AllianceBernstein®

March 2023

A Painful Epiphany

Investing in a Post-Pandemic, Post-Global World

The post-pandemic world calls for a new investment regime with a triumvirate of challenges: lower returns, higher inflation and less diversification. Against the backdrop of deglobalization and a reversal of bargaining power from capital to labor, this new investment reality raises profound questions about the kinds of risks investors will face. A strategic shift in portfolio allocations is still needed—and it should span private assets, factors and active investing while considering the role of equities as a real asset class.

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Introduction

This black book offers an overview of the investment environment from the asset owner's perspective. The pandemic marked a break in the investment regime, and the new investment reality demands a change in the approach to asset allocation and the outlook for capital markets—one that will bring about an evolution in the investment industry.

Investors' adjustment to a new regime has been complicated by the liquidity-fueled rebound of markets in the wake of the pandemic followed by the painful experience of lower liquidity and supernormal inflation levels over the past year. While a prognosis for central bank policy and available liquidity is crucial to determine the path of markets over the next year, there's also a need to distinguish these inputs from the longer-term forces driving strategic asset allocation. It's on this strategic horizon that allocation approaches need to adapt.

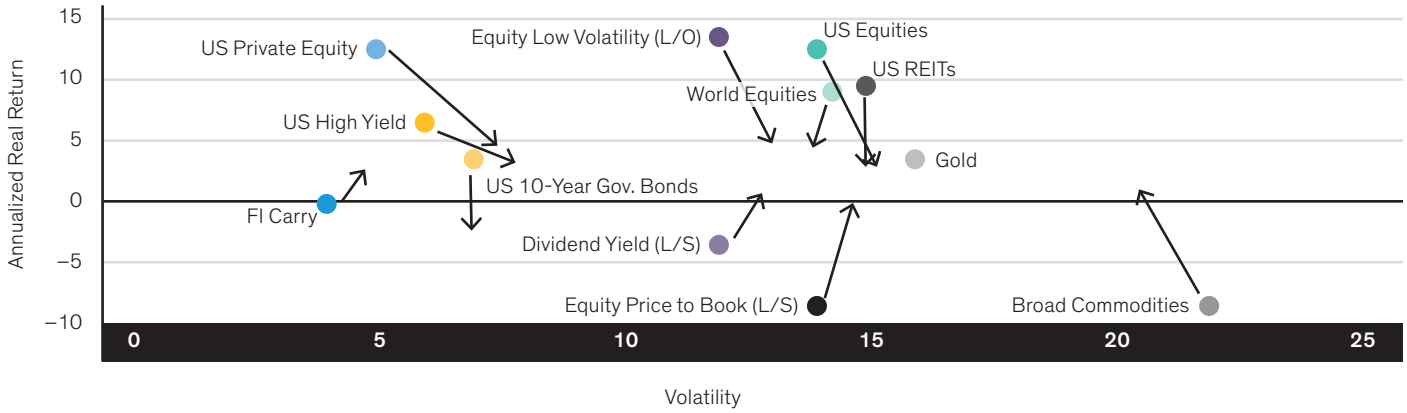
The painful epiphany for investors is that the Sharpe ratio of their portfolios in real, or inflation-adjusted, terms is likely to fall. Lower nominal returns, higher inflation over a strategic horizon and less diversification all point to this outcome. As a result, the investing model of the 60/40 stock/bond structure as the allocation starting point has outlived its usefulness. Many investors say they've moved away from this model already, but it's still a default investment position.

The experience of 2022 should serve as a wake-up call for what lies ahead, with the pain extending beyond the 60/40 portfolio. We argue that investors who continue with their current approaches will face lower returns. Investors who need to achieve a specific level of real returns will likely have to take on more risk—the key question is how to do that in the most efficient way possible. This is the narrative that runs throughout this black book.

In *Display 1, page 2*, we show the expected real return and volatility for a range of key return streams. The dots are the levels achieved over the past decade, and the arrows point to the direction we expect them to move. It's not a bearish picture, given that nearly all the arrows end in positive territory, but the general bunching up of returns points to a harder environment that will require a broader range of return sources.

DISPLAY 1: THE COMING DECLINE IN THE RISK/RETURN RATIO

Annualized Real Returns and Volatility (Percent)



Historical analysis and current forecasts do not guarantee future results.

The dots represent the last 10 years of real returns and volatility for the major return streams that investors can buy. The arrows represent the AllianceBernstein (AB) Institutional Solutions team's forecasts for the next 5–10 years. Note: US private equity data are compiled from 1,562 funds, including fully liquidated partnerships, formed between 1986 and 2019. All returns are net of fees, expenses and carried interest. Data are provided at no cost to managers.

FI: fixed-income; L/O: long-only; L/S: long/short; REITs: real estate investment trusts

As of October 14, 2022 | **Source:** Cambridge Associates, FactSet, Federal Reserve Economic Data (FRED), Kenneth R. French Data Library, Thomson Reuters Datastream and AB

If we consider the three broad topic areas we regularly write about, the key conclusions we see for asset owners' strategic allocations are as follows:

1. **The investment environment.** Inflation is likely to find an equilibrium rate above the pre-pandemic level but below today's levels. Governments will play a permanently bigger role in the economy (in areas such as fiscal support over monetary support, supply chain security, and tax and wage issues).
2. **Capital market outlook.** Investors should expect lower nominal returns and less effective stock-bond diversification ahead. However, the outlook isn't outright bearish. A slightly elevated inflation outlook is still consistent with positive real equity returns. We also see a prolonged need for exposure to real assets.
3. **The investment industry.** The parallel dynamics of public-to-private and active-to-passive flow, major forces that have been shaping the industry, have further to go. However, both will see changes. The forces driving the rotation to private assets remain in place, but we think private equity expectations may have moved too far.

The limit of passive market share will come not from any natural mean reversion in markets, but from asset owners themselves, when the passive model combined with a less appealing capital market outlook clashes with desired investment outcomes. Meanwhile, the role of environmental, social and governance (ESG) investing is set to further expand to the majority of managed assets, but ESG itself is likely to change in the process.

In the background of any strategic investment decision today is a confluence of large, secular trends that are themselves intertwined:

- Deglobalization and de-dollarization
- Demographics (a shrinking working-age population in all global regions except Africa)
- Increased labor bargaining power as a consequence of the "S" in ESG
- Climate change and the energy transition

We argue that all of these changes are inflationary (though the energy transition may well become deflationary once it progresses further).

We hope this black book will prompt debate about what we see as the key issues facing asset allocators and investors, including:

- Public versus private markets
- Active versus passive investing
- How to protect against strategically higher inflation
- How investing must adapt to a new regime and avoid recency bias in what has been an extraordinary few decades for investing
- The role ESG plays in investment methodology
- Whether asset classes are the only basis for asset allocation or whether factors can be regarded as having equivalent status
- The role of digital assets in portfolios

This discussion builds on our previous black books. *Are We Human or Are We Dancer?*[1] set out the strategic investment context, made the case for more process in investing and covered foundational issues. *Inflation and the Shape of Portfolios*[2] made the case for strategically higher inflation and what it means for portfolios incorporating equities, the duration problem investors face, factors, and digital and crypto assets. This introduction seeks to bring together a narrative that spans all the subsequent chapters of this black book.

1 Inigo Fraser Jenkins, *Are We Human or Are We Dancer? 15 Essays on the Nature of Investing*, Bernstein Research, July 2021.
2 Inigo Fraser Jenkins et al., *Inflation and the Shape of Portfolios*, Bernstein Research, May 2021.

Part I: The Investment Environment

Our thesis is that the pandemic has marked a shift in the investment environment. Not all this change is due to the pandemic itself; some elements, such as deglobalization, the prospect of lower asset-class returns and the need for private assets, have roots from long before the pandemic.

However, we expect that history will probably group these changes together and use the pandemic as the marker. The euphoric rebound of financial markets since 2020, followed by the stunned realization of central bank hawkishness, has clouded longer-term strategic questions about the macro environment and the appropriate asset-allocation response. We address those strategic issues here.

Probably no macro variable is more central to this discussion than inflation. Investors and commentators have become obsessed with the current predicament of very elevated inflation. This is understandable, given its huge social implications and what it has done to monetary policy and capital markets. However, we think the intense focus on the cyclical inflation problem we face has masked the strategic asset-allocation challenge from longer-term inflation. We suggest that the strategic inflation outlook has yet to be addressed in portfolios.

That outlook is distinct from the forces driving cyclical inflation prospects over the next one to three years. Over longer horizons, we point to the interplay of large secular forces such as deglobalization, demographics and ESG (with the longer-term importance of the implications of what the "S" implies for labor bargaining power).

In addition to these forces, policymakers (politicians, not central bankers) may look favorably on somewhat elevated inflation levels as a way of dealing with public debt/gross domestic product levels not seen since the end of WWII. This potential debt monetization has implications for central bank independence and will also influence the likely level of real yields. The opposing inflationary and deflationary forces at work (*Display 2*) suggest that inflation will be above the pre-pandemic level, but not unanchored.

DISPLAY 2: DEFLATIONARY AND INFLATIONARY FORCES ARE AT WORK OVER STRATEGIC HORIZONS

Deflationary Forces

- Technology and automation have been deflationary for years and remain that way
- Customers' realization, once pent-up spending ebbs, that nominal savings returns are down and inflation is up implies the need to save more, which lowers money's long-term velocity

Inflationary Forces

- Over strategic horizons inflation is driven by three forces:
  - Deglobalization (supply/labor cost impact)
  - Demographics (shrinking labor force)
  - The "S" in ESG shifting power from capital to labor
- Energy prices and the cost of the energy transition are high in the near term; over longer horizons the inflationary impetus moves from "E" to "S"
- Monetize debt? With debt/GDP at its highest level since WWII, governments will prefer elevated inflation in order to keep debt under control

Historical analysis and current forecasts do not guarantee future results.

As of November 30, 2022 | **Source:** AB

This forecast calls for strategic inflation hedges, the meaning of which depends on the time horizon. Longer-term investors would need assets that deliver a positive real return over an inflationary period, as opposed to a return stream that has a high correlation with inflation. We'll also discuss the return streams that can be effective in this range of long-run inflation outcomes.

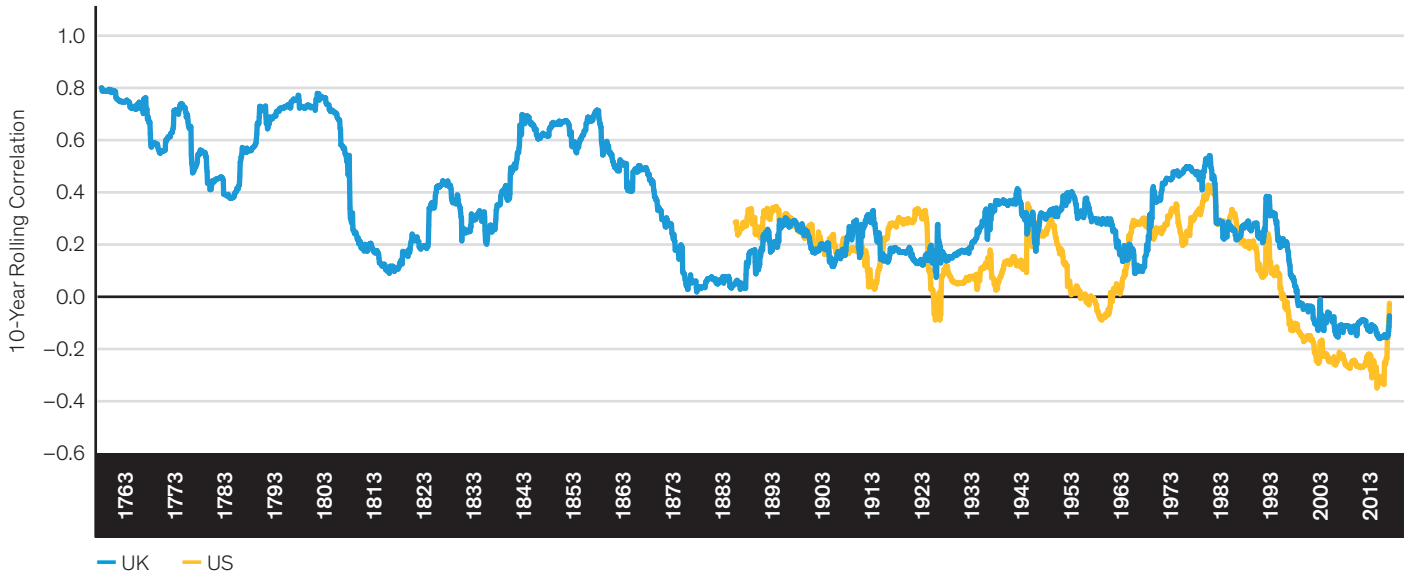
The topics of inflation and ESG have an intimate linkage. We suggest that ESG is inflationary, but that many of the knee-jerk responses to protect portfolios against inflation are inimical to at least some ESG definitions. In the dozen years that ESG has existed as a major force in the investment industry, inflation has been quiescent. We suggest that a changed environment will lead to a further evolution of what ESG means, pointing to a firmer distinction between approaches that screen out certain sectors (which we think are essentially passive in nature) and approaches that engage with the underlying issuers, or that blend ESG and financial considerations more actively.

The chapter on deglobalization makes the case that this secular trend is being driven by very different forces. One is geopolitical, particularly the US-China rivalry. The other is the domestic opposition to globalization in developed economies, given that the benefits of globalization haven't been equally shared—leading to inequality and greater precarity of labor.

Deglobalization's investment implications go beyond inflation, also pointing to lower economic growth, demands for higher risk premia and a compression in corporate profit margins (seeing as corporations have been the major beneficiaries of the globalization wave of the past four decades).

If we accept this narrative, the investment implication is that the correlation between stocks and bonds should remain elevated versus recent decades. The shock of 2022 was that bonds didn't diversify equity risk. The extreme positive correlation of that year might not persist, but we show that for most of the past 250 years, a slightly positive correlation has been the norm (*Display 3*). While it's hard to identify the consistent forces that have driven this relationship over such an extended period, both the level and volatility of inflation point to the stock-bond correlation remaining in a range from zero to slightly positive.

DISPLAY 3: STOCK-BOND CORRELATION, RECENTLY MORE NEGATIVE THAN HISTORY,* IS UNLIKELY TO PERSIST



Historical analysis and current forecasts do not guarantee future results.

***Rolling 10-year correlation between stock and bond returns

Through July 31, 2022 | **Source:** Global Financial Data, Robert Shiller's database, Thomson Reuters Datastream and AB

Part II: Asset Classes, Factors and Allocation

In Part II, we address key allocation questions for portfolios, including allocations to public versus private markets and equities versus bonds, and examine the role of digital assets.

The rotation into private assets has been a defining allocation shift over the last decade, and seems set to continue, with record dry powder allocated to private equity. When we recently presented at a pension fund conference in Canada, 70% of attendees said they plan to increase their allocations to private assets. We agree with this shift, given the investment environment we sketched out in Part I—low expected returns in public markets, diversification that's harder to come by, a need for inflation protection and a dearth of "young" growth companies coming to market.

However, we see a growing tension between these forces and the need for liquidity. A definitive upturn in interest rates, the persistently higher volatility of rates and inflation, and a return of the business cycle all point to a step change in the need for liquidity. These developments might also tempt investors into private assets due to the lack of mark to market, but that motivation would seem to be more of a governance failure and an incorrect setting of time horizons. In these cases, governance needs to be fixed before the asset allocation can be set.

The recent liability-driven investment (LDI) crisis in UK defined benefit (DB) pension plans is, we think, a canary in the coal mine in this regard. Some aspects of that incident were specific to the UK, such as the degree of leverage in place and the large size of pension liabilities relative to the local government bond market.

However, we see points of interest for global pension funds too. In the global financial crisis (GFC), banks were the point of systemic risk. In the post-pandemic world, we would argue that pension plans have taken on more of this mantle. They've shifted into more illiquid assets and further down the quality spectrum within fixed-income allocations. Pension plans are arguably better able to take on these risks, given their long time horizons, but their health is linked to policy formation, a point we made in "Long-Run Global Implications of the UK's LDI Crisis."[3]

So while we expect private asset allocation to increase, that will bring a more explicit debate about the tension between liquidity and the need to boost real Sharpe ratios. Within private assets, we think the average return on the average private equity strategy will disappoint, making manager selection even more important. We also see marginal capital flows heading into other private markets, such as private debt, real estate and natural resources such as farmland.

If demand for real assets remains high, we think equities will be a key component. The equity risk premium has a nonlinear relationship with inflation. At both very low and very high inflation levels, the risk premium rises and equity valuations are punished by the uncertainty around growth. But at moderately elevated levels of inflation (around 3%) we'll show that equities have behaved like a real asset, delivering positive real returns.

The challenge for equity investing is the strategic prospect of declining margins, with corporations less able to engage in tax or labor-cost arbitrage and inventory levels likely rising. And all of this is taking place against a backdrop of declining GDP growth and increasing geopolitical risk. Based on decomposing the drivers of equity returns, we expect a 10-year forward real return for US equities of 4.5% annualized.

Investors may respond to the prospect of lower real Sharpe ratios by allocating to illiquid assets or equity risk, but factor strategies also deserve an increased allocation. In the language of asset-management organizations, this shift often comes under the umbrella of liquid alternatives.

Allocators are sometimes wary of factors, given disagreements over whether they must be timed or can be held strategically. There's also a potentially massive range of definitions, and factors delivered subpar returns until recently. There will always be a high bar to demonstrating skill at timing; statistically, it requires a very long run of data to be credible.

3 Inigo Fraser Jenkins and David Hutchins, "Long-Run Global Implications of the UK's LDI Crisis," *Context: The AB Blog on Investing* (October 17, 2022), https://www.alliancebernstein.com/americas/en/institutions/insights/investment-insights/long-run-global-implications-of-the-uks-ldi-crisis.html.

We can leave aside the tactical question for factors since we've addressed it elsewhere. Here, we'll make a case that factors fulfill a useful strategic role in portfolios from both a return and a diversification point of view. Because a range of factor definitions is possible, we discuss a spectrum of factor "purity" that often runs counter to simplicity as a construction choice. We make the case that there is no right or wrong way to build factor exposure; instead, factors offer a range of different return properties.

A wide collection of factors have just posted an 18-month period of higher-than-average returns compared with the past decade as a whole (*Display 4*). Relative to returns on traditional asset classes, the spread is one of the highest ever. We don't expect such a wide margin to last, but it's enough to put factors back on the table of allocators' options. The bottom line: we think factors and asset classes should be seen as fungible sources of portfolio return.

An oft-heard phrase in recent months has been "bonds are back." The motivation is clear enough, given the leap in yields that implies potential positive real returns on US 10-year high-grade bonds and that has left yields on lower-quality bonds at the top end of their 10-year range. For fixed-income investors and allocators with nominal liabilities, this is indeed a step change and an unmitigated improvement in the absolute case for these assets.

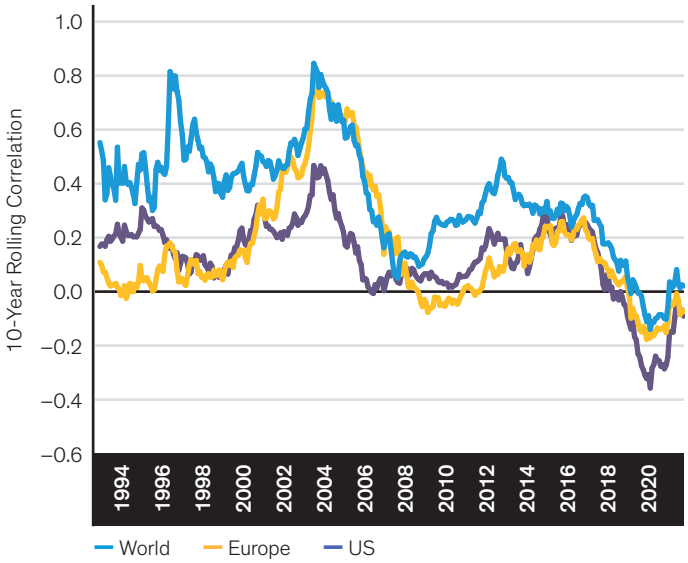
The open question is whether this improvement is enough for asset owners with real liabilities, or for those who adopt a cross-asset relative view. If high-grade bonds are no longer as effective at diversification as they have been in the past, then their role remains as drawdown protectors rather than as sources of long-term real return and diversification. Within credit, we do see the available returns as strategically attractive; the tactical issue is that credit spreads are still not very wide, even as we head into a lower-growth period.

We also make a case for inflation-linked securities. Of all the major assets that can be viewed as inflation protectors, 10-year Treasury inflation-protected securities (TIPS) have seen the biggest valuation decline of the past year. We see limits to how far real yields can rise strategically, given the limits on real growth rates and the potential for governments to suppress real yields to help with debt levels.

The decimation of crypto markets over the past year means that questions about allocations to such assets have all but dried up in recent client meetings. These assets appear to have failed as a hedge, either against inflation or risk assets. There's an open question as to whether they can become more effective if the driver of inflation shifts to debt monetization rather than labor scarcity. However, we see all this as the precursor to a bigger topic: the role of tokenized real assets in portfolios.

DISPLAY 4: ARE FACTORS BACK AFTER THEIR RECENT STREAK?

Aggregate Factor Risk-Adjusted Returns (Based on Five-Year Trailing Annualized Return/Risk)



Historical analysis and current forecasts do not guarantee future results.

Display shows the five-year annualized return/risk ratios averaged for seven factors—P/B, dividend yield, return on equity (ROE), long-term growth, price momentum, small-cap and free-cash-flow yield—in each region. Baskets are rebalanced quarterly, and we use total long/short USD returns.

Through September 30, 2022 | **Source:** AB Bernstein Research Portfolio Strategy, FactSet and AB

Investors are likely to spend progressively more time on this topic in the coming years. The key observation isn't the technology per se. It's that the technology has come along at a point when asset owners want to boost exposure to private real assets, but run into the liquidity question. A technology that can make such assets more liquid through fractionalization, increased transparency, reduced cost and faster settlement times offers an attractive prospect.

We end this section of the black book with a discussion of portfolios under a stagflationary scenario. This is not our central forecast outcome, but it's a risk that deserves attention from investors in portfolio planning.

Part III: The Investment Industry

The locus of active investing in portfolios has shifted over the last decade from traditional active equity to alternatives. Many asset allocations increasingly look like barbells, with passive management in public markets and more of the active allocation channeled to private markets.

In our chapter on the renewed case for active management, we reflect on a typical question: Is there a limit to how much of the market can be managed passively? We suggest that if such a limit exists, it's not set by the functioning of capital allocation in the economy, however damaging that might be in terms of economic growth, given the lack of a feedback mechanism. Instead, we suggest that the limit might come from asset owners who are seeking a given return level, especially when the goal is rightly set at maximizing net-of-fee return.

The limits on real Sharpe ratios outlined in this black book imply that a further increase in exposure to alternatives is on the way. It's true that the rebasing of public markets this year has increased return forecasts from a year ago, but they're still below long-run averages.

Where Does All This Leave Us?

The "painful epiphany" referenced in the title of this black book is the prospect of lower real Sharpe ratios. This means different things to investors depending on what kinds of liabilities they have. For those with strictly nominal liabilities, the rebasing of yields over the last year has provided some respite. However, for those with real liabilities, such as defined contribution (DC) pensions, sovereign wealth funds, endowments, and individuals saving to meet their own goals, an adjustment in allocations is still to come.

The main point of this black book is to outline what we see as the key lines of debate for allocators and investors in coming years.

One is forced to conclude that strategic asset allocation now matters in a way it hasn't for a long time. We're all taught that it's the most important investment decision, but investors have often just paid lip service to that sentiment for several decades. After all, public equities and public bond markets had handsomely beaten inflation, with a negative correlation between them.

While investors have been very focused on the near-term consequences of the recent inflation shock, the necessary change to strategic allocations to adjust to longer-run higher inflation has only just begun. This leaves us with a series of specific action points for investors to consider, and a series of deeper points in terms of methodology and the framing of investment decisions.

Investment Methodology

Some of the conclusions of this black book are really a set of normative statements about the process of strategic asset allocation.

The investment industry is awash with benchmarks, but are they the right ones? What is a benchmark used for, and is it fit for purpose when the regime changes?

Benchmarks have a dual function—to hold active managers to account and to guide the overall investment process. In a high-Sharpe-ratio world, these two uses were often conflated. For asset owners with liabilities set in the real economy, a new regime implies that inflation should become the ultimate benchmark, if it isn't already.

Meanwhile, industry changes have spawned a plethora of very cheap market and factor exposures, implying that the benchmark for holding managers to account should be a multivariate entity, not a single market index. This is the foundation of our definition of idiosyncratic alpha. Why should asset owners accept this notion, which sounds like an increase in benchmark complexity? Because the exercise is about reducing the risk of lost purchasing power for beneficiaries and saving money in allocating to active strategies. The idea that the old approach to benchmarking was "simple" was illusionary anyway: with many millions of benchmarks, the industry is overdue for a rethink.

The prospect of lower real Sharpe ratios implies a needed shift in allocation. The choice for asset owners is some combination of illiquid assets, factor exposure, leverage or active management. But does this choice imply that adjusting to this allocation will require higher levels of expected portfolio risk? A related question is: What's the appropriate risk measure? Should it be volatility? Or perhaps the risk of a hardship outcome for plan beneficiaries (in the case of a pension fund, for example)? We suggest that the latter approach might be more appropriate for many, though this could clash with the way governance structures are currently framed.

We would encourage senior leadership at asset owner firms to view the big picture, with pension provision a case in point. Pensions were first offered en masse in the mid-20th century, often with a DB structure. This development reflected what was possible at the time, in a world with higher rates and, in some cases, tax incentives.

The progression from DB to DC over the past four decades, with the commensurate shift in retirement risk from corporates to individuals, has been well documented. But again, it was intimately linked with the investment environment. It was relatively easy to execute this shift in a world of rising asset prices, declining inflation expectations and artificially low portfolio volatility anchored by plentiful diversification.

Arguably, individuals have come to expect certain levels of return and volatility from their retirement savings, so transitioning to a new regime will require a lot of education. Accepting a different level of risk will be part of this shift, but that has to happen hand in hand with setting appropriate time horizons.

If one frames the problem this way, it seems to us that asset classes aren't the fundamental building blocks of asset allocation. One can go a level deeper and think about strategic asset allocation as curating a set of return streams rather than asset classes or products.

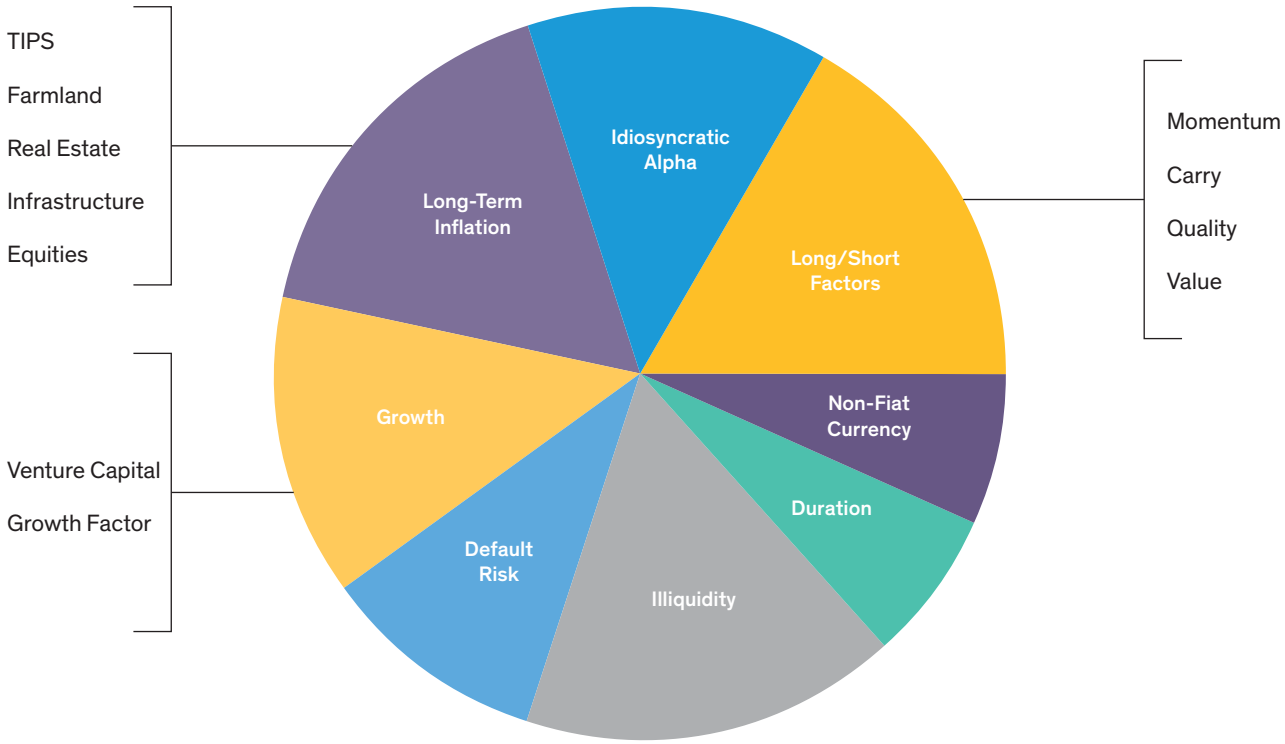
We think the challenge of the new investment regime will prompt more investors to consider risk factors hand in hand with traditional asset-class divisions. Such an approach has been suggested before, and we've written about it before, but a shift in regime makes this approach more necessary.

One key element missing from some of the more academic approaches to risk-based investing is recognizing the role of active management, which might reflect a bias that questions the role of active management. We suggest that this bias might stem from investors who are using the wrong metric for measuring the value added by active management, or from people applying a recency bias focused on markets that had a strong trend embedded in them.

If our message is that investors with a real-return target must accept higher risk, that risk has to be allocated as efficiently as possible. Asset classes are one way to partition capital and risk allocation, but not the only way. What is an asset class? Corporations and governments have chosen to raise capital in diverse ways; investing based on asset classes follows the legal structure of how capital has been raised. We suggest that thinking about factors and idiosyncratic alpha treats investment options based on the financial properties of their return streams.

This thought process suggests a different asset-allocation approach (*Display 5, page 10*), with an allocation to idiosyncratic alpha (that might be across asset classes) and a series of allocations that could be described as "betas." We've divided them into a series of factors in this example. We don't suggest that these divisions are comprehensive—there would be endless debate about how distinct they are and whether more are needed. Ideally, these factors would have a low correlation among them, but we don't envision them as orthogonal, and the correlation is likely to be dynamic.

DISPLAY 5: THE NEW BUILDING BLOCKS OF ASSET ALLOCATION?



For illustrative purposes only.

Source: AB

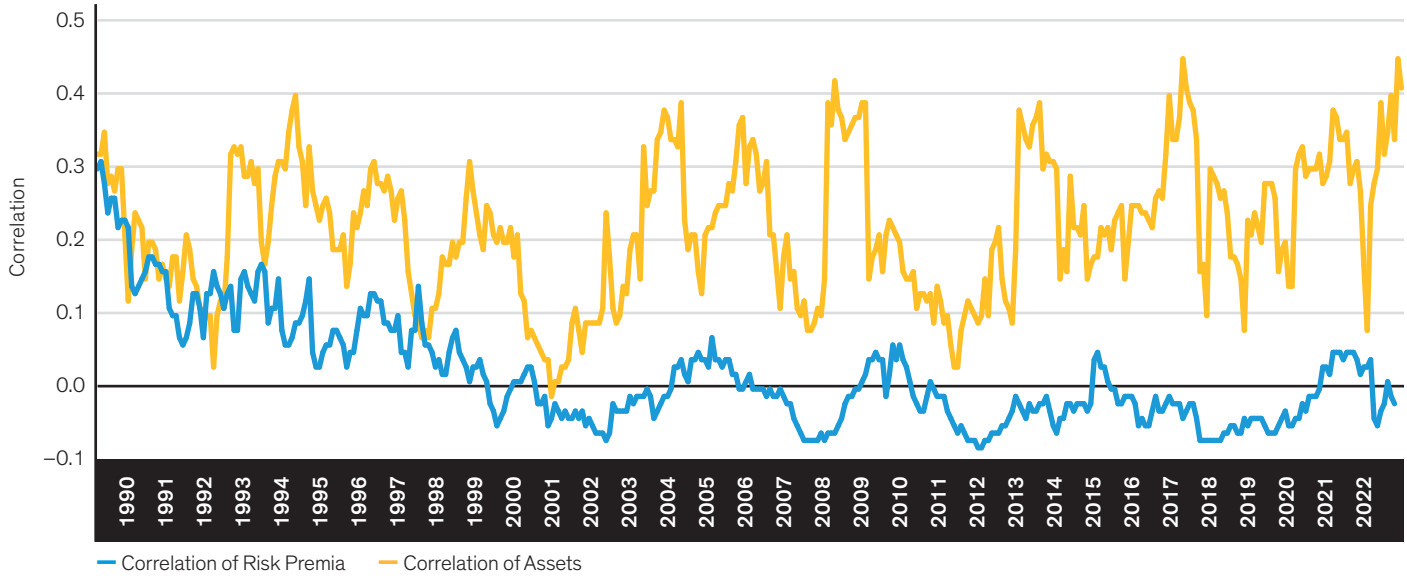
Grouping allocations under "inflation protection" reflects a change we know some clients have made as they adapt to a higher-inflation world, but investors will take very different approaches. We subscribe to the view that we'll lay out in our inflation chapter, where we stress protecting against longer-run inflation, grouping assets expected to deliver a real return over a long period rather than correlating with inflation over short periods. This approach is designed to protect against moderate inflation, not very high inflation; in a very high inflation scenario, equities don't play such a role.

There are inevitably overlaps between the illiquidity allocation as shown here and the inflation-protection and growth allocations, but we don't want to be too dogmatic about that division. We view including idiosyncratic alpha in this split as key. In a world where the expected real return on "betas" is lower, alpha necessarily plays a larger role.

This may sound more complicated than traditional approaches, but diversification provides extra incentive. One way to demonstrate this benefit is through the average pairwise correlation of asset classes and factors (*Display 6, page 11*). Factors are imperfectly captured in this analysis, because we used a set of cross-asset liquid factors that are readily available—not the full range implied in our pie chart. But the correlation of asset classes is more prone to episodes of higher co-movement.

There will always be a lively debate about how to weight factors like these. A "purist" approach would be to weight them for equal risk contributions. We like this idea in theory, but in practice it faces severe constraints. It requires open-ended access to leverage, raises questions of capacity and is very far removed from the reality of portfolios today. So, in practice, we think the weighting of segments will be more closely tied to governance structures and other constraints. We'll revisit this topic in future work.

DISPLAY 6: THE CORRELATION OF FACTORS IS MORE STABLE THAN THE CORRELATION OF ASSET CLASSES



Historical analysis and current forecasts do not guarantee future results.

The risk premia series includes global equity composite value, ROE, long-term growth, momentum and low-volatility long/short factors as well as fixed-income and FX momentum, carry and value. The asset-class series includes global, US, emerging-market (EM) and Japanese equities, US and Japanese 10-year government bonds, US investment-grade and high-yield credit series, and gold.

Through October 30, 2022 | **Source:** FactSet, MSCI and AB

Strategic Asset-Allocation Action Points

The other conclusions that can be derived from this black book are directional views on the components of portfolios in a world of strategically higher inflation.

Equity exposure is a key anchor for portfolios that need to generate real returns, even if margin compression and lower growth point to lower returns ahead. If equilibrium inflation ranges around 3%, equities would be expected to deliver positive real returns.

We should expect more questions around the appropriate allocation to private assets. The case for private assets remains, despite the upward rebasing of public-asset return expectations over the past year. A painful year for asset-class returns doesn't obviate the case for private assets, but liquidity requirements will be monitored more closely, and there are a significant number of asset owners who now find themselves above their target weight in private assets after the repricing of public markets in 2022. We expect the average return from private equity to disappoint, and marginal capital to flow into other areas such as private debt, real estate, infrastructure, farmland and timberland.

A surge in credit yields over the past year has altered the strategic investment case. Expected credit returns over a strategic horizon are attractive; the near-term issue is more about timing the entry to the trade, since spreads could widen further as economic growth slows. The reduced ability of sovereign duration to diversify implies that it plays a reduced role in those portfolios that have real-return requirements.

Factors should play a more prominent role in asset allocations—for example, value, low volatility and quality equity factors from a strategic perspective, and carry from a cross-asset perspective. To hedge against stagflation risk, factors like free-cash-flow yield become important.

It's hard to generalize about necessary shifts in asset allocation, given the plethora of starting positions, liabilities and goals. However, the direction of travel outlined in this black book for investors with real liabilities is a higher allocation to alternatives (both factors and private assets) and active managers that can deliver idiosyncratic alpha, and maintaining or growing equity and credit allocations. Marginal flows will likely need to be negative for nominal long-duration sovereign debt and private equity.

PART I: The Investment Environment

CHAPTER 1

Assessing the Inflation Trajectory and Portfolio Responses

Inflation is probably the preeminent macro issue today, but we draw a distinction between cyclical inflation over the next one to two years and structural inflation over longer periods. Cyclical inflation is the reason for the current central bank hawkishness, whereas structural inflation is the key driver of strategic asset-allocation decisions. There are overlaps, but we argue that the forces acting on the two inflation trends are different.

In this chapter, we discuss the appropriate portfolio response to strategic inflation views. Because of the nonlinear relationship between inflation and many return streams, we distinguish between moderate inflation (which is more likely) and genuinely high inflation. This narrative is not only about finding returns when inflation rises but also about analyzing stable sources of diversification and their effects on cross-asset portfolios.

Inflation is the key macroeconomic concern over all others. The potential change in the long-run (10-year forward) equilibrium inflation level could have a large effect on strategic asset allocation. We've been asked in recent client meetings whether we think the inflation trade is "done." After all, given the sizable attention directed at this topic, one might be forgiven for thinking there's nothing more to do in portfolios. We disagree. The very elevated near-term inflation has heavily impacted portfolios over the past year, but there's more disagreement about the longer-term prognosis, and hence more to do in terms of portfolio response.

Given the drama of inflationary headlines, the knee-jerk reaction might be to reflect on past episodes of unanchored high inflation. We think it's more likely that equilibrium inflation will be only moderately higher than pre-pandemic levels, which would still be a massive change from recent decades. Central banks have made it clear in recent months that they intend to clamp down on today's very high inflation, but the inflation forces are different longer term.

Shifting a strategic allocation, let alone the underlying methodology, is challenging. However, the pandemic's aftermath and the likelihood of a genuinely different policy path could be catalysts for change. Many allocations may have weaker defenses against higher inflation, which could be an opportunity to accelerate needed change in fund governance. This translates into evaluating the inflation sensitivity of strategic allocations as well as the required manager and product due diligence needed to pre-position portfolios for a period of sustainably higher inflation expectations.

In this chapter, we'll detail the impact of different inflation outcomes on a broad range of possible return streams. Because equity exposure is likely to increase with moderately higher inflation, we'll indicate what we view as the most effective way to diversify that risk as inflation increases. And we'll demonstrate how progressively increasing an allocation to a range of potential inflation hedges alters the risk/return profile of a 60/40 portfolio.

We also suggest that there are limits to using recent historical relationships to map out an allocation. The post-pandemic policy landscape has undergone profound changes from recent decades:

- A rebalancing of the economy from capital to labor
- The reallocation of resources to "green" investment
- The possibility of a political desire to maintain inflation as a way to manage debt levels
- A likely permanent larger role for fiscal policy

Some of these changes will unavoidably require allocators to take a view on sociopolitical change.

We believe that long-term inflation will likely be higher than before the pandemic, suggesting a need to adjust portfolios in response—and for asset owners to adopt a broad toolkit of traditional and nontraditional exposures. In fact, exposures to regional equities and/or factors might play a larger role in inflation responses than simply boosting allocations to TIPS.

For DC funds, the nature of a more inflation-resistant portfolio evolves over the investing lifetime. Early on, inflation protection implies an ability to deliver positive real growth; later in the glide path, preserving purchasing power by hedging inflation is a greater concern. In practical terms, this translates into a shift in preference from equities to other real assets over the course of the glide path.

We also discuss the likely durability of different inflation hedges, which depends not only on the sociopolitical environment but also on the pace of innovation in the investment-management industry.

Inflation Outlook: Separating the Tactical and Strategic

While inflation is probably the most important macro issue today, the fixation with it seems somewhat misguided. As we see it, the big issue for strategic asset allocation is how the long-term equilibrium inflation level may have changed—and thus possibly the policy response.

We expect that near-term inflation will fall from today's levels, not least because central banks have been adamant about a rapid response. Realized inflation will likely abate from today's elevated levels, but we don't think falling expectations signal a return to the pre-pandemic disinflationary norm, so inflation demands investors' attention as they refine strategic asset allocations.

We shouldn't lose sight of both inflationary and deflationary forces in the medium term, but inflationary forces seem stronger on balance. Therefore, we expect medium-term inflation to find an equilibrium above the pre-pandemic level, but not to become unanchored. Over strategic horizons, we think three forces will drive inflation:

- Deglobalization (the supply and labor-cost impact)
- Demographics (a shrinking labor force)
- ESG, but over longer horizons, with a particular focus on the "S"

We discuss these forces in more detail in separate chapters. We also think it's possible that governments might, perhaps implicitly, prefer equilibrium inflation that is higher than before the pandemic in order to reduce the burden of public debt/GDP, which has grown to levels last seen at the end of WWII. In other words, they may be tempted to monetize debt. The pandemic also seems to have marked a transition, with fiscal policy potentially available to cushion the economy in a way that would have been harder to implement before.

Deflationary forces, including automation, which helped keep inflation low prior to the pandemic, oppose these inflationary trends. This force has been somewhat swamped by others lately, but given higher investment in automation both over the course of the pandemic and post-pandemic, one should expect it to remain in play. Savings growth is another possible deflationary force. Savings rates have swung wildly in recent years, as consumers were first unable to spend and then stampeded to spend, supported by fiscal handouts. However, longer term, we make a case that savings rates will likely increase. In markets such as the US and UK, where individuals are largely responsible for bearing the risk of retirement saving, we suggest that individuals will realize over time that the real return on their investment assets is declining, implying that they should save more. This would put downward pressure on money velocity.

Ultimately, the inflation trajectory reflects the path of policy, debt levels and ESG in the broadest sense of the word—society's view of the endless erosion of labor bargaining power. That's why we see a case for moderately higher inflation in the medium term. The core of the analysis in this chapter focuses on how to build portfolios to respond to this scenario, covering a few key points:

- The returns investors should expect from specific assets or factors when inflation is either moderately high or very high
- Expected diversification potential from specific assets or factors when inflation is either moderately high or very high
- How the returns and risk levels of an overall starting portfolio (a traditional 60/40) change when certain inflation-protecting assets and factors are added
- How inflation tools are valued, and whether a premium is required today to buy portfolio inflation protection

Benchmarks and Goal Setting: The Inflation Angle

In our last black book, *Are We Human or Are We Dancer?*,[4] we made the case that investors should review benchmark and goal setting in light of possible higher inflation. In our view, sovereign wealth funds, endowments and DC plans "should" target a given level of real return: because they must fund spending in the real economy, they should seek to increase purchasing power over relatively long investing horizons.

Some pension plans, including many US state plans, have return targets couched as a nominal return—for example 6.5% annualized. We argue that the impact of inflation on such a plan depends on the asset owner's point of view. In simple terms, a moderate increase in inflation would, all else being equal, help achieve that return target. But if a plan expects to continue across multiple generations, persistently higher inflation should drive a higher return target. We recognize that this is probably more of a political than an economic decision, and may lie beyond the bounds of normal analysis for many plan funds. Still, it has to be taken into account in a genuine attempt to address strategic asset allocation.

A persistently higher move in inflation and lower nominal returns might challenge the way these return targets are set and reveal that setting them via a benchmarking exercise versus other funds is ultimately a fool's errand. Instead, we believe that setting targets must be grounded in economic reality—anything else is kicking the can down the road.

Evaluating Real Return and Inflation Hedging

Over the lifecycle of a DC plan or target-date strategy, there's a subtle need to at least preserve purchasing power and grow the asset pool relative to (real world) liabilities.

However, the risk/return trade-off evolves over that lifecycle. Early on, the investment goal should be to generate positive real returns; closer to retirement, preserving purchasing power is more important. The term "inflation hedge" is used very loosely here, as it can really refer to two distinct attributes: delivering positive real returns when

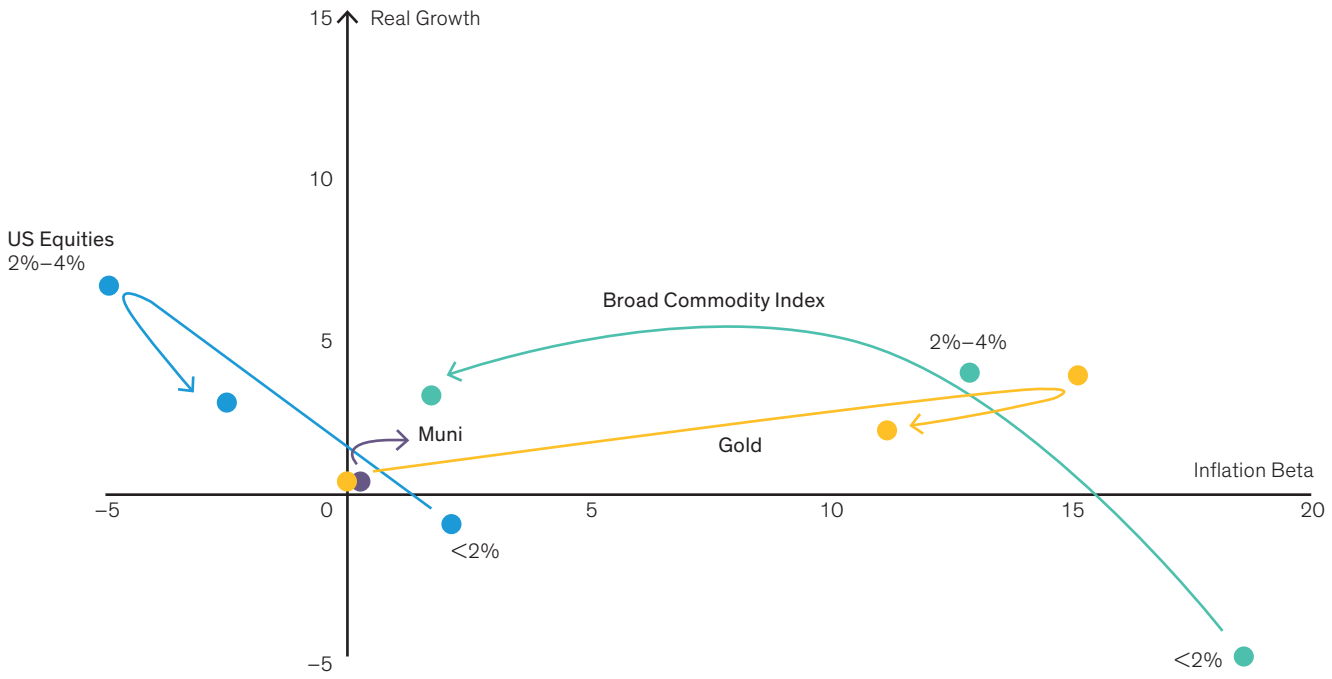
4 Inigo Fraser Jenkins, *Are We Human or Are We Dancer? 15 Essays on the Nature of Investing*, Bernstein Research, July 2021.

inflation is higher and delivering returns that closely match inflation (a "hedge"). We suggest that a DC investor's primary goal should shift from positive real returns to hedging over the saving lifetime.

In *Display 7*, we stack up a number of assets based on their ability to deliver positive real growth and hedge inflation. These abilities depend on the inflation level, so we also show how this trade-off evolves across the inflation spectrum.

For example, at moderate inflation levels, equities are at the top left—they deliver strong positive real returns, but with a negative inflation beta (positive inflation shocks from that level can be negative for the equity outlook). So, equities help generate real growth but aren't a good inflation hedge. Commodities (both broadly and oil specifically) are to the right—more useful for inflation hedging than real growth. Gold tends to move in the opposite direction from equities in this construct, so it becomes a better hedge as inflation moves from low to moderate levels.

DISPLAY 7: THE PROGRESSION FROM REAL GROWTH TO INFLATION HEDGING



Historical analysis and current forecasts do not guarantee future results.

The display shows the average year-over-year real return against the beta from the regression of nominal year-over-year return vs. year-over-year change in US CPI in different inflation regimes proxied by the US 10-year TIPS implied break-even inflation rate. Low inflation periods are defined as a break-even rate below 2%, moderate inflation is defined as a break-even rate between 2% and 4%, and high inflation periods are defined as a break-even rate higher than 4%.

From January 1, 1970, to May 31, 2021 | **Source:** AQR Capital Management, Bloomberg, Federal Reserve Bank of New York, FRED, Global Financial Data, Kenneth R. French Data Library, Robert Shiller's database, Thomson Reuters Datastream and AB

Another way to express this concept is to list the assets that tend to be most effective either as real-return contributors or as inflation hedges in moderate- or high-inflation regimes (*Display 8*).

The general picture that emerges? For moderate inflation, equity beta, REITs and value equity are keys to generating positive real returns, while commodities, gold and momentum are more effective as hedges. With higher inflation, equity beta becomes a less reliable source of real growth, while equity factors such as value and free-cash-flow yield become more important. Commodities and momentum retain their ability to hedge inflation.

Bear in mind that our outlook has moderate inflation as the most likely outcome, with genuinely high inflation less of a risk. If we translate this worldview into a suggested glide path allocation for DC funds, it has clear implications: the inflation-protection element should have a high allocation to equity beta, REITs and value equity in the early stages of the glide path, evolving to higher exposure to commodities, gold and trend strategies later in the glide path.

To be fair, the term "real asset" can be interpreted in different ways. Rather than viewing it as a limited set of clearly delineated physical assets, we show a broader range of possibilities in the following

DISPLAY 8: REAL-GROWTH AND INFLATION-HEDGING TOOLSETS EVOLVE

Moderate Inflation		High Inflation	
Real Return	**Inflation Beta**	**Real Return**	**Inflation Beta**
REITs	Broad Commodity Index	EM Equities	Oil
Equity Value	Oil	REITs	Gold
Equities (US, EM, Japan)	Gold	Equity Value	Municipal Bonds
Equity Free-Cash-Flow (FCF) Yield	Commodity Equities	Equity FCF Yield	Broad Commodity Index
	Equity Momentum	Equity Dividend Yield	Commodity Equities
	Farmland/Timberland		Momentum (Equities and FX)
	Renewables/Power Delivery		Farmland/Timberland

For illustrative purposes only.

Source: AB

sections. In our view, public equities can be thought of as a real asset—they offer partial ownership of a corporation whose revenues, and therefore dividends, can grow alongside the real growth of the economy. At the other end of the scale, real assets can refer to a physical building, a piece of land or infrastructure, which is why physical assets are more closely aligned with inflation hedging.

Assessing Return Streams in Different Inflation Regimes

We analyze the effectiveness of return streams in various inflation regimes. This is a nuanced assessment, as there's considerable evidence that many return streams have a nonlinear relationship with inflation. For example, the broad equity market dislikes deflation and abhors high inflation. However, evidence suggests that a move from low inflation to moderate inflation is consistent with positive equity returns, so it's important to be clear on the inflation level.

As we stated earlier, we don't think we're heading back to pre-pandemic disinflation. However, one thing seems accurate about the recent declines in 10-year break-even inflation rates: we don't seem headed for a very high inflation level that would be very damaging for equity returns.

That outlook is reflected in a key conclusion of our analysis: in a strategic asset-allocation context, equity exposure and risk levels for many investors should generally increase (subject to specific asset

owner constraints). For that reason, in the initial part of our analysis presented here and in an analysis of equity returns based on inflation, we equally weight how effectively various return streams diversify equity risk—and how that ability depends on inflation.

In *Display 9*, we show the average return for a range of assets, factors and sectors by inflation band since 1970. This analysis is from the point of view of a US investor, so returns are conditioned using a measure of inflation expectations developed by the Federal Reserve Bank of New York that proxies expectations over a long history.

Non-US investors face two issues in interpreting this research: hedging returns into local currency, if required, and the extent to which our inflation assumption applies to other regions. We think there's a good case to be made that developed markets generally face a similar outlook, given the post-pandemic expansion of public debt and the balancing of deflationary forces from trends such as automation. Thus, we think these results are in general globally applicable.

DISPLAY 9: AVERAGE REAL RETURNS BY INFLATION BAND

Break-Even Bands	<1%	1%–2%	2%–3%	3%–4%	4%–5%	>5%
Break-Even Average	0.8	1.7	2.3	3.5	4.7	6.9
Break-Even Frequency	1.7	22.1	25.0	8.2	11.4	31.7
US 60/40 Portfolio	–0.1	4.0	9.0	11.9	9.2	3.4
Equities	**<1%**	**1%–2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
US Equities	–6.8	2.6	14.6	15.6	10.6	4.5
EM Equities	–40.1	–3.4	21.3	13.7	21.5	9.8
World Equities	–11.6	–0.5	14.5	14.5	11.2	4.6
Japan Equities	–21.8	–4.2	10.2	27.2	24.4	8.0
Fixed Income	**<1%**	**1%–2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
US 10-Year Government Bonds	11.7	6.0	1.1	6.5	7.1	1.7
Japan 10-Year Government Bonds	10.5	1.3	–0.3	12.5	18.4	4.8
World 10-Year Government Bonds	8.8	4.5	2.4	9.1	11.6	3.5
US Investment-Grade Bonds	–1.3	5.2	3.7	7.6	8.5	3.2
World Investment-Grade Bonds	–9.5	–1.7	–0.7	–1.3	–1.9	–5.4
US High-Yield Bonds	–11.9	2.5	9.0	11.0	9.3	4.4
World High-Yield Bonds	–21.2	–2.8	5.1	0.6	1.3	–1.7
US TIPS (10-Year)	1.9	4.4	2.7	3.8	6.0	4.2
US Municipal Bonds	1.2	4.0	2.1	6.1	3.8	2.5
Real Assets	**<1%**	**1%–2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
Broad Commodity Index	–40.2	–11.6	12.6	12.8	5.9	10.0
Oil	–45.1	–8.7	28.2	4.6	–1.2	15.1
Gold	–2.8	4.1	8.0	9.6	5.9	7.3
US REITs	–25.9	5.7	15.9	23.1	16.6	8.5
World REITs	–32.4	4.1	16.0	30.0	20.7	10.1
US Real Estate	–3.3	2.7	2.2	–0.4	1.1	0.0
World Infrastructure	–5.3	2.5	16.0	4.9	9.1	2.6

Factors (Long/Short)	<1%	1%–2%	2%–3%	3%–4%	4%–5%	>5%
Equity Price to Book	–16.3	–4.2	1.3	0.3	5.1	–0.1
Equity Price to Earnings (P/E)	–8.7	1.0	0.1	–2.0	4.9	–1.3
Equity Quality	18.2	6.8	–2.8	2.0	–1.4	–3.8
Equity Dividend Yield	–6.6	1.2	–3.1	–7.8	4.1	–5.5
Equity FCF Yield	–7.8	–5.0	–0.2	–3.3	5.0	–0.5
Equity Low-Volatility	25.5	5.6	–8.7	0.3	4.0	–1.1
Equity Momentum	18.4	2.3	1.5	11.5	7.0	3.0
Fixed-Income Value	–1.2	–0.9	–1.8	1.4	–5.1	–2.8
Fixed-Income Momentum	–2.3	–1.3	–1.2	–3.0	–1.1	–7.1
Fixed-Income Carry	–1.0	–0.4	–0.9	–2.6	0.2	–3.0
FX Value	1.0	1.9	1.1	3.0	–1.0	–3.8
FX Momentum	–2.7	–2.3	–2.0	0.8	–2.2	–4.6
FX Carry	–13.9	0.0	3.0	0.0	–3.0	–3.2
Factors (Long-Only)	**<1%**	**1%–2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
Equity Price to Book	–16.6	0.5	19.5	19.3	17.9	9.6
Equity P/E	–15.6	4.2	18.6	17.5	17.3	7.3
Equity Quality	–1.1	4.6	15.4	18.4	11.3	5.6
Equity Dividend Yield	–8.4	4.4	13.5	12.2	16.1	5.5
Equity FCF Yield	–12.3	–0.1	18.1	16.5	17.6	8.2
Equity Low-Volatility	–7.0	5.2	13.1	16.3	11.7	4.8
US Relative Sectors	**<1%**	**1%–2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
Industrials	–8.0	–0.1	3.5	5.9	–1.0	–0.1
Materials	–19.3	–2.1	3.8	–4.7	–0.8	0.4
Metals and Mining	–31.2	–7.9	10.1	–8.3	–0.3	1.4
Consumer Cyclicals	5.9	4.6	0.1	–3.6	0.5	–1.3
Consumer Staples	6.6	2.0	–3.3	–2.2	2.9	2.8
Energy	–14.1	–9.1	5.4	–0.9	–3.3	1.5
Banks	–14.2	–0.8	–2.3	6.3	2.6	0.7
Insurance	–9.5	0.9	–2.6	5.8	3.6	1.1
Healthcare	9.1	3.4	–2.0	–1.7	0.1	2.6
Real Estate	–22.1	2.7	1.1	9.3	2.2	2.7
Technology	14.9	4.4	4.0	11.8	–3.2	–2.2
Communication Services	12.0	–3.7	–2.8	–2.0	4.2	0.1
Utilities	1.8	–0.2	–2.0	–4.8	1.5	–1.3

Historical analysis and current forecasts do not guarantee future results.

The table shows average year-over-year real return for different assets in different inflation regimes. The data history is from January 1970 or earliest available date through May 2021. Inflation regimes are proxied by the US 10-year TIPS implied break-even inflation rate. Before 1997, the 10-year break-even rate is a backcast of implied inflation calculated by Jan Groen and Menno Middeldorp from the Federal Reserve Bank of New York. For more details, please see: https://libertystreeteconomics.newyorkfed.org/2013/08/creating-a-history-of-us-inflation-expectations/. Equity long-only factors show the market-cap-weighted absolute return of a portfolio of top-quintile-ranked stocks based on the factor characteristic. Equity long/short factors show the market-cap-weighted return of a portfolio that is long the top-quintile stocks and short the bottom-quintile stocks. World investment-grade and high-yield bond returns are shown in excess of duration.

From January 1, 1970, to May 31, 2021 | **Source:** AQR Capital Management, Bloomberg, Federal Reserve Bank of New York, FRED, Global Financial Data, Kenneth R. French Data Library, Robert Shiller's database, Thomson Reuters Datastream and AB

DISPLAY 10: CORRELATION WITH US EQUITIES BY INFLATION BAND

Break-Even Bands	<2%	2%–3%	3%–4%	4%–5%	>5%
Break-Even Average	1.7%	2.3%	3.6%	4.8%	6.9%
Break-Even Frequency	25%	24%	10%	10%	31%
US 60/40 Portfolio	0.95	0.92	0.91	0.97	0.95
Equities	**<2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
EM Equities	0.71	0.71	0.32	0.43	0.24
World Equities	0.96	0.95	0.73	0.85	0.82
Japan Equities	0.59	0.48	0.23	0.51	0.20
Fixed Income	**<2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
US 10-Year Government Bonds	–0.27	–0.19	0.31	0.42	0.37
Japan 10-Year Government Bonds	–0.14	–0.11	0.16	0.05	0.06
World 10-Year Government Bonds	–0.15	0.00	0.24	0.44	0.22
US Investment-Grade Bonds	0.08	0.13	0.27	0.41	0.45
World Investment-Grade Bonds	0.57	0.59	0.18	0.03	–0.06
US High-Yield Bonds	0.32	0.37	0.30	0.06	0.50
World High-Yield Bonds	0.61	0.64	–0.06	–0.18	0.07
US TIPS (10-Year)	–0.08	0.03	0.34	0.29	0.27
US Municipal Bonds	–0.08	0.03	0.37	0.69	0.57
Real Assets	**<2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
Broad Commodity Index	0.23	0.30	0.03	–0.08	0.04
Oil	0.23	0.20	0.01	–0.04	–0.03
Gold	–0.06	0.15	–0.08	–0.20	–0.09
US REITs	0.51	0.54	0.47	0.64	0.72
World REITs	0.56	0.61	0.57	0.69	0.70
US Real Estate	0.07	–0.14	–0.09	–0.07	0.02
World Infrastructure	0.51	0.67	0.47	0.67	0.73
Factors (Long/Short)	**<2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
Equity Price to Book	0.04	0.16	0.15	0.03	–0.28
Equity P/E	–0.01	–0.04	0.10	0.04	–0.23
Equity Quality	–0.38	–0.28	–0.24	–0.11	0.00
Equity Dividend Yield	–0.36	–0.33	–0.28	–0.34	–0.59
Equity FCF Yield	–0.08	–0.17	0.09	–0.03	–0.34
Equity Low-Volatility	–0.59	–0.48	–0.34	–0.37	–0.56
Equity Momentum	–0.37	0.00	–0.09	0.12	0.08
Fixed-Income Value	0.01	0.18	–0.02	0.17	0.10
Fixed-Income Momentum	0.05	0.00	0.12	–0.12	–0.01
Fixed-Income Carry	–0.11	0.10	0.09	–0.10	–0.06
FX Value	0.10	–0.15	0.11	0.14	–0.11
FX Momentum	–0.03	0.24	0.07	–0.05	0.05
FX Carry	0.48	0.40	–0.03	0.13	0.08

Factors (Long-Only)	<2%	2%–3%	3%–4%	4%–5%	>5%
Equity Price to Book	0.85	0.87	0.81	0.79	0.89
Equity P/E	0.86	0.88	0.88	0.84	0.90
Equity Quality	0.97	0.95	0.93	0.95	0.98
Equity Dividend Yield	0.73	0.80	0.73	0.84	0.81
Equity FCF Yield	0.85	0.84	0.90	0.81	0.91
Equity Low-Volatilty	0.83	0.93	0.89	0.96	0.94
US Relative Sectors	**<2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
Industrials	0.27	0.23	0.10	0.18	0.36
Materials	0.16	0.25	0.00	0.28	0.37
Metals and Mining	0.32	0.29	0.02	0.18	0.13
Consumer Cyclicals	0.12	0.12	0.18	0.14	0.31
Consumer Staples	–0.53	–0.44	–0.08	–0.10	–0.16
Energy	–0.10	0.09	–0.18	–0.17	–0.12
Banks	0.20	0.08	0.08	0.07	–0.05
Insurance	–0.11	–0.05	–0.05	0.00	0.10
Healthcare	–0.41	–0.27	–0.02	0.11	–0.14
Real Estate	–0.32	–0.16	–0.15	0.33	0.25
Technology	0.38	0.26	0.14	–0.03	0.10
Communication Services	–0.14	–0.25	–0.13	–0.39	–0.42
Utilities	–0.51	–0.55	–0.29	–0.39	–0.52

Historical analysis and current forecasts do not guarantee future results.

Average 12-month rolling correlation for different asset classes versus US equities for different asset classes in various inflation regimes. Data is from January 1970 or earliest available date through May 2021. Inflation regimes are proxied by the US 10-year TIPS implied break-even inflation rate. Before 1997, the 10-year break-even rate is a backcast of implied inflation calculated by Jan Groen and Menno Middeldorp from the Federal Reserve Bank of New York. For more details please see: https://libertystreeteconomics.newyorkfed.org/2013/08/creating-a-history-of-us-inflation-expectations/. Equity long-only factors show the market-cap-weighted absolute return of a portfolio of top-quintile-ranked stocks based on the factor characteristic. Equity long/short factors show the market-cap-weighted return of a portfolio that is long the top-quintile stocks and short bottom-quintile stocks. World investment-grade and high-yield bond returns are shown in excess of duration.

From January 1, 1970, to May 31, 2021 | **Source:** AQR Capital Management, Bloomberg, FRED, Global Financial Data, Kenneth R. French Data Library, New York Fed, Robert Shiller's database, Thomson Reuters Datastream and AB

It's probably not a surprise that commodities, gold and REITs perform well as inflation rises. We've also separated out the more explicit benefit of certain return factors. For example, value strategies (both long-only and long/short) tend to fare better as inflation rises—though this benefit declines somewhat when inflation rises past 5%. Likewise, low-volatility equity holds up well when inflation is high, though less so when inflation is still rising. Trend strategies (the momentum factor), both in equities and fixed income, also tend to deliver positive returns at high inflation levels.

In *Display 10, page 20*, we repeat the exercise, but measuring the correlation of returns with US equities and how it changes by inflation band. This analysis addresses the question of the robustness of the diversification of equity risk as inflation rises. Bonds tend to lose their diversifying potential as inflation rises. For example, the return correlation of the US 10-year Treasury bond with US equities has been 0.3 when inflation is in the 3% to 4% range. Equity long/short factors, such as low volatility, become progressively better diversifiers of equity risk as inflation rises. We also see interesting differences at the equity sector level, such as in energy and utilities: these sectors tend to have higher yields but also an element of inflation linkage to their revenues that provides good diversification at higher yields.[5]

The Trade-Offs in Inflation-Protecting Assets

Bringing all these quantitative results together, we can draw some big-picture qualitative conclusions. *Display 11, page 22*, looks at a select subset of assets, categorizing their usefulness along key dimensions: ability to deliver positive real returns, reliability in doing

5 Note that we base the sector measurement on the spread of returns between the sector and the market.

DISPLAY 11: GAUGING THE EFFECTIVENESS OF INFLATION HEDGES

Class	Asset	Moderate Inflation			High Inflation			
		Real Return	Reliability	US Equity Hedge Ability	Real Return	Reliability	US Equity Hedge Ability	Cost
Equities/Bonds								
	US Equities	●	●	●	●	●	●	●
	EM Equities	●	●	●	●	●	●	●
	US 60/40 Portfolio	●	●	●	●	●	●	●
Real Bonds								
	US 10-Year TIPS	●	●	●	●	●	●	●
Real Assets								
Commodities								
	Oil	●	●	●	●	●	●	●
	Broad Commodity Index	●	●	●	●	●	●	●
Factors								
	Fixed-Income Value	●	●	●	●	●	●	●
	FX Momentum	●	●	●	●	●	●	●
	Equity P/B (L/S)		●	●	●	●	●	●
	Equity P/B (L/O)	●	●	●	●	●	●	●
	Equity Momentum (L/S)	●	●	●	●	●	●	●
Commodity Equities								
	US Energy (Relative)	●	●	●	●	●	●	●
Physical Real Assets								
	US REITs	●	●	●	●	●	●	●
	World Infrastructure Equity	●	●	●	●	●	●	●
	Farmland	●	●	●	●	●	●	●
	Timberland	●	●	●	●	●	●	●
Renewables								
	Power Delivery	●	●	●	●	●	●	●
Non-Fiat Currency								
	Gold	●	●	●	●	●	●	●
	Cryptocurrencies	●	●	●	●	●	●	●

Historical analysis and current forecasts do not guarantee future results.

A green/amber/red circle is based on the top/middle/bottom third, respectively, of the distribution of outcomes of the universe of possible return streams. A black circle indicates that there was not enough historical data for a reliable conclusion or the attribute was not applicable. Reliability is measured by the "hit rate"—the percentage of outcomes where real returns were positive. Ability to hedge US equities is measured by the 12-month rolling correlation with US equities. The data history is from 1970 or the longest available history. Inflation regimes are proxied by the US 10-year TIPS implied break-even inflation rate. Moderate inflation periods are defined as a break-even rate between 2% and 4%, and high inflation periods are defined as a break-even rate higher than 4%.

From January 1, 1970, to May 31, 2021 | **Source:** AQR Capital Management, Bloomberg, FRED, Global Financial Data, Kenneth R. French Data Library, New York Fed, Robert Shiller's database, Thomson Reuters Datastream and AB

so and ability to hedge equity beta. We also assess the cost of access (based on fees, taxes and liquidity).

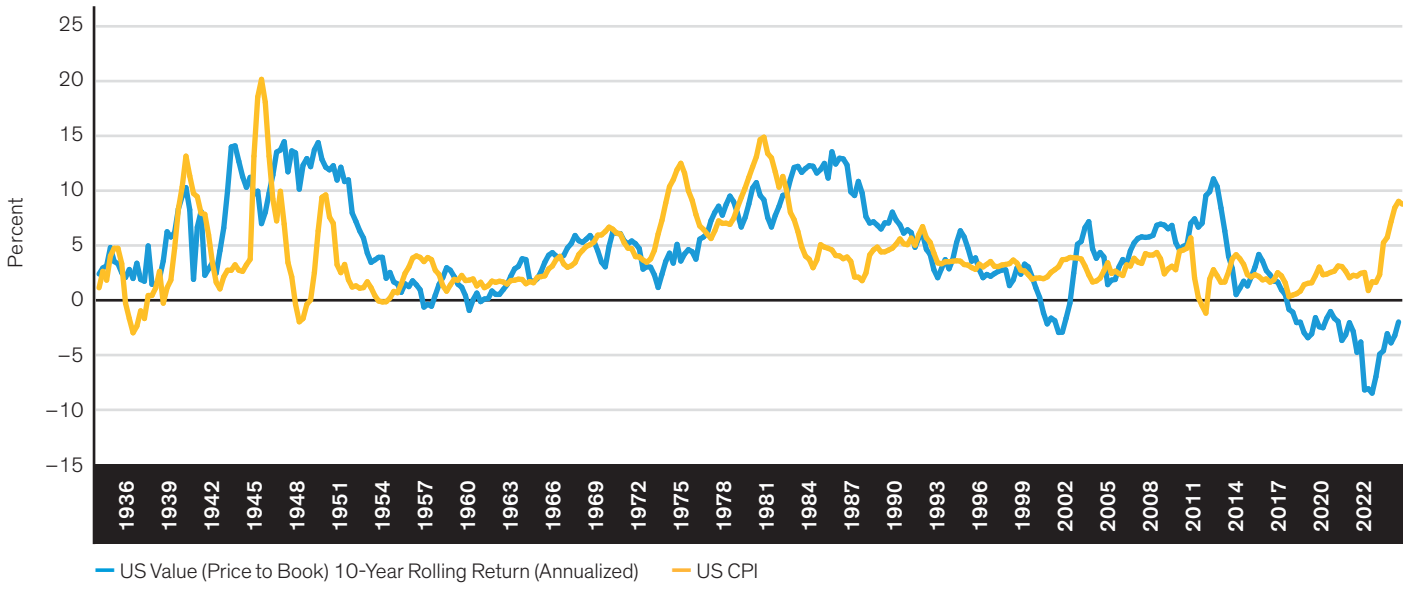
Given the nonlinear impact of inflation on many return streams, we separate the results into moderate inflation (which we define as a 10-year inflation breakeven in the range of 2%–4%) and high inflation (a breakeven above 4%). This variation in effectiveness across inflation regimes causes much confusion about what an effective inflation hedge actually is.

Based on the results, commodities have been effective at delivering positive real returns in both moderate- and high-inflation regimes, though their relatively high volatility means they only rate an amber color for "hit rate." TIPS reverse those traits, with high reliability but only moderate real returns versus other options. Among physical real assets, world infrastructure equity scores "green" lights for real return and reliability in moderate inflation but doesn't fare as well in high-inflation environments. Gold scores relatively well in periods of both moderate and high inflation, and is one of the relatively few assets that can still be a hedge for equity risk in higher-inflation periods.

We've included a small selection of illiquid and real assets in this more qualitative table, though it's hard to fit them into such an analysis because the data sets aren't as rich. As representative examples, infrastructure, farmland and timber all have possible roles as inflation hedges. We also think renewables can play a bigger role as part of these real-return streams. With power delivery, for example, the buildout of offshore wind power combined with a pricing shift from a fixed rate to a more market rate likely means more ready access to return streams of this nature.

How effective can we expect these return streams to be in the future? As we mentioned earlier, the significant change in the policy environment may imply that one can't always rely on recent history as a guide. It's also important to look closely at what influences might affect those relationships going forward before making a complete assessment.

DISPLAY 12: A STRONG, PERSISTENT RELATIONSHIP BETWEEN INFLATION AND THE VALUE FACTOR

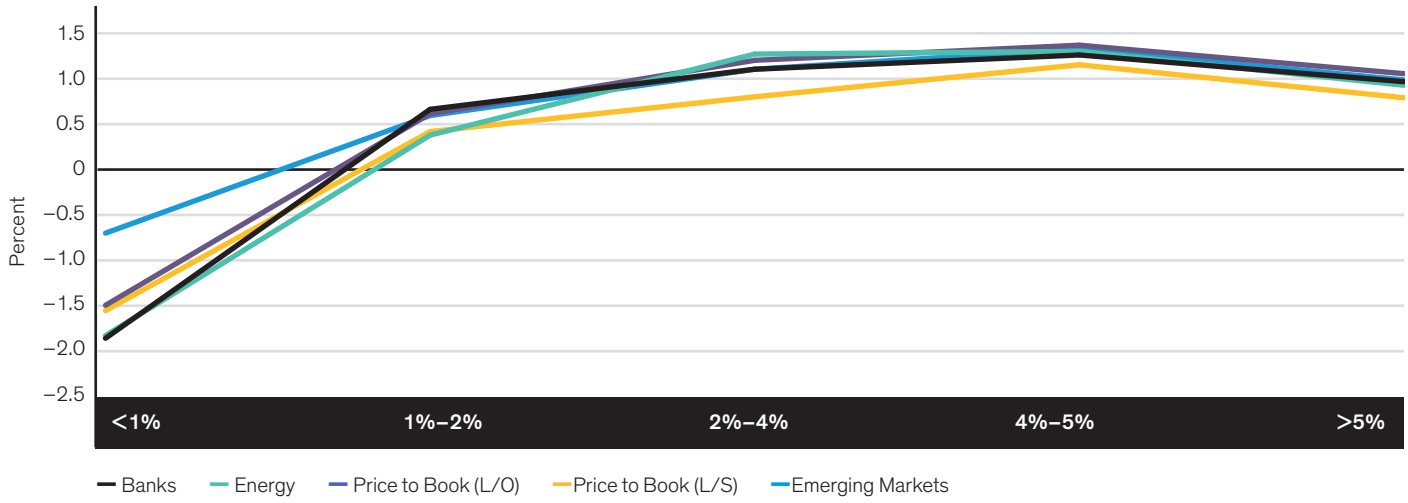


Historical analysis and current forecasts do not guarantee future results.

The display shows the annualized 10-year rolling return for Kenneth R. French's value portfolios using the top quintile of cheapest stocks by price to book versus the most expensive quintile. Inflation is proxied by the change in the US CPI.

Through September 30, 2022 | **Source:** Kenneth R. French Data Library, Thomson Reuters Datastream and AB

DISPLAY 13: HOW 60/40 PORTFOLIOS FARE WHEN ADDING AN INFLATION-HEDGING RETURN STREAM



Historical analysis and current forecasts do not guarantee future results.

Expected return from a portfolio consisting of a 70% allocation to a traditional 60/40 portfolio and a 30% allocation to the specified inflation-hedging portfolio. We show the expected return of such a portfolio in different inflation bands based on historical returns segmented into inflation bands since 1970.

From January 1, 1970, to March 31, 2021 | **Source:** Bloomberg, Global Financial Data, Kenneth R. French Data Library, New York Fed, Thomson Reuters Datastream and AB

In our view, equities are key to delivering real returns for portfolios in a moderate-inflation regime. We think the main risk to that reliability isn't policy, at least not directly. Instead, high valuations and the prospect of declining margins (a function of the sociopolitical climate) are the issues most likely to somewhat curtail real returns. Still, we think equities can continue to deliver positive real returns (though perhaps lower than the historical norm) during moderately high inflation, making them central to asset allocation in such an environment.

The inflation-protection effectiveness of the equity-value factor, whether long-only or long/short, is probably one of the most controversial points. In fact, claiming a strategic case for value at all has stoked dissension, so to claim inflation-hedging properties demands a higher level of belief. As we've pointed out in our previous research, *Portfolio Strategy: Strategic Outlook for Factors, and Why They Are Needed in Portfolios*,[6] value faces structural headwinds: the technology-destroying moats around industries, the shift in corporate expenditure to intangible assets and the tendency for passive flows to be steered to growth stocks.

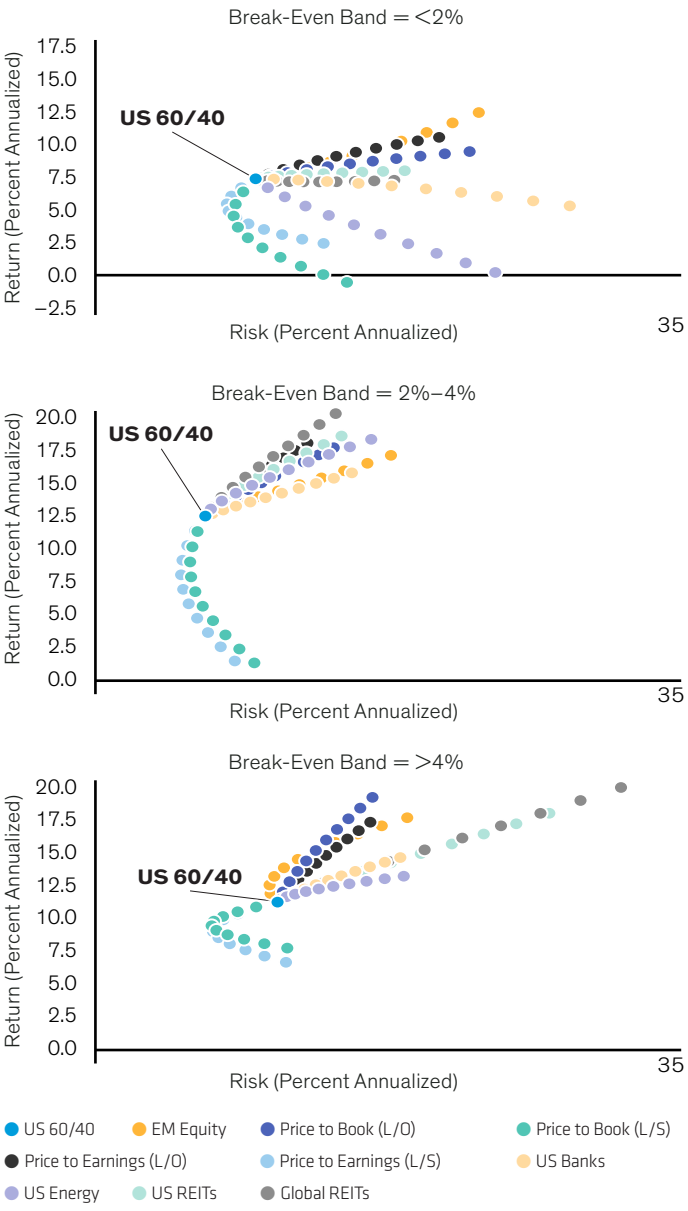
Nevertheless, there's been a strong and persistent relationship between inflation and the value factor, whether looking at daily data over the past decade or lower-frequency data over the past nine decades (*Display 12, page 23*). This relationship has persisted over many cycles and policy regimes, so we think it's still robust—despite the headwinds. And a key rationale remains: value portfolios typically lean toward procyclical stocks, which tend to flourish when economic growth recovers. This often happens in moderate-inflation regimes, when there's more risk of rising long-term rates, which tend to be more damaging for longer-duration growth stocks.

From a sector perspective, energy consistently stands out as an important allocation for hedging inflation. This relationship begs two questions: How much is due to the special circumstances of the oil-led 1970s inflation? Is that allocation now impaired by investors reallocating assets to accommodate ESG goals?

As to the 1970s question, we can show that a positive relationship remains outside that period. ESG and the energy transition is more of a challenge: in the near term, the immediate challenge to energy is the interpretation of ESG goals, which entails simply excluding certain assets such as energy and mining stocks. In our view, exclusion is somewhat myopic and will evolve in time to be more nuanced—for example, a focus on engagement and stewardship. There's also a possibility, in some cases, that corporations in these sectors can invest to become part of the solution.

6 Inigo Fraser Jenkins et al., *Portfolio Strategy: Strategic Outlook for Factors, and Why They Are Needed in Portfolios*, Bernstein Research, June 7, 2021.

DISPLAY 14: RETURN AND RISK IMPACT FROM ADDING INFLATION HEDGES TO A 60/40 PORTFOLIO



Historical analysis and current forecasts do not guarantee future results.

The display shows the trade-off between annualized return and volatility by adding inflation hedges to the model 60/40 portfolio. Assets are added to the 60/40 portfolio in increments of 10%, and the impact on the overall portfolio in each inflation band is shown. The period of analysis runs from January 1970 to June 2021. Inflation bands are proxied by the 10-year TIPS implied break-even inflation rate.

From January 1, 1970, to June 30, 2021 | **Source:** Bloomberg, Global Financial Data, Kenneth R. French Data Library, New York Fed, Thomson Reuters Datastream and AB

Augmenting Portfolios: Test Cases

The analysis described so far is univariate: how does each return stream behave as inflation rises? But as we alluded to in the diversification discussion, the impact of inflation is really a portfolio question—not one of individual return streams.

This point immediately raises questions about the constraints asset owners face in their investment mandates, the range of return streams they're allowed to invest in, risk levels and fees. Indeed, we think there may eventually be an outright clash between different risk measures—for example, between risk as volatility and risk of a hardship outcome for beneficiaries (see *Are We Human or Are We Dancer?*).

Given these uncertainties, we present a few "test cases." What happens if we start with a 60/40 portfolio (as a basic default position) and progressively add exposure to assets with the potential to enhance return and diversification as inflation rises? This is a simple bivariate analysis, not a full optimization, but we see it as an important step that draws out the influence of certain return streams and gives us a sense of what allocation is needed to make a difference.

We can address this question by examining expected portfolio returns based on the past relationship with inflation since the 1970s. These portfolios deviate from a 60/40 baseline by allocating 30% of assets to a range of the more prominent inflation-hedging options—value equities (long-only and long/short), banks, energy or emerging markets—at different inflation levels.

DISPLAY 15: CURRENT VALUATION VS. HISTORY OF KEY ASSETS (Z SCORES)

Start Date	Asset	Valuation (Z Score)
Jan 1970	Japan Equities	–0.78
Jan 1970	Municipal Bonds	0.57
Jan 1970	US 10-Year Government Bonds	0.63
Jan 1970	US Equities	0.79
Jan 1970	US P/E L/O	–0.87
Jan 1970	US P/E L/S	–0.75
Sep 1971	US TIPS 10-Year	0.42
Jan 1987	EM Equities	0.09
Jan 1990	Infrastructure	0.20
Jan 1995	US Banks (Relative)	–1.46
Jan 1995	US Energy (Relative)	–2.42
Jan 1995	US Metals and Mining (Relative)	–0.50

Historical analysis and current forecasts do not guarantee future results.

Data start from January 1970 or earliest available date (indicated in Start Date column) and run through October 2022. Equity valuations are cyclically adjusted earnings yield (1/CAPE ratio). Bond valuation is based on yield. Relative valuation is measured as the relative 12-month forward earnings yield (1/P/E) relative to the broader US market. US P/E factor valuation is measured as the 12-month trailing earnings yield. Z score of the 60/40 portfolio is calculated as 0.6*z score of US equities and 0.4*z score of US 10-year government bonds. A higher z-score value indicates a higher premium to historical valuation.

From January 1, 1970, to October 31, 2022 | **Source:** FRED, Global Financial Data, Kenneth R. French Data Library, MSCI, Thomson Reuters Datastream and AB

The returns create an inverted U-shape (*Display 13, page 24*), with the positive inflation characteristics of the portfolios deteriorating at high inflation levels. This makes sense: many of these assets are higher-risk allocations, but the risk premium rises at very high levels of inflation. That's because forecasting cash flows and the policy environment becomes challenging when inflation is very high.

Relative to the simple 60/40 case, adding these other assets hurts performance at inflation levels under 1%; when inflation ranges from 1% to 2%, it produces results in line with the simple 60/40. At higher levels of inflation, there's a pickup in returns—even for this very simple case.

In *Display 14, page 25*, we show the risk/return impact, within a given inflation band, of adding progressively larger weights to the inflation-hedging portfolios, starting from a 60/40 base. For example, the second scatter chart shows the risk/return outcome in periods when inflation is in the 2%–4% range, starting from a 60/40 allocation and allocating progressive 10% increments to long-only value, REITs or EM equities. These allocation changes tend to move the risk/return outcome up and to the right of the starting 60/40 position. The risk/return paths mapped out by these portfolios are even more stark in the higher-inflation outcome. But when inflation is low (Display 14, top chart), many portfolio combinations end up being less effective than the simple 60/40.

What Does One Pay to Protect Against Inflation?

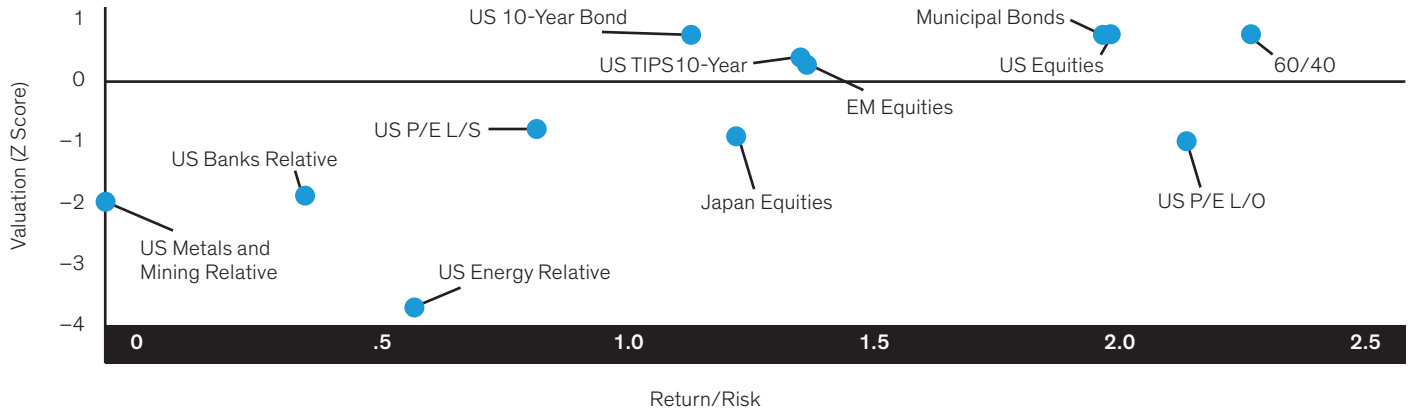
Much inflation-hedging analysis focuses on historical returns, but we see two other important elements: the policy environment and valuations. It's true that valuation has generally been a poor guide to success in the past decade, both at the asset-class and market levels, but we see reasons (with hindsight, admittedly) for this ineffectiveness.

In *Display 15*, we show a z score of current valuation versus history for key assets. To make valuations comparable across asset classes, we show an earnings yield for equities and a yield for fixed income, expressed as the z score of the current yield versus history. We then invert the z score so the most expensive assets are positive and the cheapest are negative.

On this basis, a 60/40 portfolio is 0.72 standard deviations more expensive than its post-1970 range, with 10-year government bonds 0.63 standard deviations more expensive and US equities 0.79 standard deviations more expensive. On this basis, TIPS were the most expensive inflation-hedging asset a year ago (at 2.4 standard deviations). However, the rapid shifts of recent months have made them an attractive part of a strategic inflation hedge in portfolios.

Despite the turnaround in the fortunes of factors in general and the value factor in particular over the last year, long/short equity value is still attractive on a valuation basis at –0.75 standard deviations cheap (since 1970).

DISPLAY 16: VALUATIONS VS. RISK/RETURN RATIO WHEN EXPECTED INFLATION IS 2%–4%



Historical analysis and current forecasts do not guarantee future results.

The display shows current asset valuation measured by the z score compared with the historical average against the return/risk ratio calculated as annualized return divided by annualized standard deviation. It is conditioned on the period where the US 10-year break-even implied inflation rate was in the range of 2% to 4%. The data history is from 1970 or the longest available history. P/E long-only factor shows the market-cap-weighted absolute return of a portfolio of top-quintile-ranked stocks based on P/E multiples in US equities. P/E long/short factor shows the market-cap-weighted return of a portfolio that is long the top-quintile-ranked stocks and short the bottom-quintile-ranked stocks based on P/E multiples in US equities.

From January 30, 1970, to September 30, 2022 | **Source:** FRED, Global Financial Data, Kenneth R. French Data Library, MSCI, Thomson Reuters Datastream and AB

In *Display 16*, we plot the average return on a range of assets if inflation is in a 2%–4% range against the z score of current valuations versus history. This analysis looks only at one possible inflation scenario, but it again implies a wide spread of possible valuations for assets that can help portfolios weather a higher-inflation outcome.

Conclusion

Inflation is critical to the post-pandemic outlook for strategic asset allocation. While achieving positive real returns is a challenge, we believe it's equally important to hold portfolio assets that can continue to diversify if inflation rises—even moderately. We think it's unavoidable that investors who require a given level of real return must raise risk levels.

The magnitude of exposure needed to achieve a given level of real return and inflation "beta" varies across a broad range of potential inflation-hedging assets—and has implications for overall portfolio risk. This analysis suggests potential approaches to an overall portfolio allocation.

In addition to genuine disagreements over the inflation prognosis, there's some disagreement about what constitutes an inflation hedge. This ambivalence is due in part to the nonlinear link between inflation and asset returns, and in part to the diverse goals of investors with different time horizons when it comes to hedging inflation.

For many risk assets, there's a "sweet spot" of low-to-moderate inflation, which is a benign environment, while deflation and high inflation are negatives. Moderate or genuinely high inflation regimes are very different from the environment we've become used to, but there's also a world of difference between them, as we've shown in this chapter. Likewise, at the early stages of a glide path, the key inflation-driven consideration is an ability to deliver positive real growth; more mature portfolios will likely care more about explicitly hedging inflation risk.

There's a wide valuation spread among the options for exposures to improve portfolio risk and return during inflationary episodes, amplifying the need to cast a wide net across public asset classes, factor strategies and private assets. This kind of analysis often relies on the historical link between given policy paths and return streams, but we think valuation also has an essential role over strategic horizons.

In the strategic outlook after the pandemic, inflation is likely to be higher. Looking through the short-term discussion about whether inflation is transitory or not and how central banks are responding, our key conclusion is that a significant shift in the strategic composition of portfolios is needed.

CHAPTER 2

The Intimate Linkage of ESG and Inflation: ESG and the Hegelian Dialectic

Investing responsibly and protecting portfolios from inflation are strategically important issues for the investment industry. ESG's first encounter with persistent inflation poses a new challenge: it will likely increase dispersion between ESG approaches and provide an extra impetus to develop return streams that are ESG compatible and effective inflation protectors.

We suggest that ESG and inflation are linked in a variety of ways, with profound implications for inflation, what we mean by the term ESG and the investing profession itself. An intimate linkage and elements of tension that existed before the war in Ukraine have been thrust into the spotlight.

A discussion of this interaction can be viewed as a response to this question: How can investors address inflation—responsibly? Formulating an answer will likely involve a grand narrative that will ripple through the industry for years to come. We make the case in this chapter that there are two broad linkages—at the economic and portfolio levels. The economic link is that ESG is profoundly inflationary. The portfolio link is that many current knee-jerk reactions to protect portfolios against inflation are unfriendly to a certain definition of ESG investing—creating a potential clash. We think this ESG-inflation dialectic will drive innovation in the investment industry.

Inflation poses a challenge to ESG investing that requires a response. There's a short-term question around the tactical underperformance of a portfolio underweight in commodities, commodity-linked equities and defense stocks, which have been key hedges in the recent crisis. But there's also a more strategic question about the nature of long-run inflation protection and the best way to achieve it. This issue must be seen in a much broader context: investors face a squeeze on real returns and reliable diversification.

There's something Hegelian in this linkage of ESG and inflation—an interaction we think can be seen as a dialectic.[7] Many typical inflation responses involve allocating to assets such as commodities, commodity-linked equities, private assets and the potential hedge of crypto (which hasn't worked as a hedge yet!) that have historically had less focus on ESG or are even regarded as counter to it. ESG investing is a broad church with many members, but some established forms of ESG investing disavow investments like commodities and related equities.

In the aftermath of the invasion of Ukraine, one could add defense stocks as an inflation hedge, but that investment is misaligned with many established ESG definitions. We think a synthesis is needed between inflation protection and ESG. In this tension, we ground a call to action for the asset-management and asset-owner communities to evolve and develop new return streams. This call is, in a sense, a provisional language for describing multi-asset portfolios in a world where investment management is synonymous with ESG—but within an inflationary macro landscape.

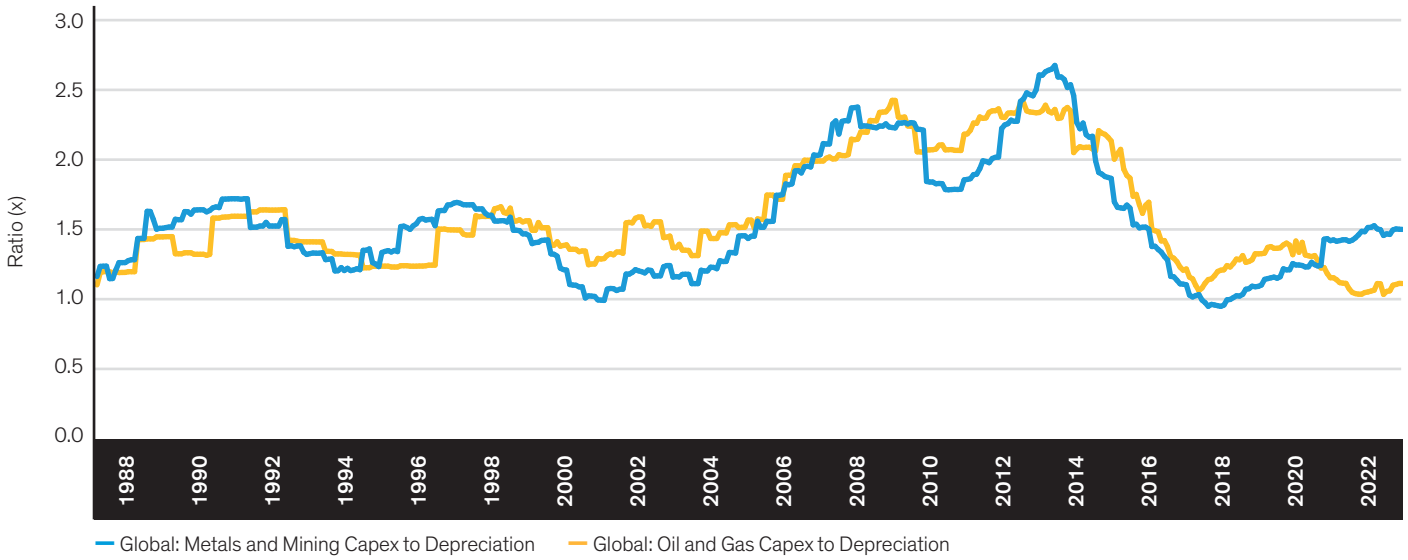
A common thread running through this chapter is that there are many ESG definitions. New challenges like those posed by the current environment will likely increase the dispersion between different ESG approaches. We also think this episode will amplify the view that ESG policies need to be dynamic and contingent.

In this chapter, we will:

1. Outline our claim that ESG is inflationary. In the near term, there's an inevitable focus on the cost of the energy transition and what it means for prices. However, over strategic horizons we think this force will fade. The more persistent link will be what the "S" means for wages. (*See* Section I: "Why ESG Is Inflationary.")
2. Show how knee-jerk inflation responses in a portfolio are often hard to align with restricted definitions of ESG investing. (*See* Section III: "Are Inflation Protection and ESG Necessarily in Opposition?")
3. Attempt to illustrate how ESG investing may change in response to a different environment and how new return streams are needed—both to meet the economic challenge of the energy transition and to respond to the need for real assets that can offer inflation protection. (*See* Section IV: "A Synthesis Is Needed.")
4. Discuss another macroeconomic linkage that's not totally clear yet: Who bears the costs of ESG policies? (*See* Section V: "Who Pays for a Shift to ESG-Friendly Policies?")

7 The Hegelian dialectic seems like an apt lens through which to view this topic. For those who are rusty on the concept of the dialectic, the idea is that an initial thesis (be it an intellectual movement or an investment approach) will eventually be shown to be inadequate or insufficient. This gives rise to an antithesis, which in turn will prove to be inadequate. These two movements must be brought together to address what is insufficient in both, which is called a synthesis. All dialectical movements lead to a synthesis of some form. Here we see the evolution of ESG investing as the thesis, which has become established over the past decade. However, the abrupt need to seek inflation protection in the post-pandemic world raises new questions that ESG has not had to face before. The urgency of the need to address the inflation question gives rise to an antithesis. However, classical approaches to inflation protection are insufficient, as they do not adequately address the needs of responsible investing. Therefore, the synthesis lies in the resolution to the question: How to address inflation responsibly? See, for example, Peter Singer, *Hegel: A Very Short Introduction* (Oxford, England: Oxford University Press, 1983).

DISPLAY 17: INVESTMENT IN COMMODITIES EXTRACTION IS LOW TODAY



Historical analysis and current forecasts do not guarantee future results.

Through October 31, 2022 | **Source:** FactSet and AB

We'll also examine the portfolio implications of these four issues. For investors seeking inflation protection over long horizons and who need to generate positive real returns, we think exposure to the delivery of renewable energy should increase. Allocations to specific natural resources—farmland and timberland—should also rise.

In the near term, we think these allocations could be funded from assets earmarked for illiquid assets, especially private equity. However, if investors manage to become less siloed, this shift should be viewed in the context of the overall portfolio: in a world of lower nominal returns and higher inflation, the funding could come from traditional fixed income.

Within public equities, we expect to see a greater distinction develop between passive approaches to ESG, which rely on screening and exclusion, and ESG investing using active integration and engagement—with asset owners saving active fees for these more dynamic ESG approaches.

I: Why ESG Is Inflationary

The investment world is (rightly) fixated on inflation. In the near term, we're still grappling with the inflationary impact of the supply/demand mismatch from the pandemic. On top of that, there's an independent inflationary impulse from the Russia-Ukraine war. Aside from the immediate impact on energy and food prices, we think this conflict strengthens and hastens the transition to a less globalized world—removing a major deflationary force of the past three decades.

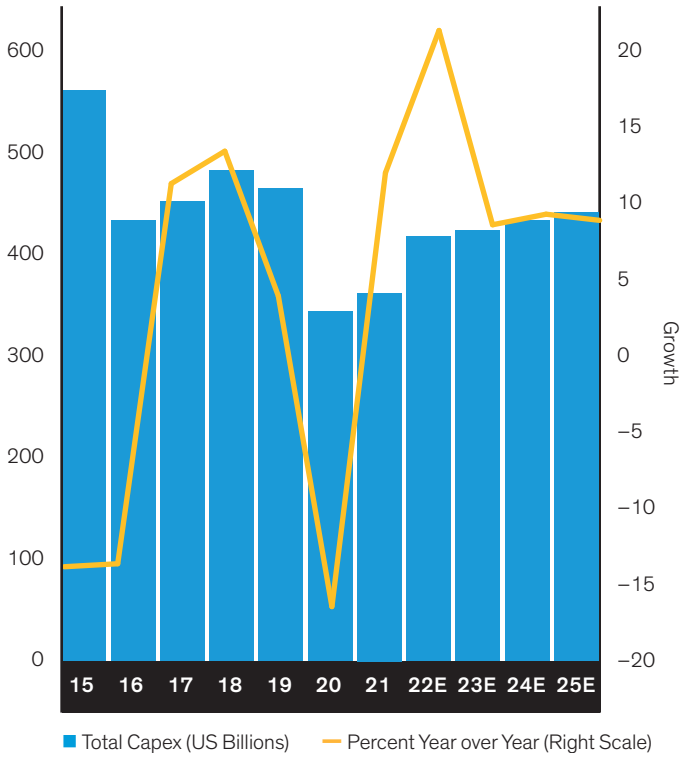
Beyond this very public debate about inflation, we see explicit reasons why ESG is inflationary as a mode of investment and even more so as a sociopolitical force. There are many rational reasons for a company to invest in ESG to gain a competitive advantage, and there are good economic and moral reasons for a society to adopt more responsible policies.

That rationality doesn't forestall the possibility that such policies are inflationary. Given the current near hysteria about inflation, one might need to point out that labeling a policy as inflationary is in no way a negative statement—it's inherently value-neutral. To the extent that some of the underlying disinflationary forces of recent decades have fueled social concern about the precarity of labor and economic concern about deflation, the inflationary aspect of ESG could be seen in an overtly positive light.

Multiple inflationary and deflationary forces are at work over a medium- to long-term horizon, which we've detailed in the previous chapter. In this chapter, we focus on the case for ESG as another inflationary force, both as an investment theme and a social trend, driven by the following three distinct trends:

1. **Customers say they're willing to pay more for ESG-friendly products.** For example, one of the largest studies to date, by Simon-Kucher & Partners in October 2021, covered 17 countries and more than 10,000 respondents. In it, 34% of consumers reported that they're willing to pay more for sustainability.[8] That willingness was most pronounced among the younger generations, Generation Z (39%) and Millennials (42%), who will command a growing share of consumption in coming years.

DISPLAY 18: LOW GROWTH EXPECTED IN GLOBAL UPSTREAM OIL AND GAS CAPEX



Historical analysis and current forecasts do not guarantee future results.

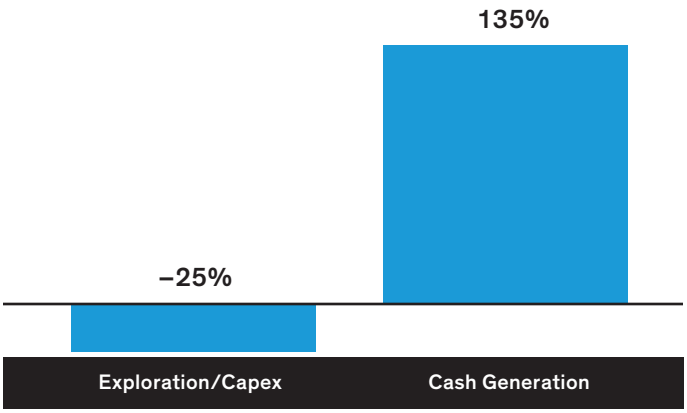
As of December 31, 2021 | **Source:** Bernstein Research, Bloomberg, Rystad Energy and AB

2. **Lower investment in the upstream extraction of commodities implies tighter supply and higher commodity prices.** The global energy sector capex-to-depreciation ratio is back down to historical lows (*Display 17, page 29*). For metals and mining, the ratio has inched upward over the past five years, but remains just below its historical average, with capex and supply dynamics varying greatly across commodities.

The Bernstein Research energy team believes that the combination of deflationary shale technology, stranded-asset risk and the global climate-change agenda will lead to a structurally lower level of global oil and gas capex. The team expects global upstream capex to grow by only 3% annualized through 2025 (*Display 18*), significantly below historical levels. It also sees capital being rapidly reallocated toward downstream renewables, buybacks and increased dividend payouts faster than the demand-side energy transition, leading to persistent undersupply.[9]

The changing management incentives across North American exploration and production companies since 2015 offers strong support for this case. According to the Bernstein Research team, compensation incentives linked to cash generation increased strongly from 2015 to 2020 (*Display 19*), while growth- and

DISPLAY 19: INCENTIVE CHANGES FOR EXPLORATION/CAPEX VS. CASH GENERATION, 2015–2020



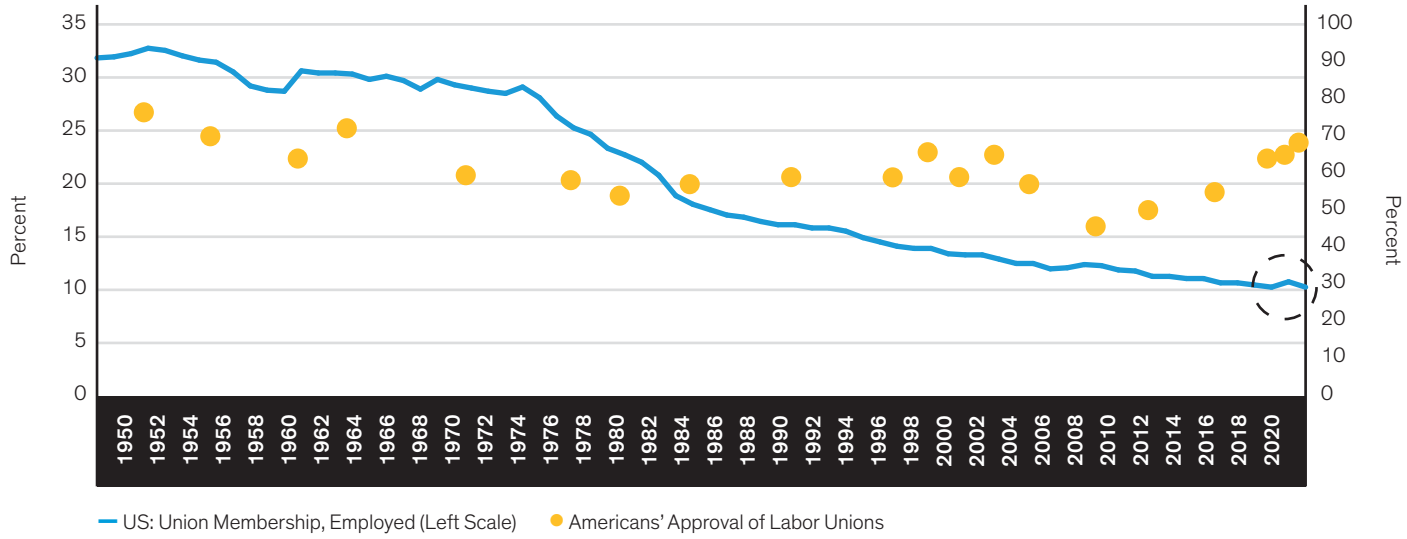
Historical analysis and current forecasts do not guarantee future results.

As of December 31, 2020 | **Source:** Bernstein Research and AB

8 Shikha Jain, "2021 Global Sustainability Study: What Role Do Consumers Play in a Sustainable Future?" Simon-Kucher & Partners (blog), October 28, 2021, https://www.simon-kucher.com/en/insights/2021-global-sustainability-study-what-role-do-consumers-play-sustainable-future.

9 For more details, see *Bernstein E&Ps: The Green Wolf at the Door—Oil Is Transitioning to a New (and Bullish) Paradigm and We Upgrade the Sector*, Bernstein Research, June 21, 2021.

DISPLAY 20: INCREASED SUPPORT FOR LABOR UNIONS IN US



Historical analysis and current forecasts do not guarantee future results.

Through November 30, 2021 | **Source:** Gallup, Thomson Reuters Datastream and AB

production-related metrics declined. This shift from growth-related metrics to cash-generation metrics provides a strong incentive for capital discipline going forward.

3. **There's a bigger-picture link between ESG and inflation.** If the adoption of ESG considerations broadens beyond investment rules to become more of an established sociopolitical force (which seems likely), the "S" component implies that labor bargaining power should rise, and wages with it. This trend is distinct from, and could play out much faster than, the demographic force of a shrinking supply of working-age people that could also drive up wages.[10]

   Much of the focus on ESG's inflationary nature stems from the impact on energy prices, but it could be argued that this is a "temporary" phenomenon (if a process that lasts for up to a decade can be deemed temporary in investment discussions). When the transition to new energy sources is more advanced, the focus on energy conservation is greater, and as population growth slows, one could make the case for downward pressure on energy prices in the longer term.

   That's why we think the social component of ESG, with its profound wage implications, could be more strategically important. We believe it will be a core force in shifting the balance of power between capital and labor in wage negotiations, reversing the trend of recent decades. One tentative sign is the slight uptick in union membership and favorability in the US (*Display 20*). It's only a small move, but it could mark the beginning of a broader trend for developed markets. Such a shift would imply that current wage increases, driven by supply/demand constraints in certain economic sectors, would become more broad-based.

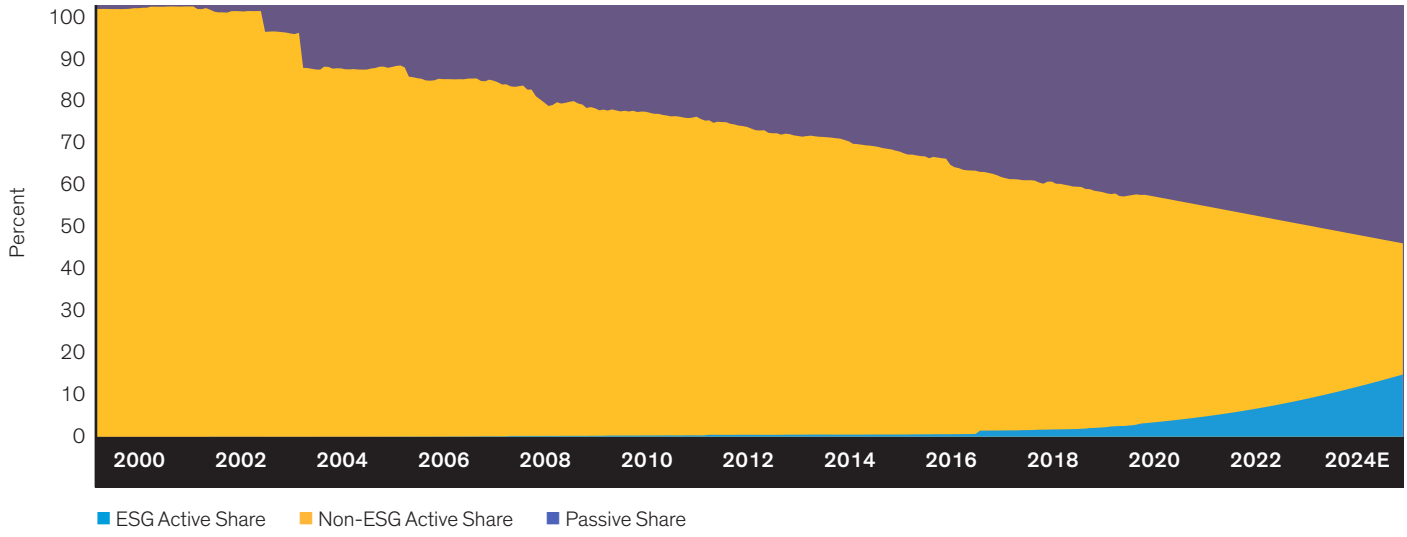
   The war in Ukraine could extend the "S" component even further. ESG has tended to focus on single issuers, but there's a macro ESG angle too. Investors could look at the historical inclusion of Russia in ESG indices and wonder whether such investment approaches, in passive indices for example, should adopt a harder line on certain forms of government in a more forward-looking way.

   Should other autocracies be penalized in an ESG approach? It's a difficult question, because it's not clear where such a normative-based approach would lead—though it would likely lead to more disagreements. The elephant in the room from such a line of reasoning is China and its role in portfolios—a topic we'll return to in future research.

10 See our discussion of this and review of books on this topic in our black book *Inflation and the Shape of Portfolios: A Changed Policy Environment, the Market and Factor Outlook, and the Changing Needs of Asset Owners*, Bernstein Research, May 7, 2021.

DISPLAY 21: NON-ESG ACTIVE INVESTING SET TO BECOME A MINORITY ACTIVITY

Share of Equity Fund AUM: Passive, ESG and Non-ESG Active



Historical analysis and current forecasts do not guarantee future results.

As of November 30, 2021 | **Source:** Gallup, Thomson Reuters Datastream and AB

II: The Active Investing Industry Will Soon Be Synonymous with ESG Investing

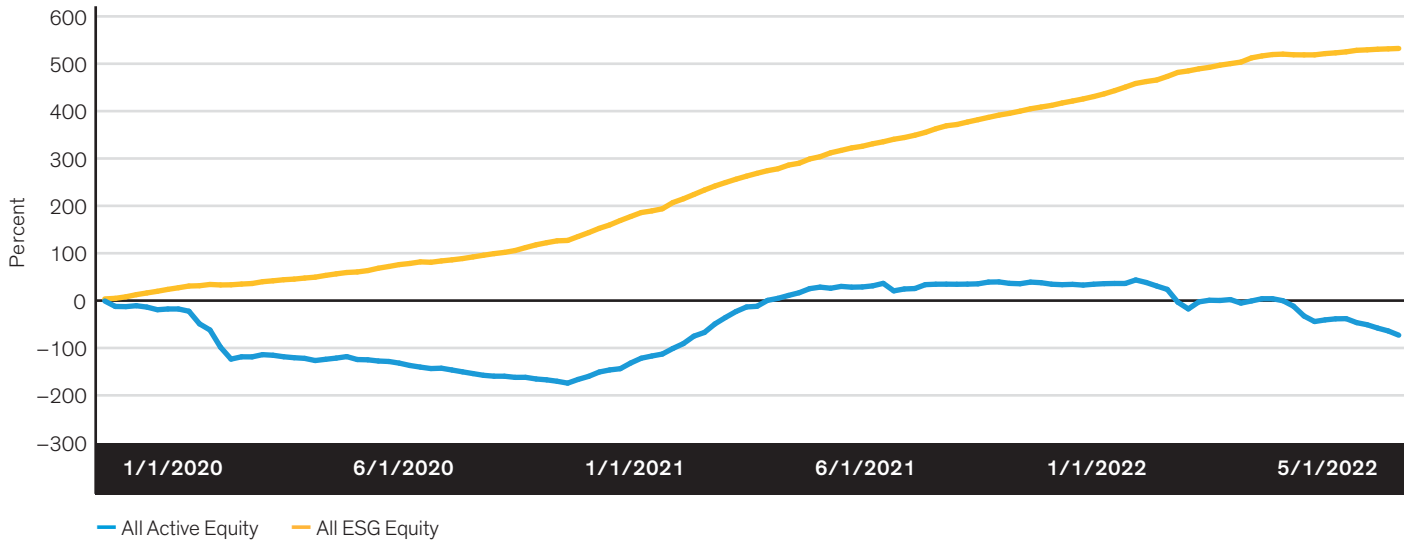
In our view, the active-investing industry will soon be essentially dominated by ESG investing. This progression has long been in motion in Europe, but is now rapidly becoming the norm in the US and elsewhere. As it becomes more prominent it is also facing a backlash in some areas that will likely be an input to the future evolution of this mode of investing.

A casual glance at industry commentary in recent years, such as that in the *Financial Times*, would imply that active investing has become synonymous with ESG investing. The share of non-ESG active investing fell below 50% in the second half of 2021 (*Display 21*), a decline that's projected to continue, pointing to a future where ESG and non-ESG funds give way to ESG integration in investing processes.

The pandemic experience is informative. We've long wondered if investors have been lured into a false sense of security by decades of rising markets—assuming they can afford ESG as a supplementary goal alongside traditional risk/return goals. We think it would be dangerous to use that experience as a basis. First, people wouldn't agree on non-return-based goals, setting the scene for a clash. Second, investors could be shocked by a capital loss into abandoning ESG investing.

However, preliminary evidence from the pandemic shows that this hasn't happened. The initial stages of the pandemic saw equity investors suffer a sizable capital loss, yet our sample of active ESG

DISPLAY 22: ESG FUNDS ONLY SAW TWO WEEKS OF NET OUTFLOWS DURING THE ONSET OF THE PANDEMIC



Historical analysis and current forecasts do not guarantee future results.

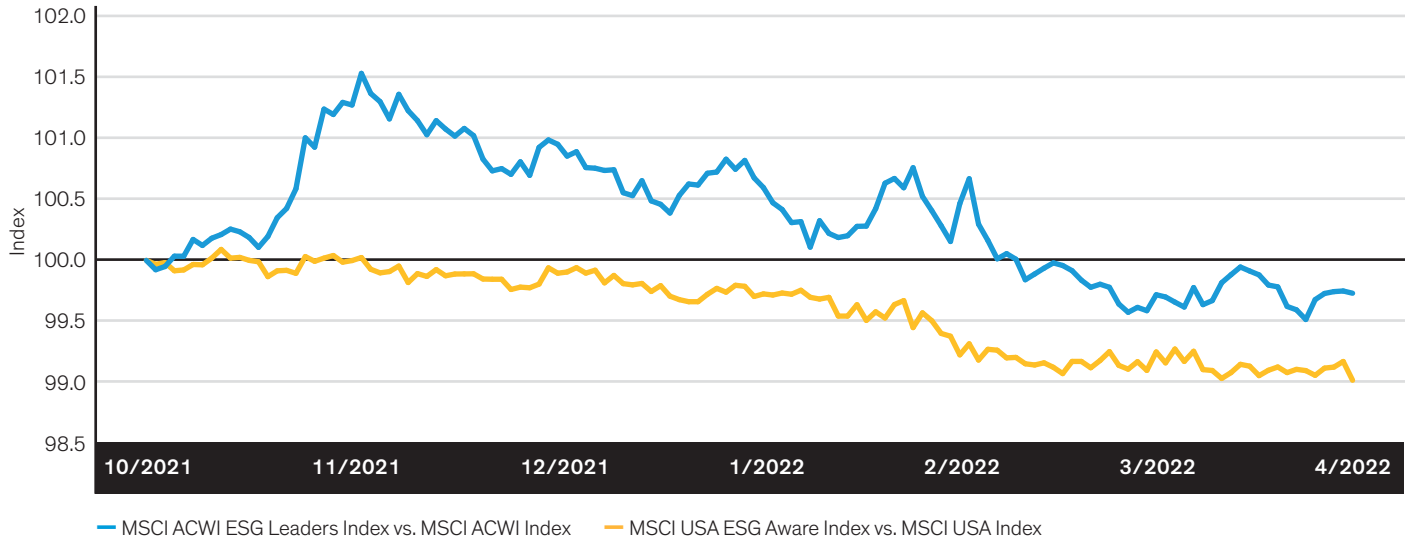
Through May 11, 2022 | **Source:** Emerging Portfolio Fund Research Global and AB

equity funds only saw two weeks of net outflows (*Display 22*), in contrast with nearly $70 billion of net outflows from active equity funds from March through December 2020. We take this as *prima facie* evidence that investors view ESG investing as a path to achieve return-risk targets, not as an unrelated goal. This is admittedly a limited data set based on the reaction to one event, but as a provisional conclusion it could be a sign of a robust ESG bandwagon.

However, inflation could pose a bigger challenge to ESG investing. The early development of ESG investing benefited from a period of persistently negative inflation surprises, with strategic inflation hedging sitting much lower on investors' lists of concerns. Some clients have asked us recently whether inflation "breaks" ESG as an investment concept. We strongly reject that notion: ESG is too firmly ingrained and here to stay—driven, for example, by the leaders of US asset-management companies and influential asset owners, such as those in Europe.

But the current environment poses a new challenge to ESG investing—one that must be overcome by both stakeholders above. Part of the challenge is tactical, related to short-term performance. It's not too controversial a notion that excluding a subset of assets

DISPLAY 23: GLOBAL AND US ESG INDICES VS. BROADER MARKET PERFORMANCE



Historical analysis and current forecasts do not guarantee future results.

Through April 1, 2022 | **Source:** MSCI, Thomson Reuters Datastream and AB

will lead to short-term underperformance in certain periods. Recently, we've seen such underperformance from some types of ESG investing.

This isn't a simple story about the war in Ukraine. There's also a link to bond yields, and much of the recent underperformance relates to rising yields before the war, indicating a longer duration for many ESG-investing approaches. Lower allocations to commodity-linked equities and defense have also impaired performance since the onset of the war (*Display 23*). Short-lived tactical underperformance presumably isn't too much of a problem for asset owners focused on a long horizon, but the strategic questions, which we cover in the next section, are the key ones.

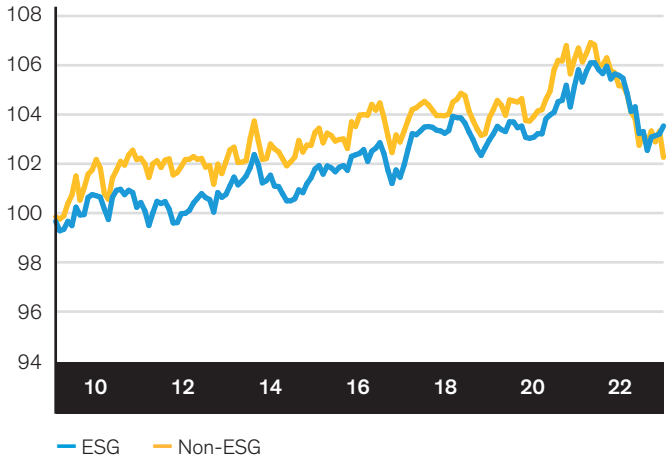
In other research, we've shown that active managers are better able to generate idiosyncratic alpha in an ESG context—a critical point, because we view idiosyncratic alpha as the core of active approaches.[11] In terms of simple excess returns, both ESG and non-ESG funds have underperformed recently (*Display 24, page 35, left*). While the idiosyncratic alpha of ESG funds has fallen in the most recent period, they maintain their advantage over non-ESG funds based on trailing three-year returns (*Display 24, right*; see our Alphalytics research for more details).

For a US-only version of this analysis, we can again show that ESG funds have delivered higher idiosyncratic alpha than non-ESG funds (*Display 25, page 35*).

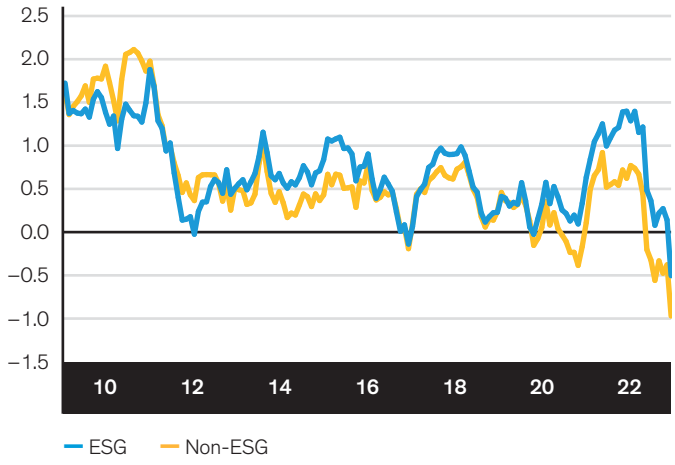
11 See *Alphalytics: The Elusive ESG Alpha Question*, Bernstein Research, September 4, 2020.

DISPLAY 24: DESPITE THE RECENT DOWNTURN, ESG STRATEGIES MAINTAIN AN ADVANTAGE OVER NON-ESG FUNDS

Monthly Excess Return Indexed:
ESG vs. Non-ESG Portfolios (Global)



Three-Year Rolling Idiosyncratic Alpha:
ESG vs. Non-ESG Portfolios (Global)



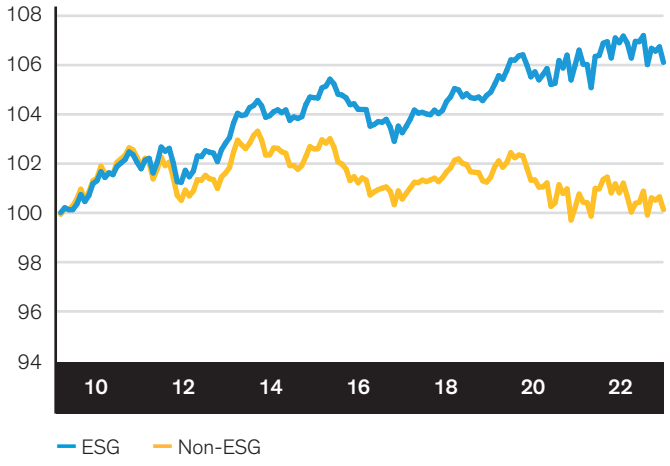
Historical analysis and current forecasts do not guarantee future results.

Gross-of-fee data from January 31, 2010, to July 31, 2022. US sample includes 700 ESG and 2,000 non-ESG strategies; global sample includes 250 ESG and 750 non-ESG strategies.

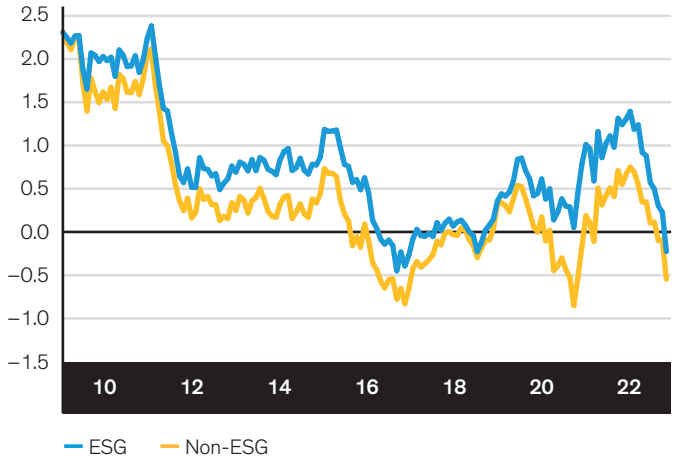
Source: eVestment, FactSet, Morningstar, MSCI, S&P and AB

DISPLAY 25: ESG FUNDS HAVE DELIVERED HIGHER IDIOSYNCRATIC ALPHA

Monthly Excess Return Indexed:
ESG vs. Non-ESG Portfolios (US)



Three-Year Rolling Idiosyncratic Alpha:
ESG vs. Non-ESG Portfolios (US)



Historical analysis and current forecasts do not guarantee future results.

Gross-of-fee data from January 31, 2010, to July 31, 2022. US sample includes 700 ESG and 2,000 non-ESG strategies; global sample includes 250 ESG and 750 non-ESG strategies.

Source: eVestment, FactSet, Morningstar, MSCI, S&P and AB

III: Are Inflation Protection and ESG Necessarily in Opposition?

In previous research, we noted that commodities and commodity-linked equities, as well as private real assets, are some of the best hedges in a high-inflation environment—especially if an economy tips into stagflation.[12] With recent Consumer Price Index (CPI) releases at their highest since the 1970s, and with the war in Ukraine shifting the inflation peak higher and later, these assets have gained rapid interest and inflows from investors.

However, the knee-jerk reallocation into such assets clashes with many precepts of some of the definitions of ESG investing. Broad commodity indices have historically fared best in a moderately high inflation environment of 2%–4% (*Display 26*), but they've also been a hedge in very high inflationary environments that exceed 5%. Oil has historically performed best when inflation has been around 2%–3%, but has also delivered strong returns in inflation regimes above 5%.

From an ESG perspective, some commodities, such as copper, aluminum and nickel, play a critical role in the transition to net zero carbon emissions. But others, such as oil, coal and steel, are clearly at odds with the current climate agenda and will have to be replaced over time by renewable resources. Energy- and mining-linked equities have also tended to outperform in moderate-inflation environments of 2%–3%, but have also hedged effectively in periods of very high inflation.

Tactical underperformance in certain episodes, or at a specific point in the cycle, might not be too much of a problem for long-horizon investors. However, there are strategic questions too. If the inflation path is higher for a sustained period, what are the protection options? Likewise, if a particular ESG definition excludes any defense companies, does it miss the bigger-picture need for defense in exchange for supporting broader social interests? And if this is the case, are there other avenues for inflation protection?

Real Estate: Public REITs tend to perform best in the moderate-inflation range of 3%–4%, but they also post high returns in high-inflation environments, when inflation is above 4%. Private real estate, proxied by the Case-Shiller US National Home Price Index, has historically delivered a similar pattern.

Real estate is very established as an inflation hedge, both empirically and theoretically. Empirical data show an ability to deliver robust real returns in times of higher inflation. From a fundamental perspective, this makes sense given the way rental incomes stem from the real economy. There are potential short-term problems from rapid inflation changes and the slower response of rental incomes, but over longer horizons, we're comfortable with real estate in better enabling portfolios to deliver positive long-term real returns when inflation is elevated.

There are relatively few overall constraints on real estate investing right now from an ESG perspective, in principle. There's a focus on the "E" part of ESG and the potential for new buildings to be more efficient, which is all well and good. But we think a more holistic view reveals challenges—investors need to be more aware of the "S" part of ESG. In September 2021, Berlin voters backed a referendum to force large corporate landlords to sell housing they own in the city, which could affect a quarter of a million apartments. The vote is nonbinding, and arguably the high incidence of renting in Berlin makes the city different from others in developed markets, but it could presage a broader question around ESG considerations in this asset class.

DISPLAY 26: REAL RETURNS OF SELECT ASSETS IN INFLATIONARY REGIMES

	Inflation (Percent)				
Asset	1–2	2–3	3–4	4–5	>5
Broad Commodity Index	–11.6	12.6	12.8	5.9	10.0
Oil	–8.7	28.2	4.6	–1.2	15.1
Gold	4.1	8.0	9.6	5.9	7.3
US REITs	5.7	15.9	23.1	16.6	8.5
World REITs	4.1	16.0	30.0	20.7	10.1
US Energy Relative	–9.1	5.4	–0.9	–3.3	1.5
US Metals & Mining Relative	–7.9	10.1	–8.3	–0.3	1.4

Historical analysis and current forecasts do not guarantee future results.

The table shows average year-over-year return for different assets in different inflation regimes. The data history is from 1970 or the longest available history. Inflation regimes are proxied by the US 10-year TIPS implied break-even inflation rate. Pre-1997, the 10-year break-even rate is a backcast of implied inflation calculated by Jan Groen and Menno Middeldorp from the Federal Reserve Bank of New York. For more details, see: https://libertystreeteconomics.newyorkfed.org/2013/08/creating-a-history-of-us-inflation-expectations/. US CPI Index is used to convert nominal to real returns. We do not subtract the change in CPI for relative sector returns.

January 1, 1970, through May 31, 2021 | **Source:** Bloomberg, Global Financial Data, New York Fed, Thomson Reuters Datastream and AB

12 See Inigo Fraser Jenkins and Alla Harmsworth, *What the War in Ukraine Means for Asset Allocations*, AllianceBernstein, March 18, 2022.

A similar backlash is forming in Spain where, according to the *Financial Times*, Blackstone is now the country's biggest landlord.[13] At the end of last year, Spain's government approved a draft bill aimed at landlords with more than 10 properties. The measure could introduce rent caps in certain areas where rents have risen much faster than inflation, and it might also ban the sale of social housing to investment funds. Similar pressures are apparent in other countries.

Seen in this light, the role of institutionally owned residential real estate is bound up with broader questions of inequality and social fairness. We think a shift to permanently higher inflation will stoke institutional demand for real estate. In the world of real assets, real estate is the only asset class that could be sizable enough to rival the capacity of equity markets. There have been constraints related to how much of the real estate market is investable, but large strides have been made to open more of it to investors. The potential for tokenization could better enable investors to access a larger share of real estate markets—by making fractionalized ownership easier, for example.

However, there are dangers and limits.

We expect a growing social—and possibly political—backlash against the financialization of real estate, particularly residential. In some cases, in Berlin for example, this opposition might limit investors' ability to own such assets at scale. That might be an extreme example, but more broadly it could directly limit the ability of real estate income to rise with inflation as it has historically. The potential for rent controls to limit real estate's ability to hedge inflation might have to be included when modeling returns. This issue also raises questions about the interaction of rent controls and the supply of real estate, given insufficient residential construction in many key markets.[14]

Cryptocurrencies: There's currently no empirical evidence of cryptocurrencies providing inflation protection. Bitcoin, for example, has dramatically failed as an inflation hedge—or as a hedge for anything—over the past year. The day Russia invaded Ukraine saw gold and Bitcoin move in opposite directions: gold worked, and Bitcoin didn't. The return history of cryptocurrencies is simply too short, and prices too volatile, to demonstrate any meaningful inflation hedging properties.

Nevertheless, we would note that if one treats this asset as "digital gold" because it's a zero-duration non-fiat asset with a programmatically limited supply, a case could be made that it should act as an inflation hedge, particularly when the money supply is expanding rapidly. It could be most useful in an environment where moderately elevated inflation is a policy goal to reduce public debt—debasing fiat currencies. The likelihood of such a policy shift, either explicit or implicit, has increased.

Our view is that the pandemic marked a critical moment in the transition between monetary and fiscal policy as the key cushion for economies in times of stress. The fiscal genie is out of the bottle, and there will be popular pressure to reach for it again in future downturns. A fiscal response to elevated energy and food prices brought about by the Ukraine crisis could further entrench such a view.

The energy consumption required to mine some cryptocurrencies, most notably Bitcoin, is strongly at odds with the environmental principles of ESG. Some of these issues could be alleviated if more renewable energy sources are used for future mining, but that point is open to debate. A move to proof-of-stake could also blunt this ESG concern in some cases. However, the use of Bitcoin and other cryptocurrencies in money laundering and other illicit activities is highly problematic from a social perspective. To be fair, there's a positive offset to this downside, as crypto enables banking access to those shut out of traditional banking systems, while also making it cheaper and easier to repatriate money to poorer countries.

Private Assets: There's nothing inherently anti-ESG about private equity (PE) assets—unless one wants to argue that, from a policy point of view, direct access to these return streams is biased toward the wealthy. But private assets have historically not been subjected to the same kind of ESG constraints as active equity funds have. This disparity is being addressed, but it will likely take time before it's reflected in the majority of assets.

We're seeing growing scrutiny of PE firm investments that are filling the financing gap in oil, gas and coal project funding left by public firms.[15] *The New York Times* cites a report by the Private Equity Stakeholder Project showing that about 80% of the top 10 PE firms' current holdings are in oil, gas and coal sectors. Because PE firms' disclosure requirements are much less stringent than their public counterparts, it's harder to evaluate their ESG practices, resulting in less pressure and fewer incentives to reduce emissions or divest non-ESG assets.

13 Daniel Dombey, "Spain Takes on Private Equity Landlords as Cost of Housing Soars," *Financial Times*, November 14, 2021, https://www.ft.com/content/9ef1eb29-04a5-441f-ac77-f6a0fb7d2d85.

14 For example, see Prasanna Rajasekaran, Mark Treskon and Solomon Greene, *Rent Control: What Does the Research Tell Us About the Effectiveness of Local Action?*, Urban Institute, January 16, 2019, https://www.urban.org/research/publication/rent-control-what-does-research-tell-us-about-effectiveness-local-action.

15 Hiroko Tabuchi, "Private Equity Funds, Sensing Profit in Tumult, Are Propping Up Oil," *New York Times*, October 13, 2021, https://www.nytimes.com/2021/10/13/climate/private-equity-funds-oil-gas-fossil-fuels.html.

IV: A Synthesis Is Needed

We've laid out the case for ESG driving inflation and the tension between inflation hedging a portfolio while complying with some of the traditional constraints of ESG investing (such as simple approaches based on screening and exclusion). We think the macro trend of inflation and the industry trend of an increasing focus on ESG will persist. Returning to our comment on seeing this as a dialectic, a synthesis is required, part of which is an evolution of what ESG investing really means.

But critically, this also requires developing new return sources.

ESG, or responsible investing, is a very broad field. Answering the question we posed up front—how to address inflation responsibly—requires recognizing the broad spectrum of ESG investment approaches. Historically, relying heavily on screening or identifying certain segments of the economy as "good" or "bad" has been a dominant approach. It can take the form of either excluding "sin" stocks from broad market indices or using "best in class" indices of companies that score highly on common ESG metrics. Much of this approach has been labeled as socially responsible investing.

When we think about the spectrum of ESG approaches, screening and exclusion still have a role to play, but they represent a more passive approach, in our view: they should be considered akin to rules that determine broad market indices or "smart beta" simple factor tilts.

We argue that an active ESG approach should employ active engagement with underlying issuers and investments, with the intent to gain insight, foster corporate change or promote certain outcomes. As a first step, it should acknowledge that ESG rules are dynamic and contingent, not static and absolute—which allows active ESG approaches to adapt rather than waiting for the deliberations of index providers. As a case in point, the war in Ukraine raises questions as to whether excluding defense companies is a sustainable approach. At the very least, the role of defense companies in enabling democratic societies to take a stance against existential threats deserves a discussion.

We also believe that active ESG needs to go further by integrating ESG into the financial considerations of buying or selling an asset, without necessarily imposing any exclusions. In this way, the financial materiality of ESG becomes an important element of any investment decision, implicitly placing a coefficient on an ESG input alongside other financial considerations.

A further extension of this active approach incorporates specific ESG-related outcomes in addition to integrating ESG into financial analysis—we'd include impact and sustainable funds in this category. Given their more thematic bias, some of these strategies could be susceptible to underperforming in certain phases of the cycle when specific themes aren't in favor. However, the fund buyer would presumably have signed up for that tactical risk when making an allocation. As we showed earlier in the chapter, a broad sample of ESG funds has managed to achieve more idiosyncratic alpha than non-ESG funds in recent years—an important pillar of the case for an active approach to ESG.

Another route for a definitively active approach to investing under the aegis of ESG is engagement. We think this route could become the core of what it means to be an active investor. From a purely commercial perspective, such an approach has advantages, would be much harder to create through passive strategies and could make it possible to defend fees. There are three other crucial benefits of an active engagement approach:

1. **Extending the time horizons of investments.** If asset owners care about ESG engagement, they're more likely to stick around to see the fruits of that engagement. This not only becomes important for E, S or G reasons—it also benefits asset owners, making them less likely to incur an excessive churn cost from bad fund-selection decisions. And it becomes important for asset managers, enabling them to have longer investment horizons.
2. **Generating idiosyncratic alpha.** In a world where smart beta is becoming free, we think idiosyncratic returns are the only kind of return that managers can charge a fee for.[16] Engaging with companies and bringing about corporate change is at least a candidate for generating idiosyncratic returns.
3. **Competing with private equity.** Engagement blurs the distinction between private and public equity managers. The most egregious differences in fee spreads across the industry aren't between active and passive managers, but between active public equity managers and private equity managers. By encouraging active engagement and bringing about positive governance changes, active public funds would be facilitating the kind of returns private equity managers aim to deliver, assuming that ESG engagements lead to positive returns. So, if used correctly, engagement can be a strong element in narrowing the fee spread between public and private equity managers. Ultimately, this would benefit asset owners too, in our view.

We think engagement-driven ESG is a key part of the active/passive debate. One line of reasoning holds that because passive managers can't decide to sell a given security in an index, they care more about engaging on ESG than active managers who have the option to sell. This line leads to another view that many companies view passive managers as long-term investors because their capital allocation is stable—in a survey we conducted, corporations told us that they saw this attribute of passive managers as a key attraction.[17]

We think both views are misguided. Not being able to sell an asset raises questions about the degree of power (other than voting power, which all owners have). It also presumes that one knows the right questions to ask or points of engagement to push. Moreover, thinking of passive investors as long-term investors conflates the frequency

16 See Inigo Fraser Jenkins and Alla Harmsworth, *Alpha, Beta and Inflation: An Outlook for Asset Owners*, AllianceBernstein, July 2021, https://www.alliancebernstein.com/content/dam/global/insights/insights-whitepapers/alpha-beta-inflation.pdf.
17 See *Fund Management Strategy: Management Incentives, Buybacks and the Failure of ESG*, Bernstein Research, March 21, 2019.

of capital reallocations with the investment time horizon. Tracking a broad-market index is necessarily a backward-looking exercise, not an endorsement of the future.

In our experience, asset owners might like this line of reasoning, but we also hear pushback. Surely, some argue, if ESG is to carry any moral or intellectual force, it must exclude certain types of economic activities altogether. Given these attitudes, we see a need for other ESG approaches, rather than relying on engagement alone, to provide asset owners with new kinds of return streams—including renewable power, timberland and farmland.

Delivery of renewable power: Renewables seem like a highly attractive option that neatly meets sustainability requirements and has natural inflation-hedging properties. In fact, as renewable power offsets older power sources, it can be thought of as naturally replacing part of a portfolio's commodities exposure. Because it addresses the same "real" need in the economy for energy consumption, green-energy delivery should have a similar return profile in inflationary environments. Moreover, it helps address many ESG goals, so the asset class should enjoy the support of significant and sustained investment inflows from ESG-oriented investors and the public sector in the coming years.

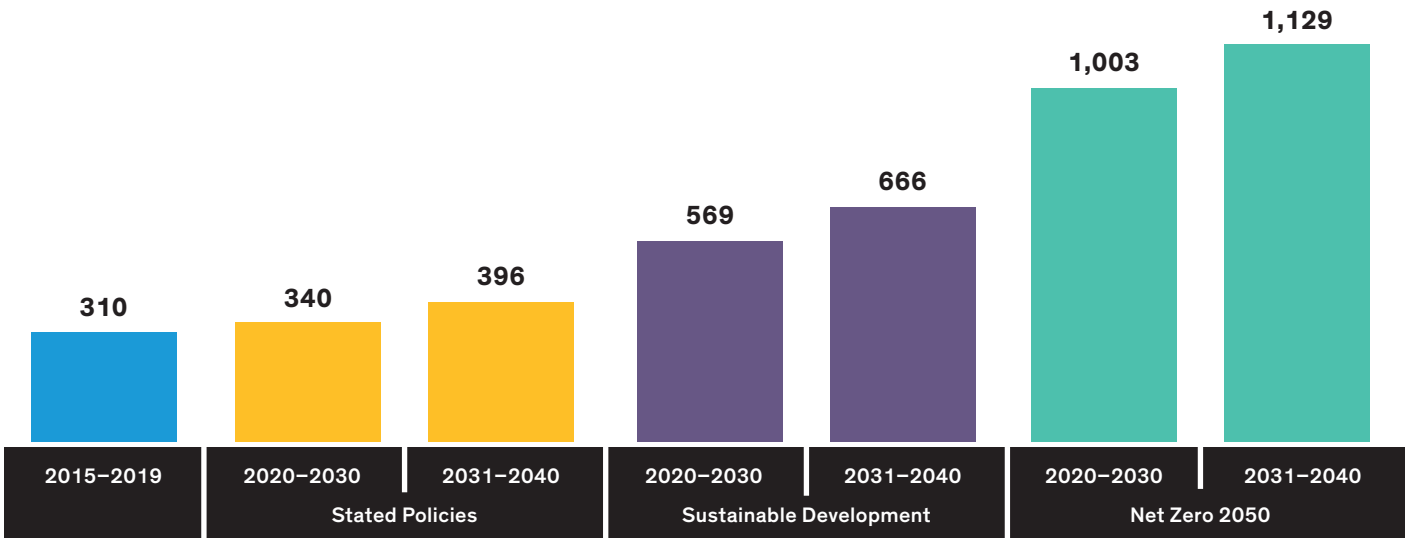
In *Display 27*, we gauge the possible range of renewable investment in coming years—an analysis completed before the Ukraine war, which will accelerate some of these goals. We show the annual global renewables investment required under three different scenarios considered by the International Energy Agency. The Stated Policies scenario reflects the spending forecast under current stated climate policies. The more ambitious Sustainable Development scenario reflects the spending needs to meet the goals set by the Paris Agreement, with countries reaching net zero emissions between 2050 and 2070. The most ambitious scenario (Net Zero) aims for net zero emissions by 2050 and is consistent with limiting the global temperature rise to 1.5°C.

To put the scale of spending into context, global GDP was nearly $85 trillion at the end of 2020. Under the Sustainable Development scenario, the required investment would be nearly 0.7% of 2020 GDP for the next 10 years and nearly 0.8% of GDP thereafter. For the Net Zero scenario, investment would be 1.2% of 2020 GDP for the next decade and 1.3% thereafter.

These numbers are relatively modest compared with prior investment booms, when changing technology caused huge, society-altering investment in infrastructure. One historical comparison that seems relevant is the capital investment in UK railways from the mid-1830s

DISPLAY 27: ANNUAL GLOBAL RENEWABLES INVESTMENT UNDER UPCOMING, EXISTING AND AMBITIOUS POLICIES

USD Billions



Historical analysis and current forecasts do not guarantee future results.

Stated policies scenario: Reflects existing stated climate policies. Sustainable development scenario: Represents spending required as a path to implementing the Paris Agreement, with countries reaching net zero emissions between 2050 and 2070. Net zero emissions by 2050 scenario: A more aggressive path to net zero consistent with limiting the global temperature rise to 1.5°C, without a temperature overshoot (with a 50% probability).

As of October 2020 | **Source:** Bernstein Research and International Energy Agency

to 1860. Railway investment averaged 2.1% of GDP, or 1.6% if we exclude the peak "railway mania" years of the mid-1840s. At the peak build-out of the US interstate highway system in the late 1950s and early 1960s, the US was spending around 3% of GDP on transport and water infrastructure.[18]

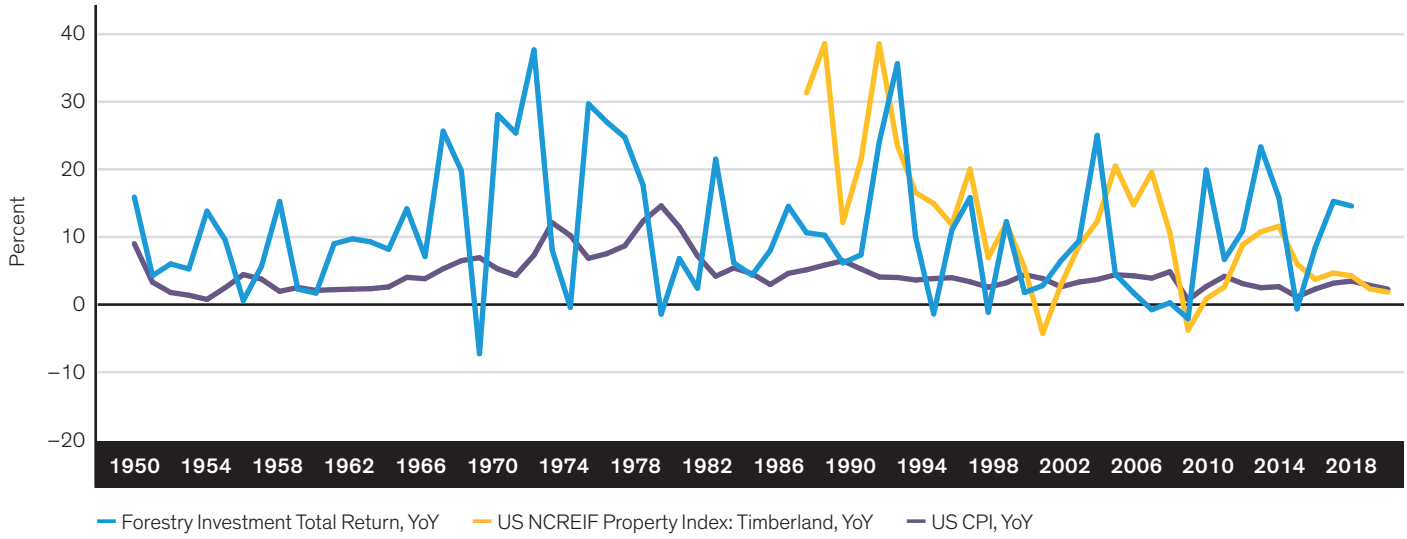
Meanwhile, a BloombergNEF analysis of different net zero scenarios, which is broader in scope and covers renewables, energy storage, electric vehicles, carbon capture and sustainable materials, suggests higher required investment.[19] For the period from 2022 to 2025, the analysis projects an average of $2 trillion of energy-transition investment annually, and nearly $4.2 trillion annually for 2026–2030. These amount to 2.4% and 4.9% of global GDP, respectively.

Farmland and timberland: These long-established alternative asset classes have been considered niche investments for the past century. While institutional assets under management in these investments are still low compared with private equity or real estate, farmland and timberland are gaining renewed interest and importance in the current macro environment. According to recent academic studies, global institutional investments in timberland have grown to nearly $100 billion.[20]

Data on institutional investors' exposure to farmland are harder to come by. According to the United States Department of Agriculture, only about 2% of total farmland ownership in the US is held by non-family-owned farms, which include corporations and institutional investors.[21] However, the growing market value of the widely followed NCREIF Farmland Index from less than $4 billion 10 years ago to nearly $14 billion at the end of 2021 suggests increasing institutional interest.[22]

Both timberland and farmland have attractive inflation-hedging properties, as suggested by the close long-run link between US CPI and timberland[23] prices (*Display 28*) as well as farmland prices (*Display 29, page 41*). Also, timber is a major component in housing construction, while farmland prices are tied to the price of agricultural commodities, so they should provide a natural hedge against rising real estate prices and food-price inflation.

DISPLAY 28: TIMBERLAND—ATTRACTIVE INFLATION-HEDGING PROPERTIES

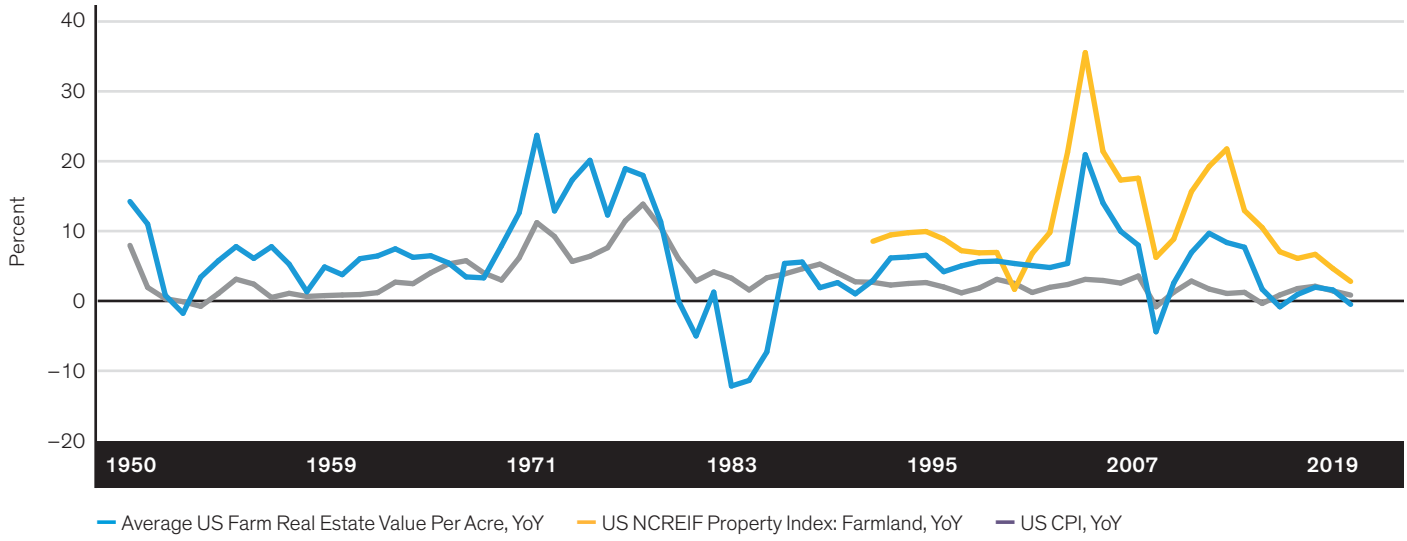


Historical analysis and current forecasts do not guarantee future results.

Through December 31, 2020 | **Source:** Colm Fitzgerald, Thomson Reuters Datastream and AB

18 "Public Spending on Transportation and Water Infrastructure, 1956 to 2014," Congress of the United States Congressional Budget Office, March 2015, https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/49910-infrastructure.pdf.
19 "Energy Transition Investment Trends 2022: Tracking Global Investment in the Low-Carbon Energy Transition," BloombergNEF, January 2022, https://assets.bbhub.io/professional/sites/24/Energy-Transition-Investment-Trends-Exec-Summary-2022.pdf.
20 R.P. Chudy and F.W. Cubbage, "Research Trends: Forest Investments as a Financial Asset Class," *Forest Policy and Economics* 119 (October 2020), https://doi.org/10.1016/j.forpol.2020.102273.
21 "Farm Structure and Contracting," Economic Research Service, US Department of Agriculture, updated March 8, 2022, https://www.ers.usda.gov/topics/farm-economy/farm-structure-and-organization/farm-structure-and-contracting/.
22 "NCREIF Farmland Property Index Released," National Council of Real Estate Investment Fiduciaries, https://www.ncreif.org/news/farm-4q2021/.
23 Forestry Investment Total Return index is based on Colm Fitzgerald, "The Forestry Investment Total Return (FITR) Index," *Journal of Alternative Investments* 23, no. 4 (Spring 2021): 131–150, https://doi.org/10.3905/jai.2021.1.125.

DISPLAY 29: FARMLAND—ATTRACTIVE INFLATION-HEDGING PROPERTIES



Historical analysis and current forecasts do not guarantee future results.

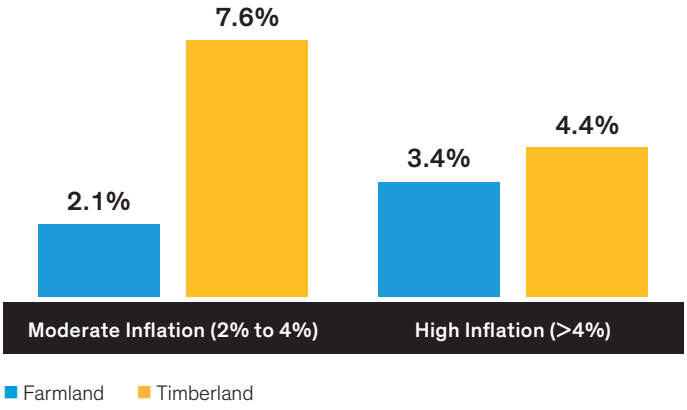
Through December 31, 2020 | **Source:** Thomson Reuters Datastream, USDA and AB

Since the 1970s, both farmland and timberland have, on average, delivered strongly positive real returns in periods of moderate and high inflation (*Display 30*). We define periods of moderate inflation as those where the US 10-year break-even rate was between 2% and 4%, while high inflation is a break-even rate above 4%.

In addition to the specific role these assets play in protecting investors from inflation, they also offer strong strategic "fundamentals" in the form of a growing population, changing consumer preferences in protein sources and a rising demand for agrofuels and carbon sinks.

Both timberland and farmland are also increasingly important from an ESG perspective. Forests play a crucial role in climate regulation, and their role as carbon sinks is attracting more interest from institutional and corporate investors looking to invest in growing forests for carbon sequestration—an aid to achieving net zero emission goals. Meanwhile, farmland plays a crucial role in achieving the United Nations Sustainable Development Goals, such as zero hunger.

DISPLAY 30: REAL RETURNS FROM FARMLAND AND TIMBERLAND IN DIFFERENT INFLATION REGIMES

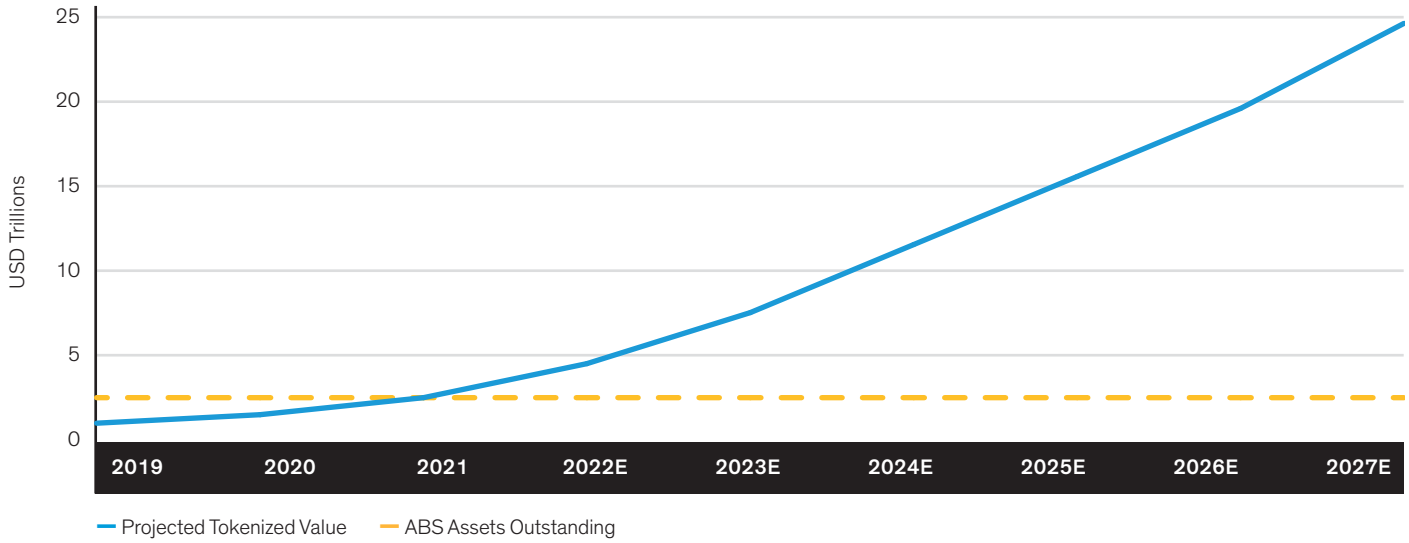


Historical analysis and current forecasts do not guarantee future results.

The analysis uses annual data from 1972 to 2020. US CPI is used to convert nominal to real returns. Moderate inflation regime is defined as periods where the US 10-year break-even inflation rate was between 2% and 4%. High inflation regime is defined as a break-even rate higher than 4%. Pre-1997, the 10-year break-even rate is a backcast of implied inflation calculated by Jan Groen and Menno Middeldorp from the New York Fed.

January 1, 1972, through December 31, 2020 | **Source:** Colm Fitzgerald, New York Fed, Thomson Reuters Datastream, USDA and AB

DISPLAY 31: A PROJECTED SURGE IN TOKENIZED ASSET VALUE



Historical analysis and current forecasts do not guarantee future results.

As of December 31, 2020 | **Source:** Securities Industry and Financial Markets Association, World Economic Forum and AB

Given this backdrop, farmland and timberland could offer a very desirable overlap between protecting investors against inflation and fulfilling ESG objectives. However, fulfilling that promise requires that the management of these assets incorporates a significant focus on sustainable goals. Given this required slant, it's probably not enough for these exposures to be passive only, so there should be dispersion in the demand for different types of farmland assets. Not all farmland exposure will be equal.

Taking the US as an example, farmland productivity is highly skewed. Large-scale family farms and industrial nonfamily farms account for only 4.8% of total farms but 57.4% of production in dollars. And there's a succession issue: 28% of farmers are between the ages of 55 and 64.[24] This leaves open the possibility of a need for capital, which could leave a useful role for institutional investors.

The focus of ESG-minded investors in this area will likely be on sustainability and the "E" of ESG in the first instance. As with the debate about the social impact of the financialization of residential real estate, there may be a parallel challenge emerging regarding the role of institutional investors in farmland and converting more of it into a financial asset. This will likely manifest both at the local level in terms of the impact on communities, and at a global level from the perspective of the commons and the status of food in society.[25]

Tokenization: The tokenization of real assets currently presents very few examples of meaningful investment capacity outside of real estate. However, World Economic Forum projections show immense future potential for growth (*Display 31*). In our view, the key benefit of tokenization is that fractional ownership enables retail investors and small institutions to access real-asset classes previously inaccessible to them, such as private real estate, farmland and collectibles.

Overall Allocation and Sizing

In the context of protecting against inflation and complying with ESG rules, we suggest that investors seeking inflation protection over long horizons, and therefore needing positive real returns, increase their allocations to renewable power delivery. These allocations will likely be limited by capacity in the near term but will scale up as projects are developed. We also think allocations to private natural resources—such as farmland and timberland—should increase. Real estate exposure should stay the same or increase, but these decisions should be made within a long-term strategic view that considers emerging risks from the "S" of ESG.

What allocations can be reduced to fund these return sources?

Many investors are siloed by their governance structure or allocation methodology. So, we suspect near-term funding would come from existing alternatives or illiquid positions—possibly at the expense

24 "U.S. Food System Factsheet," Center for Sustainable Systems, University of Michigan, 2021, https://css.umich.edu/factsheets/us-food-system-factsheet.
25 See, for example, Stefan Ouma, "This Can('t) Be an Asset Class: The World of Money Management, 'Society,' and the Contested Morality of Farmland Investments," *Environment and Planning A: Economy and Space* 52, no. 1 (August 2018): 66–87, https://journals.sagepub.com/doi/full/10.1177/0308518X18790051.

of private equity, or at least at the expense of new allocations into private equity. In time, we think this decision should be viewed in the context of the whole book and sources of real return. As long as risk constraints allow, a world of lower nominal returns and higher inflation implies that more of these allocations should come at the expense of traditional fixed income.

We're mindful of the risk implications, but this must be viewed in the context of a bigger risk (a hardship outcome for end beneficiaries). We would argue that it's this risk that should be the primary focus of agents entrusted with managing assets. We're fully aware that risk is usually measured as trailing realized volatility, which might have been excusable in an environment where major asset classes delivered strong positive real returns. However, for a long-horizon investor, we think it's myopic to focus on realized volatility as the principal risk measure in the current environment. This is a huge topic in its own right, but also a common thread through much of our research. Within public market allocations, we expect an evolution in distinctions between cheap, passive approaches to ESG based on exclusion and screening, and engagement-based approaches as a destination for active fees.

There's an open question on sizing allocations to these newer return streams.

The usual approach would be to assess their long-run real return potential, ability to hedge inflation and volatility to arrive at an allocation. But this is a complicated effort with newer return streams. An alternative approach considers the potential scale of the return source in the economy. Such an approach would have been ineffective in recent decades when financial assets strongly outpaced real assets and the real economy, but we expect that performance gap to be much narrower in the future. So, approximating the sizing of assets in the real economy might be an effective path to generating real returns. This is a much more general question than the specific issue of ESG and inflation.

We discussed earlier how investment in the energy transition could account for 1%–2% of GDP for an extended period. This would leave renewable power sources occupying a similar place in the economy to that of fuel commodities today, potentially performing a similar role in investment portfolios as well. Fossil-fuel costs currently account for around 6% of GDP. Adding metals and mining, the share rises to nearly 14%.[26] However, many metals, such as copper, aluminum and lithium, will still be needed in the future and are keys to the green transition. Neither gold nor silver will be replaced, so that higher number might not be a relevant comparison.

V: Who Pays for a Shift to ESG-Friendly Policies?

Not directly related to the portfolio question of inflation protection is the issue of who will pay for a sociopolitical shift in favor of ESG-friendly policies. Perhaps the most obvious cost is the investment required for the energy transition, a need now rendered much more acute by the war in Ukraine. However, the shift will also have a broader impact via the cost of rebalancing power between labor and capital, which will result in higher wages.

We argue that consumers can't bear this cost. Yes, they may say they're happy to pay more for sustainable products, but we think the burden will fall more heavily elsewhere—namely, on companies and governments. Corporations should be expected to bear a large share of the cost, as margins are at historical highs. The profit share of GDP for US corporations is currently 12.6%, well above the 9.7% average since 1950. Commodity inflation raises input prices, but it's also important that the messaging of the "S" in ESG involves wages and labor bargaining power.

We expect governments to take on a large share of this cost. In the post-pandemic world, the ability to deploy fiscal policy to address investment requirements has plausibly changed. There will always be a debate on this point, but policymakers have had to become comfortable with much higher levels of debt/GDP than were deemed acceptable before. Moreover, if investment is labeled as "green infrastructure," it's more likely to be considered politically palatable.

One implication of the ESG bill coming due is that investors should expect a downward drift in corporate margins in the years ahead. There's room for this to happen and for equities to still generate positive real returns.[27] The other consequence would be an expected continuation of unprecedented high debt levels across the Organisation for Economic Co-operation and Development; at the margin, this implies a lower endpoint to any run of interest-rate increases. The policymaking desire will be to keep the interest rate below the growth rate of economies as a route to manage debt.

26 See *Global Metals & Mining: The World Has Never Paid More for the Stuff We Pull Out of the Ground*, Bernstein Research, October 25, 2021.
27 See Inigo Fraser Jenkins and Alla Harmsworth, *An Equity Outlook: Are Stocks the Biggest Real Asset Out There?*, AllianceBernstein, March 1, 2022.

Conclusion

ESG, both as a mode of investing and a broader sociopolitical force, is here to stay—representing a secular force in investment and society. We've argued in this chapter that this force is profoundly inflationary and adds to other inflationary forces, cementing our view that the post-pandemic future will feature inflation above the pre-pandemic equilibrium. However, there are balancing deflationary forces, so this shouldn't lead to unanchored inflation.

Thousands of notes have been written on what kinds of assets comply with an ESG portfolio or an ESG investment ethos; here, we've focused on the specific question of ESG and inflation. We've done so not only because inflation protection is the question of the day, but also because we think the question of how to address inflation responsibly will be a key one for the investment industry for years to come. ESG is a cause of inflation, but certain ESG definitions hinder some of the knee-jerk responses. At the same time, investing responsibly and protecting investments from inflation are two of the biggest issues investors need to deal with. The synthesis of these forces will be strategically important for the investment industry.

ESG investing is far from monolithic; there's in fact a wide spectrum of approaches. What's more, the resurgence of persistent inflation for the first time since ESG has become a material force for change raises a new challenge for this mode of investing. The corollary is that inflation causes a wider dispersion between different kinds of ESG investing (for example, favoring an active engagement approach and/or integration over a more passive screening or exclusion approach). It also provides extra impetus to develop return streams that are both ESG-compatible and potentially effective as inflation protection.

Any mode of investing must continually evolve as it encounters the vagaries of the investment landscape and changing investor preferences. This is true of style-based modes of investment (for example, the way value strategies have overcome a long period of disfavor) and for active investing overall (with more of that happening in illiquid alternatives than in public equities). ESG is no different, and we think a sustained resurgence of inflation will bring changes in people's definitions of ESG. One thing seems certain: ESG investing is here to stay.

CHAPTER 3

Investing in a Post-Global World

It's become almost a cliché to claim that the world is on a path to deglobalization. After the Brexit vote, the Trump presidency, years of growing US-China tensions and now the war in Ukraine, it might seem like a well-worn path. Still, we think the prospect of deglobalization demands attention from strategic investors, both for explicit allocation decisions and in investment praxis.

In this chapter, we consider what form deglobalization might take and its impact on the investment environment. The chapter title is an intentional oxymoron—investing will always be global in nature, but a specific paradigm of globalization is waning.

Our thesis: expect a prolonged phase of deglobalization. Its roots have been around for some time, a function of two distinct but mutually amplifying forces. The first is domestic opposition to globalization in developed economies, driven by the precarious nature of labor, which hasn't been changed by the recent decline in unemployment. (One could describe this by paraphrasing Lenin—that those at the bottom don't want to live in the old way.) The second force is geopolitics, most evident in the deterioration of US-China relations and the shift in the direction of Chinese policy. The current period of crisis, driven by Russia's invasion of Ukraine, has been an accelerant in the context of this backdrop.

Only part of this narrative is about geopolitics: the war in Ukraine may make it a natural focus, but there's also more demand to "reclaim" national sovereignty that spans the political spectrum. The narrative of the left is that sovereignty has been forfeited to corporations; the right believes it has gone to supranational organizations. Some portion of deglobalization must be seen as repositioning the global balance of power between corporations and governments (both democratically elected and autocratic).

Some countries have fared particularly well under globalization (such as Germany, South Korea, Taiwan and China). But investors have been the main beneficiaries, enjoying a free flow of capital, higher corporate margins and the deflationary impetus that has driven down the cost of capital. Deglobalization has direct implications for effective tax rates, employee compensation as a share of revenues, supply chains and regulation. All these challenge the expected real returns from holding passive long positions in traditional asset classes.

Deglobalization won't be a move toward some neo-Westphalian state, with each country its own island. Instead, it seems more likely to be a move toward blocs. Recent developments in Europe are instructive, with some reconciliation between eastern European states and Brussels as they face a perceived common threat, and the likely accession of Sweden and Finland to NATO. The tension between the economic priorities of Germany and southern European states has been a problem since the European debt crisis a decade ago.

However, these countries now exist in a world where keeping open exports to China has become more challenging, and where doubts linger about the durability of US defense guarantees. So, export-reliant Germany has a lot to lose, which explains its abrupt about-face on defense policy this year. The logical consequence is a greater likelihood that Germany will realize it needs Europe as much as Europe needs Germany, implying a greater acceptance of outcomes that further the overall interests of the bloc.

Climate change is another major force preventing a total fracture of globalization into independent country-led policies. There's likely to be more global governance in this sphere, not less, and grassroots support for climate-sensitive policies seems set to grow. We see the intensifying focus on climate change as a force leaning against deglobalization, though it's unlikely to help improve the aggregate profitability of the corporate sector. If ever a case could be made for the "the commons," global climate would be it.[28]

28 In this context, see our review of Pope Francis's *Laudato Si': Encyclical on Climate Change and Inequality* in "Fund Management Strategy: The Social Function of the Investment Profession," Bernstein Research, September 25, 2017.

The core of this chapter examines deglobalization's implications for investors, which depend very much on whether the forces of deglobalization are aligned with other far-reaching forces. We see the main implications for the investment landscape as:

- Higher inflation
- Lower corporate margins (due to less tax and labor arbitrage as well as higher inventories)
- Lower real growth
- Dampened outperformance of financial assets over real assets, and perhaps a reversal
- Supply chain and energy security becoming a key concern, leading to more direct government involvement

The impacts of this evolving landscape on portfolio design will likely include:

- Yet another reason to include strategic inflation hedges
- A need for benchmarks and mandates for many investors to be couched in real-return terms
- The acceptance of a higher default risk level
- Less acceptance of a passive global market with quasi-arbitrary weights to China
- A long wave of investment in automation and renewables
- Changing sources of diversification in portfolios (relatively less inter-asset diversification and more intra-asset regional diversification)

The specific allocations to assets and return streams will mean:

- More real assets for many investors (including real estate, infrastructure and farmland, but also public equities, despite lower expected returns)
- A strategic preference for US over international investments, even in the face of de-dollarization
- An underweight to large/mega-cap stocks, whose leadership we don't expect to continue
- Allocations to the low-volatility factor (market risk will be higher and equity returns lower)
- Secular support for the themes of automation and renewables, boosted by deglobalization
- Increased allocations to gold

I: The Case for Deglobalization

What Was the Impetus for the Latest Phase of Globalization…and Why Is It Under Threat?

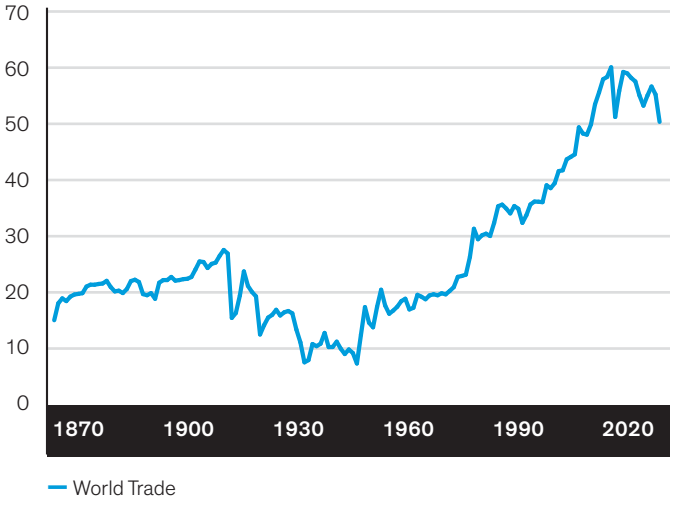
Deglobalization is a very broad concept covering trade, the movement of labor and capital, regulation, sociopolitical forces and corporate structure. Above and beyond these factors, it represents a change in the intellectual zeitgeist.

If one wants to assert that deglobalization is happening, some form of metric is needed, and trade seems to be one of the cleanest. After WWII, global integration increased substantially, as seen in total trade as a share of global GDP (*Display 32*), though the previous peak in 1913 wasn't exceeded until the 1970s. The inflation of the 1970s stalled further growth, but the uptrend since the 1980s has been particularly strong.

It's specifically this post-1980 episode of globalization that now seems under threat. The World Trade Organization (WTO) forecasts that world merchandise trade volume will grow roughly in line with global GDP in 2022 and 2023.[29] If this is the measure of globalization, then it's been in a gentle retreat for 10 years. Nevertheless, we suspect that history may look back and point to the pandemic as the key breaking point.

DISPLAY 32: HAS TRADE GLOBALIZATION PEAKED?

Total Trade as Share of Global GDP (Percent)



Historical analysis and current forecasts do not guarantee future results.

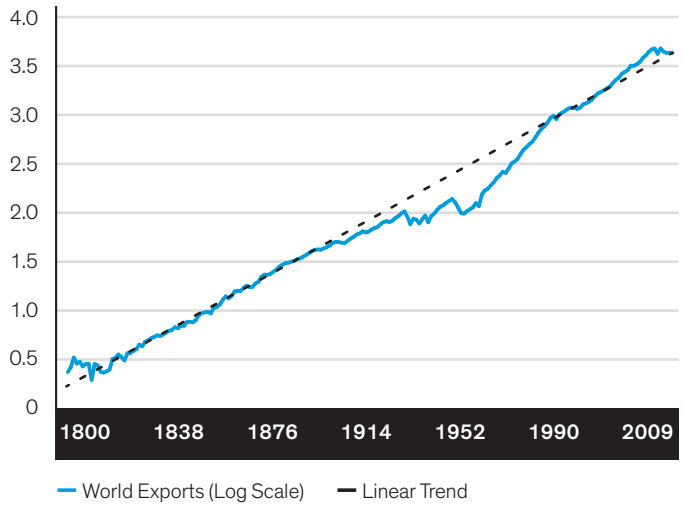
From 1870 to 1970 data are from www.ourwordindata.org. From 1970 data come from World Bank.

World trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.

Through December 31, 2020 | **Source:** Our World in Data, World Bank and AB

29 *Russia-Ukraine Conflict Puts Fragile Global Trade Recovery at Risk*, World Trade Organization, April 12, 2022.

DISPLAY 33: TRADE GROWTH HAS BEEN FALLING BACK TOWARD TREND



Historical analysis and current forecasts do not guarantee future results.

Display shows inflation-adjusted value of world exports.

Through December 31, 2014 | **Source:** Giovanni Federico and Antonio Tena Junguito, "A Tale of Two Globalizations: Gains from Trade and Openness 1800-2010" (discussion paper, Centre for Economic Policy Research [CEPR DP11128], February 21, 2016) and AB

Trade has had a long-run tendency to grow since the Industrial Revolution (*Display 33*), though the succession of WWI, the Great Depression and WWII clearly caused a deviation below trend. Closer inspection reveals that the period from the late 1980s through the 2000s was a special one with above-trend growth. The most recent point shown in the display is 2014, so trade growth had fallen back toward trend even before feeling the full effects of the pandemic, China's lockdowns and Russia's invasion of Ukraine.

If we identify the period since 1980 as the phase of globalization that's now threatened, two questions emerge: 1) What drove this phase? and 2) What's the basis for the claim that it's now under threat? To answer the first question, we believe the recent globalization phase was driven by a convergence of the following wide-ranging forces:

- Deng Xiaoping's opening up of China as a pro-market, post-Mao entity
- The dominance of the US-led world order, which morphed into US hegemony after the Cold War
- The Reagan and Thatcher–led shift toward sociopolitical acceptance of neoliberalism, particularly the path that enabled large corporations to offshore labor
- The previous two factors combining to help drive the evolution of the global-trade infrastructure from the GATT negotiations in 1947 to the establishment of the WTO in 1995
- Technology and the role of intangible assets, which vastly increased the network/scale benefits for successful firms while eroding the power of sovereign governments

Other unrelated factors, such as changing demographics and the acceptance of independent monetary policy as the key cushion for the economy, parallel these globalization forces—and have reinforced the investment consequences of globalization.

In our view, all these forces except for technology are under threat—or at least no longer potent—and in many cases are reversing. Even in the case of technology, the potential splintering of the internet and shifts in regulation will likely blunt its globalizing tendency.

The Intellectual Basis for Globalization Has Exhausted Itself

Many financial-services publications understandably tend to focus on the economic aspects of deglobalization, but we think this process is more fundamental. At its core, deglobalization represents *a change in the intellectual environment*—a shift in the paradigm, or overarching narrative.

In this chapter, we focus on the unraveling of the specific surge in globalization since 1980. It's probably no coincidence that Jean-François Lyotard published his seminal text, *The Postmodern Condition,* in 1979.[30] It set the stage for a disbelief in history and progress as well as an acceptance of relativism that we argue has been a key part of this globalization wave. A tenet of the book is a rejection of what Lyotard calls "metanarratives," or the grand theories of history. (However, it's become increasingly clear that any claims of the end of metanarratives are themselves merely another metanarrative.)

The assumption that the market's role is a given is the other intellectual underpinning of globalization. Probably the most well-known work in this vein among financial-services professionals is Francis Fukuyama's assertion in *The End of History and the Last Man* that history had "ended" because of the alleged consensus that a market-based liberal order was the "final form of human government,"[31] a claim that has long been under attack. This rejection seems particularly relevant in the context of the rise of an alternative economic/political system in China, the internal social problems in advanced economies and changing demographics.

Some of the developed-market backlash against globalization relates to the power shift that has favored corporations and capital markets. In his book *Planetary Politics*, Lorenzo Marsili writes:

> The revolt of our times, too hastily attributed to austerity politics or to a backlash against a multicultural society, represents instead a rejection of the new condition of impotence that is the result of a world that has surpassed its organisation in separate nation states.[32]

In other words, the greater power of markets in recent decades at the expense of governments has been a key force in making globalization seem inevitable and permanent, but this power shift seems set to reverse. Franco Berardi made an assertion in a similar vein in *The Uprising: On Poetry and Finance:*

> The financial dogma states the following: if we want to keep participating in the game played in the banks and stock markets, we must forfeit … civilization. But why should we accept this exchange? Europe's wealth is not based on the stability of the Euro … it is wealthy because it has millions of intellectuals, scientists, poets and … has historically managed to valorize competence.[33]

If the underlying intellectual basis of globalization is being challenged in this way, it's likely that deglobalization has become a persistent theme—not simply a passing worry. Taken from this starting point, what are the proximate causes of deglobalization? These are key to mapping out an investment response.

30 Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge* (Paris: Les Éditions de Minuit, 1979).
31 Francis Fukuyama, *The End of History and the Last Man* (New York: Free Press, 1992).
32 Lorenzo Marsili, *Planetary Politics: A Manifesto* (Cambridge, UK: Polity Press, 2021).
33 Franco Berardi, *The Uprising: On Poetry and Finance* (Los Angeles: Semiotext(e), 2012).

The Reasons for Deglobalization Now

1. Russia-Ukraine

The immediate reason for deglobalization suddenly dominating investor conversations is Russia's invasion of Ukraine. The far-reaching repercussions have included sanctions on Russia, the decision by China to somewhat align with Russia against the US, and the US decision to weaponize the dollar and access to payment systems.

The share of world trade as a percentage of GDP was declining even before the pandemic, so in one sense the conflict is merely an accelerant. The war has also changed the nature of the deglobalization debate: this is the first time since the end of the Cold War that a large country has been cut off from the international system. Moreover, the degree of unity between the US, Europe and countries such as Japan and Australia has been surprising. Equally surprising has been the determination to cut Russia off from international payment systems and freeze central bank assets—these actions, which the average investor wouldn't have expected a year ago, mark a genuine shift.

In examining the reasons for deglobalization, one should ask: How permanent are these shifts? If deglobalization is painful, won't there be a push to simply reverse its driving forces? We think Russia's isolation should be viewed as semipermanent—at least while Putin remains in power. There's been too much rhetoric to easily go back. Investors shouldn't, in our view, expect a change in the status quo. The weaponization of the US dollar by limiting access to it is a new development too (at least on this scale); once used, it will be hard to avoid calls to do it again in future crises (for example, a serious threat to Taiwan).

2. Declining Domestic Support for Globalization

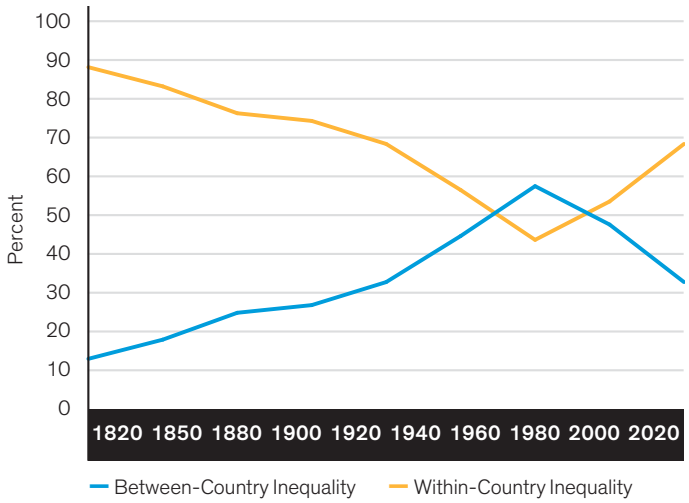
A key engine of deglobalization is the perception that globalization's benefits have accrued only to a small minority in developed countries. Of course, globalization has helped reduce inequality globally, for example by pulling people out of poverty in developed nations. The world inequality report[34] shows a decline in global inequality among countries in the latest phase of globalization, though recent academic research suggests that the pandemic has unwound some of this effect.[35]

While wealth inequality among countries remains below its level in the 2000s and its peak in 1980, inequality within countries has risen (*Display 34*). The world en masse doesn't vote for individual country governments, so intra-country wealth outcomes determine policy more than the global picture does—and intra-country is where inequality is higher today.

The resurgence of inequality has cost globalization support in the internal political dynamics of key developed nations. One can point to the rise of populism, the Trump presidency, the Brexit vote and the strong showing of Marine Le Pen as recent examples, but its roots stretch further back. A key pledge of Ross Perot's 1992 US presidential campaign was to end job outsourcing. Similar points (with more intellectual gravitas) have long been made in the writings of Yanis Varoufakis, Nick Srnicek and Franco Berardi.

DISPLAY 34: THE DIFFERENT PATHS OF WEALTH INEQUALITY

Between-Country vs. Within-Country Inequality (Top 10% Income vs. Bottom 50% Income)



Historical analysis and current forecasts do not guarantee future results.

The display shows the ratio of the average incomes of the top 10% and the bottom 50%. Income is measured per capita after pensions and unemployment insurance transfers and before income and wealth taxes.

Through December 31, 2020 | **Source:** Lucas Chancel, Thomas Piketty, Emmanuel Saez and Gabriel Zucman, *World Inequality Report 2022*, World Inequality Lab, 2022; and AB

34 Lucas Chancel, Thomas Piketty, Emmanuel Saez and Gabriel Zucman, *World Inequality Report 2022*, World Inequality Lab, 2022.
35 "Global Inequality Is Rising Again," *The Economist* (August 2, 2022).

Globalization's benefits haven't been shared equally—with the distribution of wealth and income two of the distinct elements. Assets are owned very unequally (in capitalist societies, anyway), but (nearly) everyone can offer equal amounts of labor. Globalization drove discount rates down and growth up, fueling a massive rally in financial assets that boosted wealth inequality. Globalization also enabled corporate labor arbitrage, increasing the precarious state of labor in developed economies. This also introduced an element of income inequality, as Piketty detailed in his 2014 book *Capital in the Twenty-First Century*. These trends are enough to not only slow globalization, but also to reverse parts of it.

"Hang on," one might say, "aren't today's headlines full of stories about labor shortages? Can't that help neutralize the populist rejection of globalization?" We don't think so. The apparent shortage of labor is a very recent phenomenon; labor's loss of bargaining power, in contrast, has been a long-run trend. Moreover, much of the world faces the prospect of very high short-term inflation, which will likely cause much more pain for low earners.

3. A New Cold War?

Another force that seems poised to sustain deglobalization stems from growing US-China tensions. Because this force is very different from the loss of domestic support for globalization, there's no reason to expect it to run at the same pace—and it will likely have subtly different investment implications. Nevertheless, we see these tensions directionally supporting other deglobalizing tendencies. Just as China's opening up to the global economy was a central driver of the most recent wave of globalization, any change in that status is key to the deglobalization narrative. We'll leave aside the distinct topic of what these rising tensions mean for directional views on Chinese assets.

In a recent article in *Foreign Affairs* devoted to the topic of America's "cold wars," Hal Brands and John Lewis Gaddis claim that "it is no longer debatable that the United States and China. . .are entering their own new cold war."[36] Others have disagreed; for example, Ian Bremmer, founder and president of Eurasia Group, has advocated the view that China and the US are too intertwined to countenance a cold war[37] (though a similar sentiment was also expressed about the world in 1913).

Right now, China is still tied to a global economic system that depends heavily on the US dollar. The weaponization of access to dollar payment systems as a result of Russia's invasion of Ukraine presumably concerns Chinese authorities, a topic we'll cover later in the section on de-dollarization. This interconnectedness will likely inhibit some of the more dangerous forces that indicate an unstitching of globalization. Also, China remains central to both investors' plans and global supply chains.

We can debate the extent to which this path constitutes a cold war, but either way it changes the narrative from much of the previous decade. Under Xi, there's a path to ensuring greater orthodoxy within China, and his administration's brand of "wolf warrior" diplomacy has been more active in carving out China's role in the world. The belief in the West that Deng's economic opening of China would lead to social and political reforms has now been consigned to antediluvian status.

The Forces of Supply Chains and Energy Security

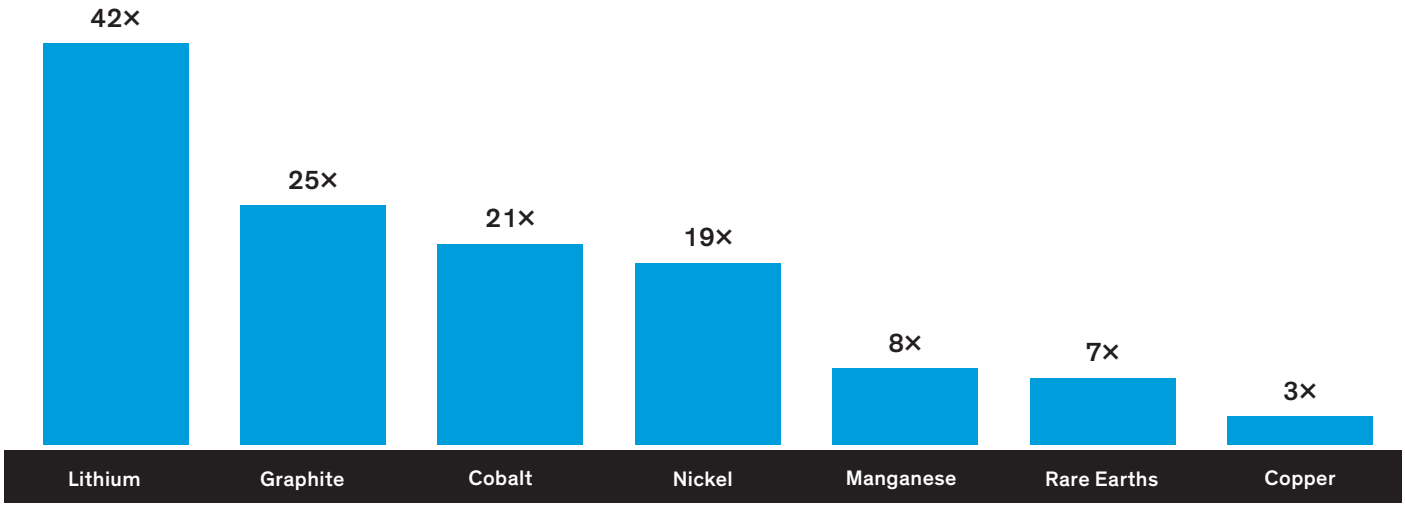
We also see supply chain and energy security becoming a long-lasting theme. Today, semiconductor chips are often called the 21st century's new oil, given their key role in modern manufactured products and the associated geopolitical tensions surrounding their supply chain. Semiconductor production is extremely concentrated, with Taiwan Semiconductor Manufacturing Company alone constituting more than 50% of global market share and Asia overall constituting more than 80% of the global market.[38] The tense geopolitical situation between the US and China related to Taiwan underscores the crucial importance of diversifying the semiconductor supply chain.

Efforts to increase domestic chip production have already started in Europe. The European Chips Act, passed in February 2022, aims to provide private and public funding of more than €43 billon for new chip fabrication plants.[39] In the US, the recently passed CHIPS Act[40] provides $52 billion in government subsidies ($39 billion directly related to manufacturing) for boosting US semiconductor production. It will also grant an estimated $24 billion in tax subsidies for the industry. The CHIPS Act is part of the broader CHIPS and Science Act, which will also include around $200 billion for research and innovation in advanced technologies in areas including energy, biology and quantum information science.

But diversifying the supply chain isn't a quick process: new plants can take years to build and exact a significant cost. *The Economist* cites research by Boston Consulting Group and the Semiconductor Industry Association showing that, in a scenario where chip production was self-sufficient within regions, prices could increase between 35% and 60%.[41] This is similar to estimates from TSMC, suggesting that the lack of an established talent base and

36 Hal Brands and John Lewis Gaddis, "The New Cold War: America, China and the Echoes of History," *Foreign Affairs* (November/December 2021).
37 Reshma Kapadia, "China and US Aren't in a Cold War, Eurasia's Bremmer Says. But the Relationship Could Become More Fraught," *Barron's* (December 7, 2021).
38 Govind Bhutada, "The Top 10 Semiconductor Companies by Market Share," Visual Capitalist Datastream (website), December 14, 2021, https://www.visualcapitalist.com/top-10-semiconductor-companies-by-market-share/.
39 "In the Global Chips Arms Race, Europe Makes Its Move," *The Economist* (February 12, 2022).
40 "Congress Passes Investments in Domestic Semiconductor Manufacturing, Research & Design," Semiconductor Industry Association, 2022.
41 "After a Turbocharged Boom, Are Chipmakers in for a Supersize Bust?" *The Economist* (July 10, 2022).

DISPLAY 35: ADDRESSING CLIMATE CHANGE WILL BOOST MINERAL DEMAND



Historical analysis and current forecasts do not guarantee future results.

Sustainable Development Scenario represents implementing the goals of the Paris Agreement by 2040. Index (2020 = 1)

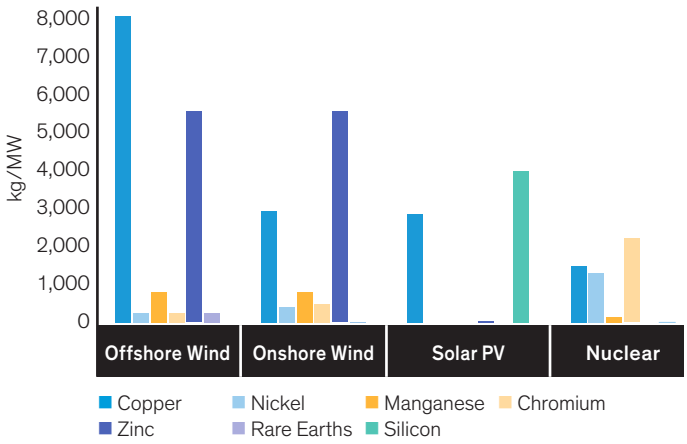
As of August 5, 2022 | **Source:** International Energy Agency (IEA) and AB

infrastructure would make chip production in its US factories 50% more costly than in Taiwan.[42] It's a good example of deglobalization leading to a strategically higher level of inflation, beyond the current one- to two-year squeeze.

Energy security is another important element in the supply chain. Jason Bordoff and Meghan O'Sullivan claim in a recent issue of *Foreign Affairs*[43] that analysts don't sufficiently account for a key impact—not a directional view on energy but the likelihood that governments will play a much larger role in the dynamics of energy markets than they have in recent decades. The invasion of Ukraine seems likely to accelerate the energy transition. For investors, this likely means that the corporate sector (and overall economy) will face higher near-term energy costs, but a potential longer-term deflationary effect. For strategic investors, this prompts questions of what "energy security" will mean during the transition.

Achieving the Paris Agreement scenario of stabilizing the global temperature rise at well below 2°C by 2040 would boost demand for select minerals.[44] For instance, demand for lithium would increase by over 40 times, while demand for graphite, cobalt and nickel would grow by around 20 times—or more—from their 2020 levels (*Display 35*).

DISPLAY 36: KEY MINERALS USED IN SELECT CLEAN-ENERGY TECHNOLOGIES



Historical analysis and current forecasts do not guarantee future results.

As of August 5, 2022 | **Source:** IEA and AB

42 Morris Chang, Jude Blanchette and Ryan Hass, "Can Semiconductor Manufacturing Return to the US?" (podcast), Brookings (April 14, 2022), https://www.brookings.edu/podcast-episode/can-semiconductor-manufacturing-return-to-the-us/.
43 Jason Bordoff and Meghan L. O'Sullivan, "The New Energy Order: How Governments Will Transform Energy Markets," *Foreign Affairs* (July/August 2022).
44 *The Role of Critical Minerals in Clean Energy Transitions*, International Energy Agency, March 2022.

The drive for clean energy means greater demand for essential minerals, such as copper and zinc in wind power (*Display 36, page 51*). Demand for electric vehicles and battery storage is the key driver in mineral-demand growth; electricity-network upgrades and buildouts are another pillar in the energy transition—and the main reason for an expected tripling of copper demand.

The supply of key minerals is highly concentrated in certain countries and geographic areas (*Display 37*); the top three producers combined constitute around 50% or more of all production (more than 80% in the case of lithium). As European countries strive to achieve independence from Russian oil and gas, it's notable that Russia has no meaningful role in the supply chain of minerals required for the green transition, except for nickel and cobalt. China, however, is a major supplier of crucial commodities such as graphite, rare earths and lithium, and has strong interests in other commodity suppliers, such as Chile and the Democratic Republic of the Congo, through its Belt and Road Initiative.

Could This Whole Narrative of Deglobalization Be Wrong?

Is it possible that this deglobalization narrative merely reflects recency bias from the war in Ukraine? As we've discussed, we think the core forces of domestic opposition to globalization in developed markets and the shift in US-China relations are hard to reverse in the near term.

However, there are mitigating factors to deglobalization. One is technology—both the network and scalable advantages of intangible assets and its role in making the world less resource intensive than it's been for the past 100 years of growth. Another factor is the huge economic incentives to retain the current global system, both for corporations eyeing their supply chains and for the countries that have been relative winners under the status quo.

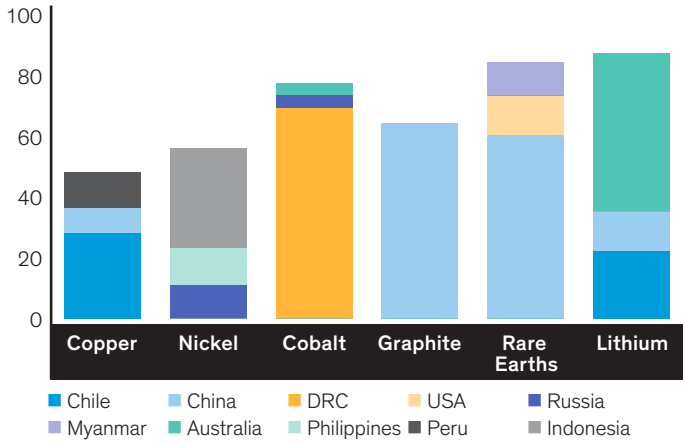
But the biggest counterforce to deglobalization is probably climate change. If there's one thing arguing for the role of the commons or for collective action, it's almost by definition the global climate challenge. We think climate change may limit how far governments can change to a deglobalized course, but it's not enough to counter the intra- and inter-country deglobalizing forces.

The Accelerating Force of Labor Power and the Implications for Inflation

Deglobalization isn't happening in a vacuum. One can opine on its consequences, but its impact on the variables investors worry about depends on whether they're aligned or not with other contemporaneous trends. The most significant alignment is with demographics and the "social" part of ESG; when seen alongside deglobalization these three forces together imply a higher path for wages and inflation. Deglobalization removes a key disinflation driver of the past four decades—the ability to offshore labor and keep wages low.

DISPLAY 37: PRODUCTION OF KEY MINERALS IS HIGHLY CONCENTRATED

Percent Share of Top Three Producers in Select Mineral Extraction



Historical analysis and current forecasts do not guarantee future results.

DRC: Democratic Republic of the Congo

As of August 5, 2022 | **Source:** IEA and AB

Globalization added more than 1 billion working-age people to the world's labor force between 1980 and 2000. Even ignoring the splintering of the global workforce behind trade walls, the combination of an aging population and lower birth rate are set to remove 21% of the extra workers that became available to the global economy through the opening of China and former Soviet countries (*Display 38, page 53*). Other countries, such as India, can temporarily mitigate this loss, but the fact remains that there will be fewer workers in the future.

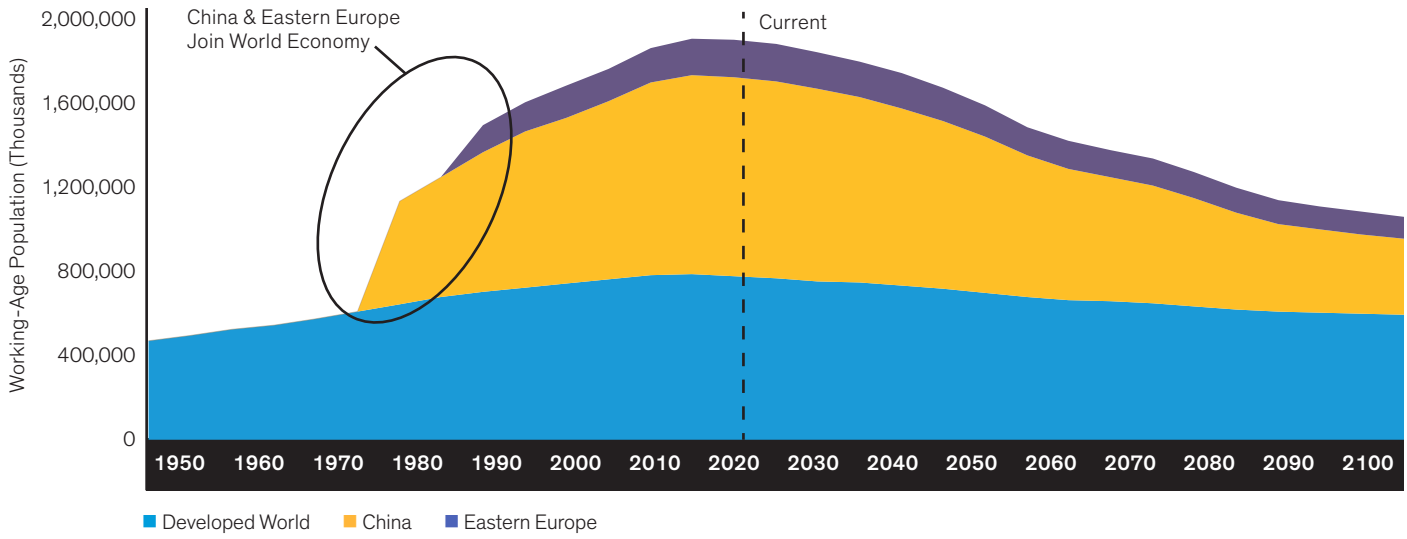
There are signs that this trend could be playing out even faster than previously thought. The UN population-prospects report from 2019 put the Chinese population peak at 1.46 billion in 2031–2032. However, a recent report from the Shanghai Academy of Social Sciences suggests that China's population could fall this year—a decade sooner than originally expected—with a projected average decline of 1.1% in the country's population after 2021.[45]

Charles Goodhart and Manoj Pradhan make the case in *The Great Demographic Reversal*[46] that the pool of extra labor since the 1980s has undermined workers' bargaining power—and that this will change. The narrow economic answer would be to allow mass immigration, but that's not a message many politicians would want to hear.

45 Xiujian Peng, "Could China's Population Start Falling?" BBC.com (June 5, 2022).

46 Charles Goodhart and Manoj Pradhan, *The Great Demographic Reversal: Ageing Societies, Waning Inequality and an Inflation Revival* (Palgrave Macmillan, 2020). See our book review in "Six Books to Read for the Post Pandemic World" in *Inflation and the Shape of Portfolios*, Bernstein Research, May 2021.

DISPLAY 38: DEMOGRAPHICS WILL REMOVE 21% OF THE EXTRA WORKERS ADDED BY GLOBALIZATION



Historical analysis and current forecasts do not guarantee future results.

Size of population aged 20–65 in regions shown.

As of March 12, 2021 | **Source:** United Nations Population Division and AB

Investors at times dismiss demographics, since its effects can take a long time to manifest, but demographics has the advantage of being very predictable. The demand for social fairness in alignment with the "S" part of ESG is happening even faster, implying a path to greater unionization, among other measures that will likely increase labor's bargaining power (*Display 39, page 54*).

If higher wages become entrenched, they'll have big implications for the structural level of inflation. As a case in point, outsourcing manufacturing production to China and other emerging markets helped keep the costs of durable goods low, below the overall Consumer Price Index (CPI), an important contributor to keeping overall inflation subdued (*Display 40, page 54*). When we're forecasting the impact of deglobalization on investors, its alignment with other forces that imply a higher path for wages results in a conclusion of higher, though unanchored, inflation.

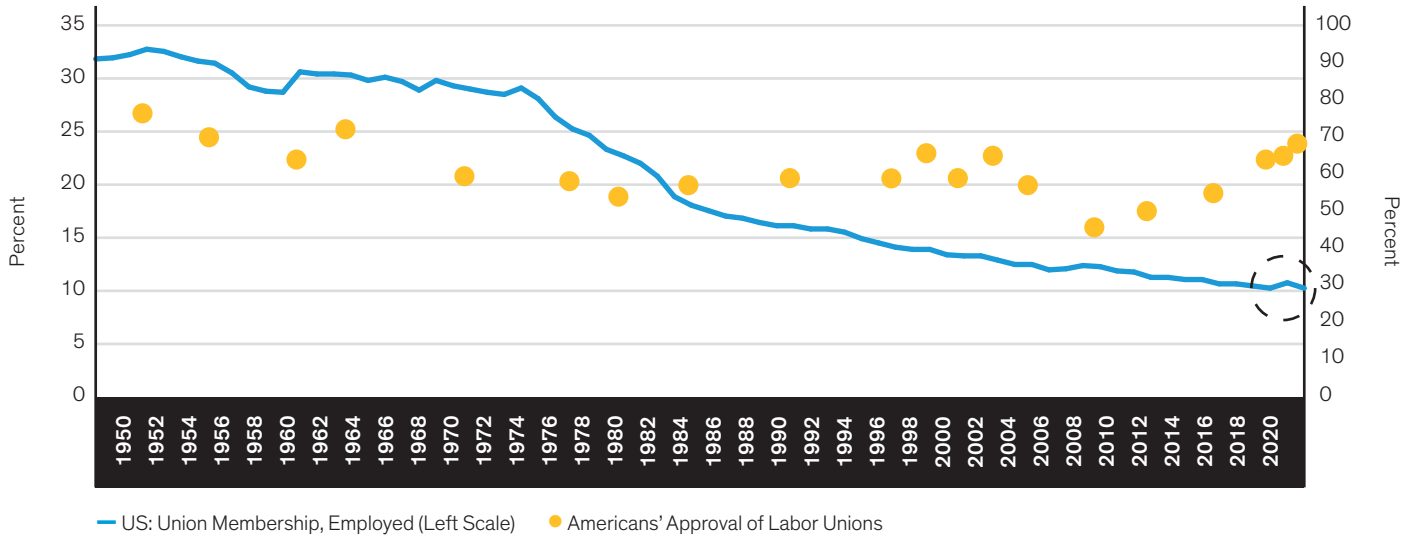
II: What Deglobalization Means for Investing

Deglobalization and the Meaning of Risk

Investors must bear in mind that recent decades have been unusually benign in the longer run context—and unlikely to be repeated. This isn't a bearish statement and categorically doesn't imply a negative return on financial assets, but it does imply that investors must be willing to accept a higher risk level and ready to consider different types of risk. At one level, higher risk means expecting more volatility in portfolio returns, but we think there are other dimensions to the definition of risk.

Perhaps most germane to the topic of deglobalization is that we see greater acceptance ahead that there's no such thing as a risk-free rate. Historically, risk-free rates were contingent on certain geopolitical environments that deglobalization challenges (*Display 41, page 55*). Also, the debt/GDP ratio today has risen back to its 1945 level across OECD nations, implying more risk that governments will wish to monetize their debt, at least implicitly. If there's no such thing

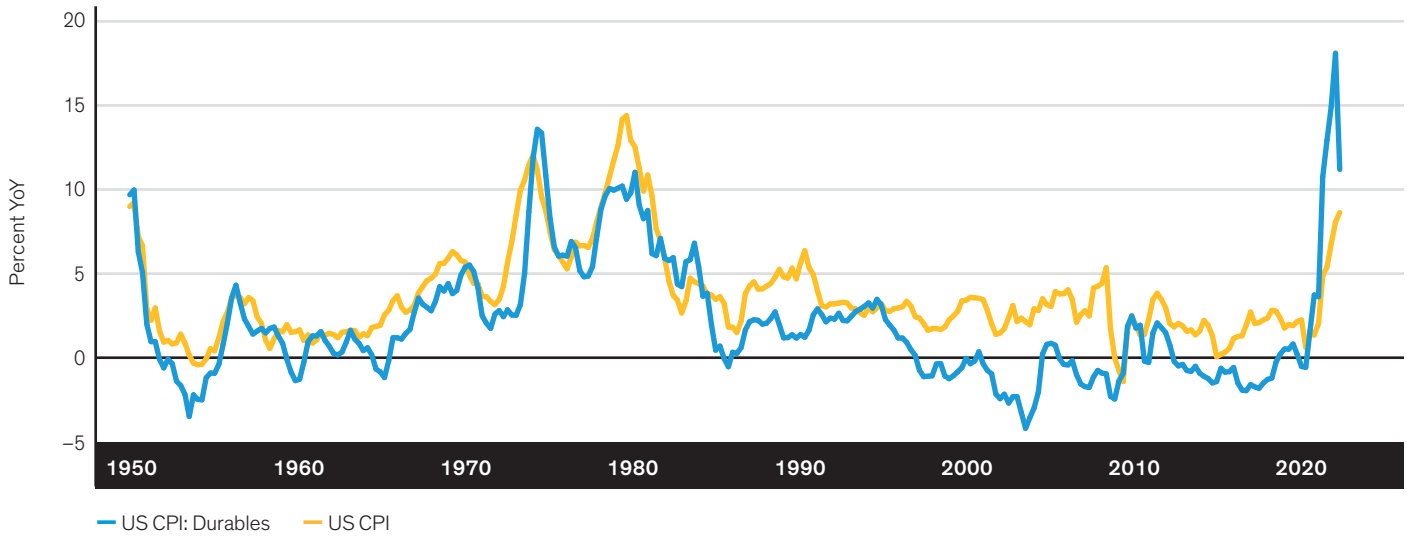
DISPLAY 39: THE RETURN OF UNIONS AND LABOR BARGAINING POWER



Historical analysis and current forecasts do not guarantee future results.

Through December 31, 2021 | **Source:** Gallup, Thomson Reuters Datastream and AB

DISPLAY 40: US DURABLES CPI LAGGED OVERALL CPI FROM THE LATE 1980S TO 2020

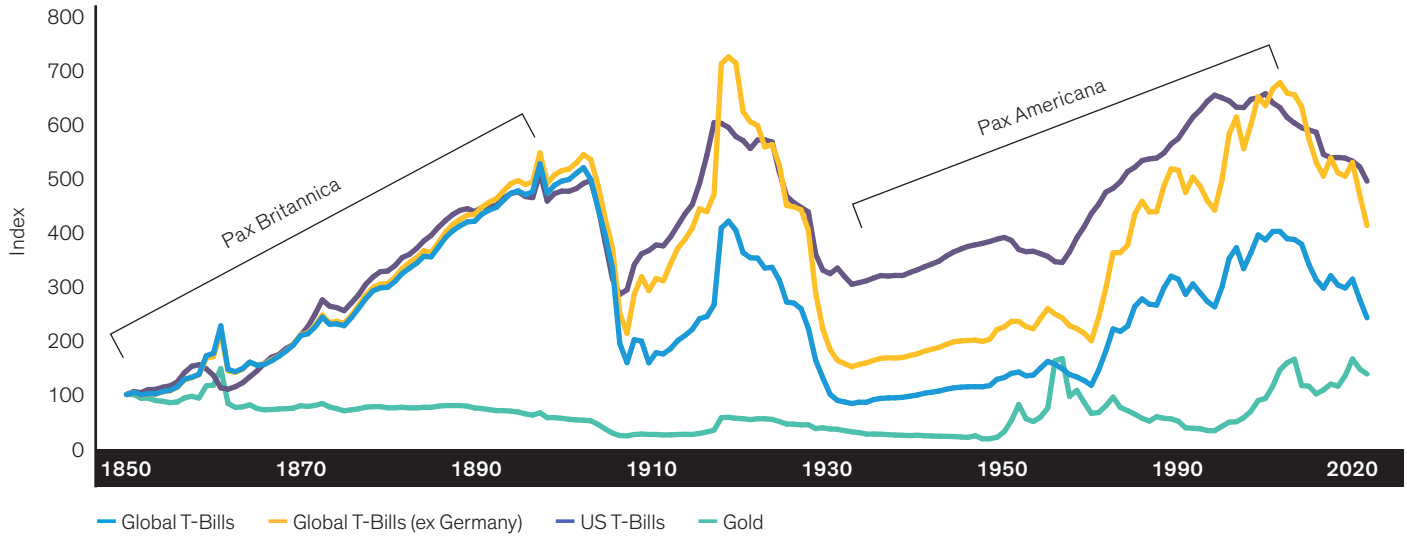


Historical analysis and current forecasts do not guarantee future results.

Through June 30, 2022 | **Source:** Thomson Reuters Datastream and AB

DISPLAY 41: WHAT IS RISK-FREE?

Real Returns on Global Treasury Bills and Gold Since 1850



Historical analysis and current forecasts do not guarantee future results.

Expressed in real terms using US CPI as the deflator. Global T-bills comprise an equal-weighted average of the US, UK, Holland, France, Prussia/Germany and Australia, with Italy, Japan, Switzerland and Belgium joining as the data become available or as the countries were created.

December 31, 1851, through June 30, 2022 | **Source:** Global Financial Data and AB

as a risk-free rate, the notion of absolute value is in question, and we're left with a nested set of risk premia.

We've made the case before that the pandemic has ushered in an era of greater government involvement in the world economy. The abrupt shift in energy and food prices, not to mention the availability of the natural resources needed to carry out the green-energy transition, implies that the national-security element of supply chains will be made more explicit.[47]

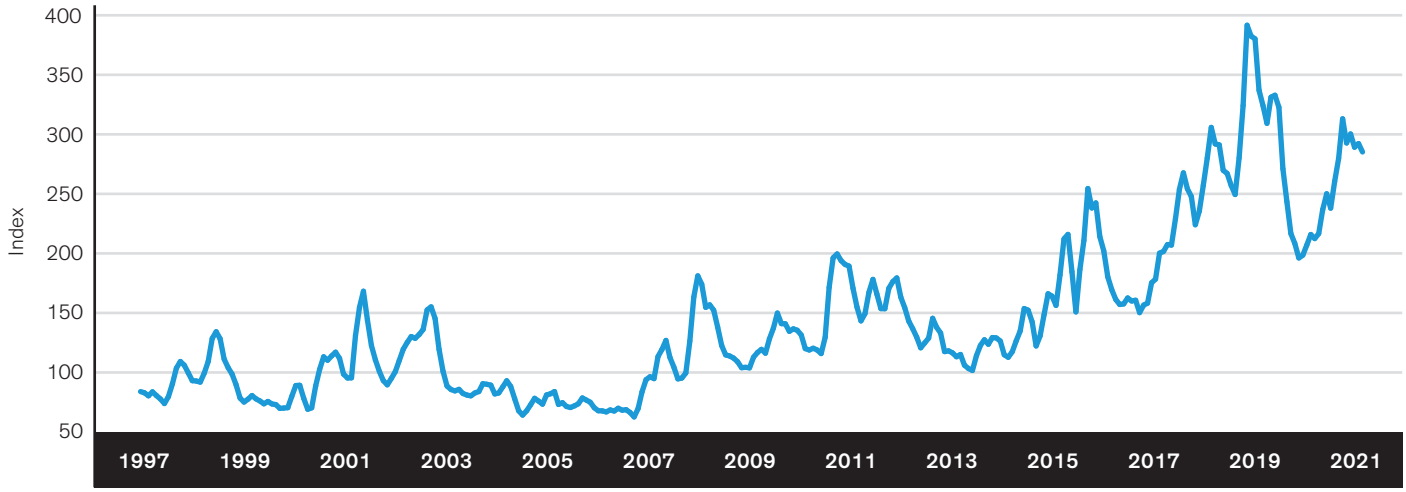
We also expect policy risk to be amplified in the years ahead, as the chore of cushioning economies in tough times shifts from monetary policy, run by technocrats, to fiscal policy, run by politicians. This risk factor might not show up in daily market volatility, but it does imply the risk of more frequent regime changes. One way to capture the effect of policy risk is through the Economic Policy Uncertainty Index,[48] which has been rising to a structurally higher level since 2014 (*Display 42, page 56*). We expect it to remain above its historical average over the strategic horizon, and it could move higher.

Macroeconomic uncertainty is also rising, as shown by a simple measure of the volatility of both inflation and GDP (*Display 43, page 56*). Greater government involvement implies that these macro measures of volatility will likely remain above their pre-pandemic levels.

47 The case that analysts are not fully factoring in the role that governments are going to play in energy markets is set out in Bordoff and Sullivan, "The New Energy Order."
48 For more information, see www.policyuncertainty.com.

DISPLAY 42: UNCERTAINTY OVER POLICY REGIMES HAS BEEN GROWING

Economic Policy Uncertainty Index (Three-Month Moving Average)

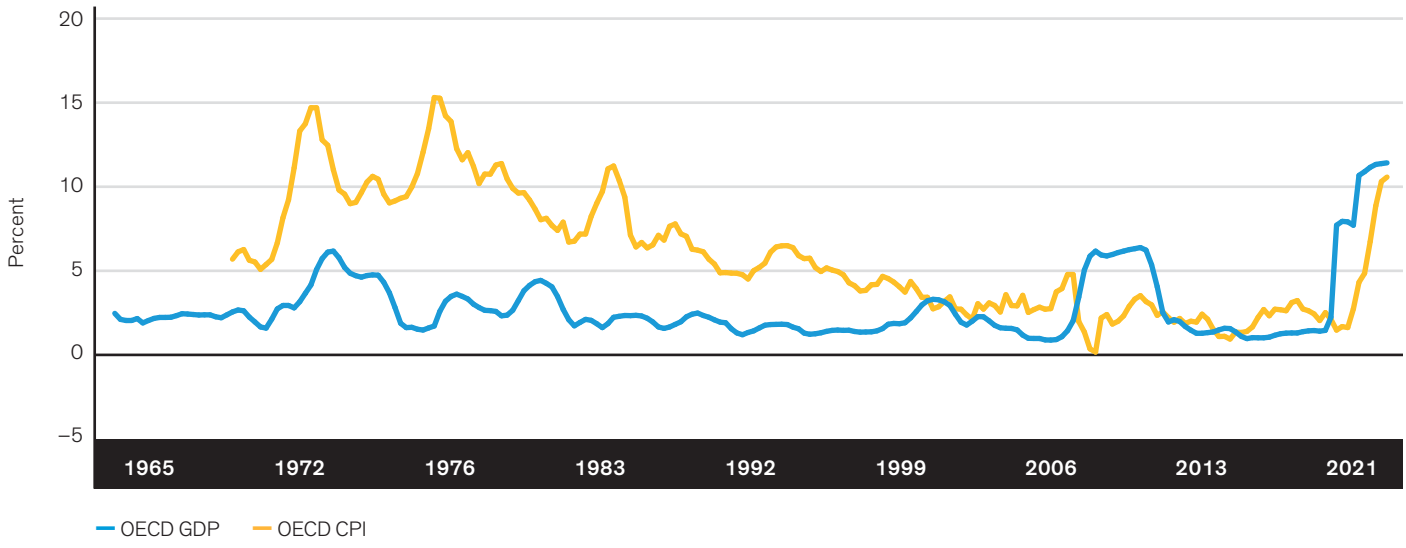


Historical analysis and current forecasts do not guarantee future results.

Through July 15, 2022 | **Source:** Economic Policy Uncertainty, Thomson Reuters Datastream and AB

DISPLAY 43: MACROECONOMIC UNCERTAINTY IS ON THE RISE

OECD CPI and GDP, Three-Year Rolling Standard Deviation

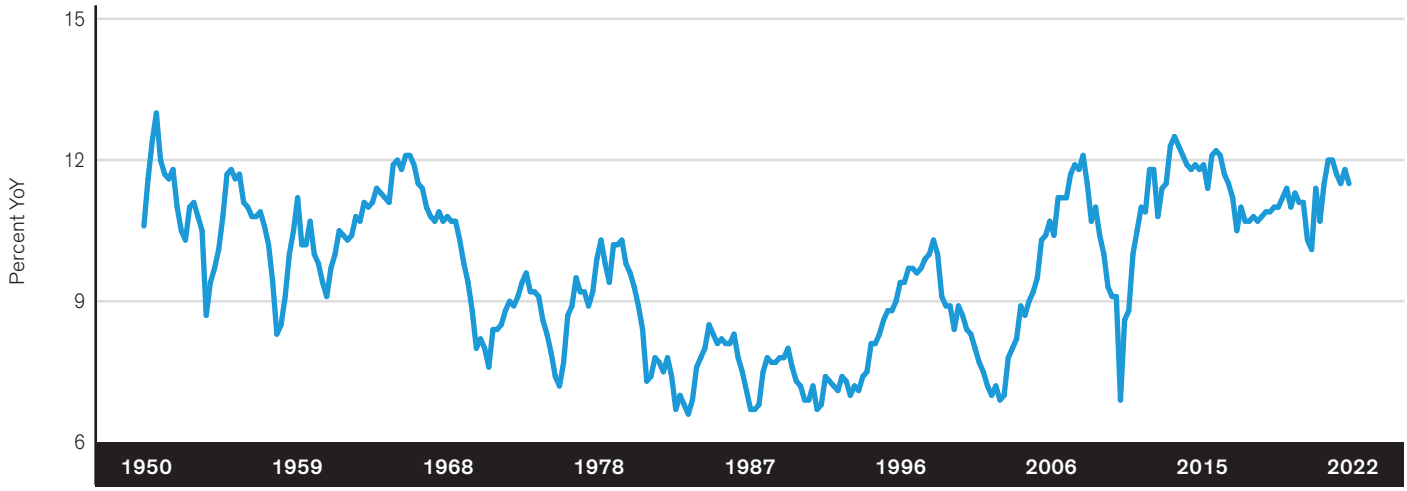


Historical analysis and current forecasts do not guarantee future results.

Through June 30, 2022 | **Source:** OECD, Thomson Reuters Datastream and AB

DISPLAY 44: NEAR-RECORD US CORPORATE PROFIT SHARE WILL LIKELY DECLINE

US Profit Share of GDP



Historical analysis and current forecasts do not guarantee future results.

Through September 30, 2022 | **Source:** FRED, Thomson Reuters Datastream and AB

Deglobalization Will Likely Reduce Corporate Profitability

In our view, deglobalization will depress corporate profitability. In the near term, profitability will likely be dictated by the procyclical nature of profit margins, while also benefiting from investments in automation during the pandemic. However, over horizons longer than three years, we think margins will fall. As with inflation, profitability is an area where the deglobalization process aligns with other macro factors pointing in the same direction. In the US, the corporate profit share of GDP is close to an all-time high at 12.2%, and has been elevated for a decade compared with historical norms (*Display 44*).

We expect several structural issues to bring this ratio lower in the coming years, such as:

- Rising effective corporate tax rates
- Increased inventory levels
- Greater bargaining power for labor versus capital
- A fading of the flattering effect of mega-cap efficiency on cap-weighted corporate profitability

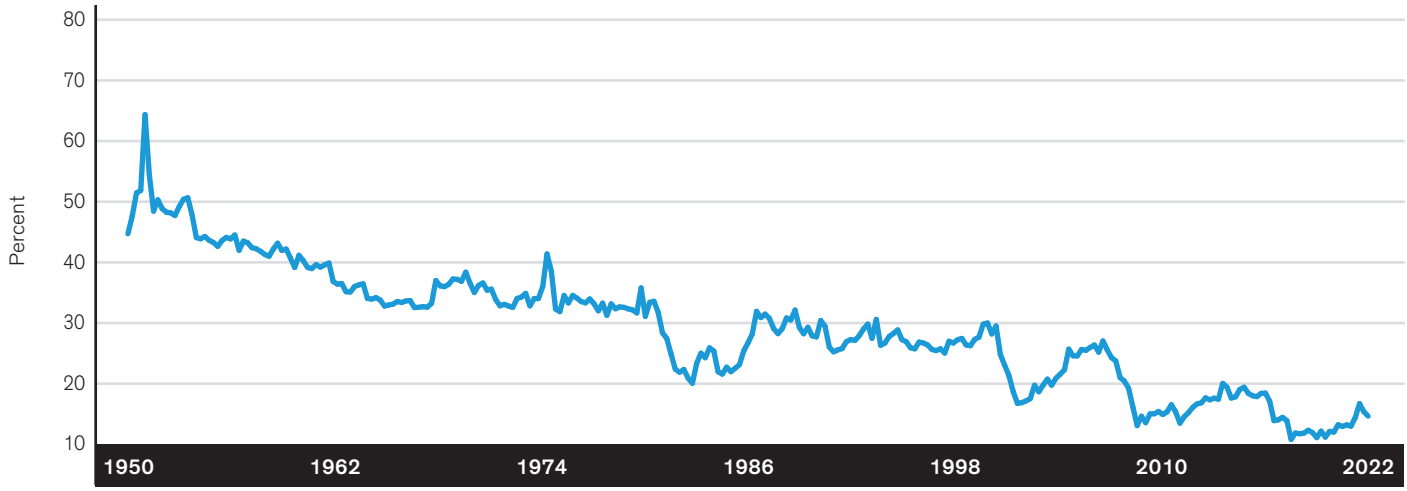
The effective corporate tax rate in the US has been on a downward trajectory since the 1950s (*Display 45, page 58*). This decline isn't solely due to globalization, but the ability to engage in what could be described as tax arbitrage has been a huge boost to corporate profitability. A shift to a less globalized world and multilateral discussions on minimum corporate tax rates in response to questions of social fairness imply rising effective tax rates.

Inventory levels are poised to move permanently higher, following a downward trend from 1992 to 2015 as just-in-time supply chains were built out (*Display 46, page 58*). The coronavirus pandemic caused huge fluctuations in inventory levels, which are still seeking an equilibrium as a result of ongoing supply chain issues, particularly with respect to China.

Deglobalization implies that "just in time" supply chains, with their light inventory levels, will be replaced with higher "just in case" inventory levels. The exact consequences will vary by sector, and automation can help to an extent, but we generally see inventory levels as likely to be closer to what they were 20 years ago.

DISPLAY 45: CORPORATE TAX RATES, LONG DECLINING, WILL LIKELY RISE

US Effective Corporate Tax Rate

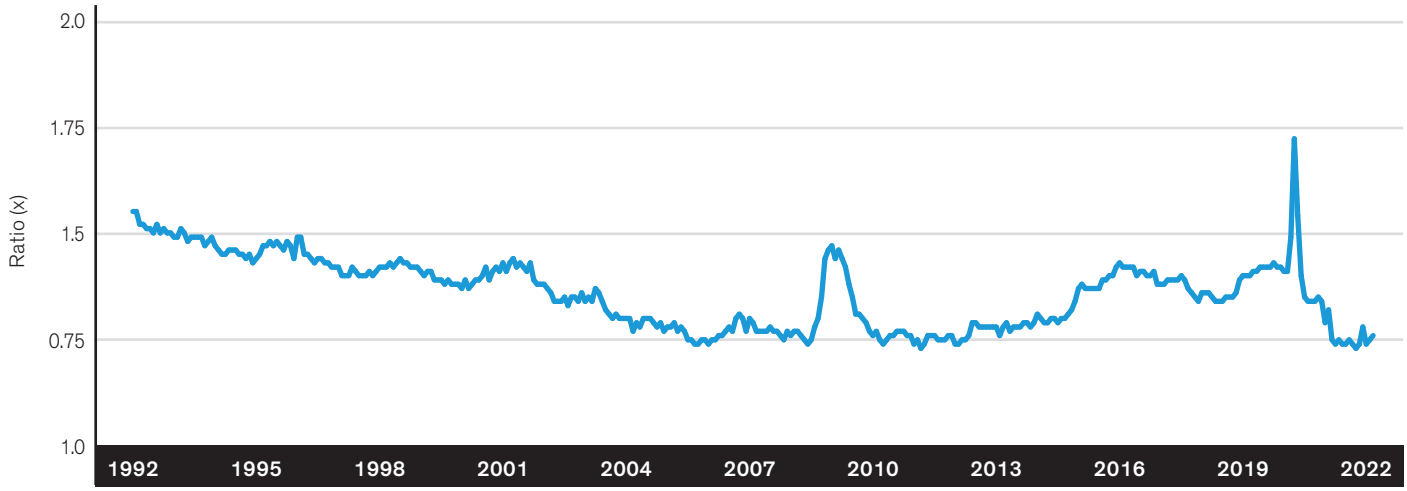


Historical analysis and current forecasts do not guarantee future results.

Through September 30, 2022 | **Source:** Thomson Reuters Datastream and AB

DISPLAY 46: INVENTORY LEVELS FELL WITH GLOBALIZATION AND ARE SET TO RISE AGAIN

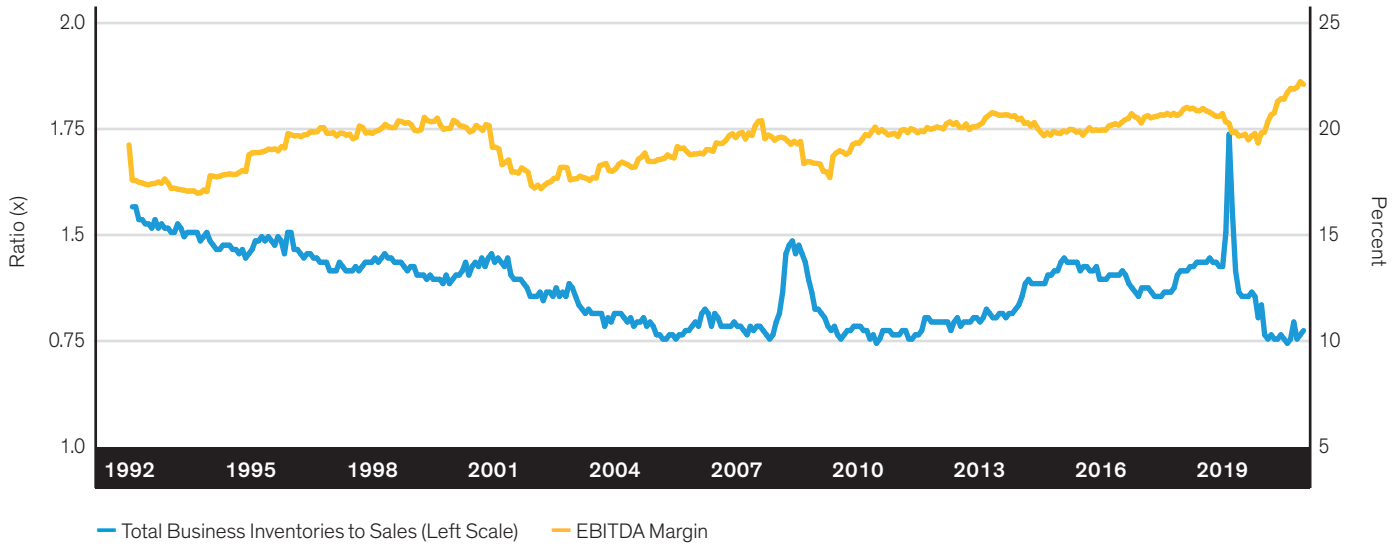
Total Business Inventories to Sales



Historical analysis and current forecasts do not guarantee future results.

Through March 21, 2022 | **Source:** FRED and AB

DISPLAY 47: THE INVERSE RELATIONSHIP BETWEEN US MARGINS AND INVENTORIES



Historical analysis and current forecasts do not guarantee future results.

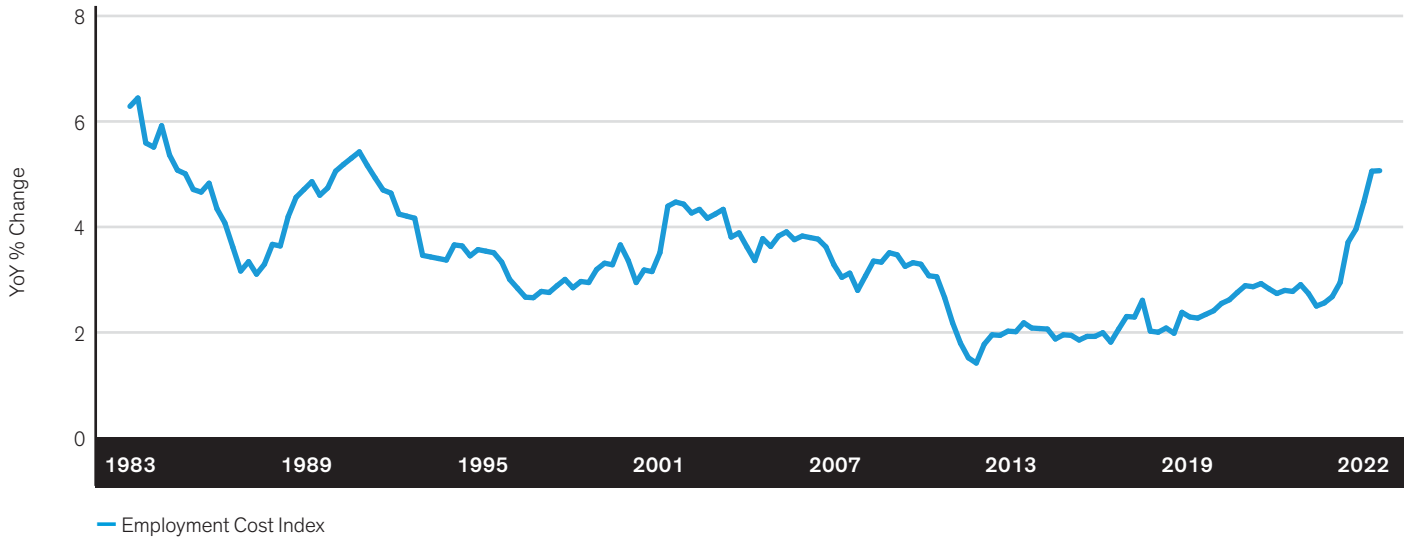
Through March 31, 2022 | **Source:** Thomson Reuters Datastream and AB

There's a negative relationship between inventory levels and corporate profit margins (*Display 47*). A simple regression of corporate margins against the inventory-to-sales ratio shows a negative, and highly statistically significant, beta coefficient with a t-statistic of –4.5. Based on this result, if the inventory-to-sales ratio returns to its historical average of 1.4, that shift alone would be enough to bring the EBITDA margin down to its historical average of 19%.

We've laid out multiple reasons to expect labor to achieve greater wage-bargaining power. We're seeing this manifested in the very short term in response to a rapid decline in unemployment, but we think it will be a persistent feature of the economy (*Display 48, page 60*).

Finally, we note that margins at the median US firm have been elevated for the reasons cited above—over and above that, the cap-weighted margin is even higher (*Display 49, page 60*).

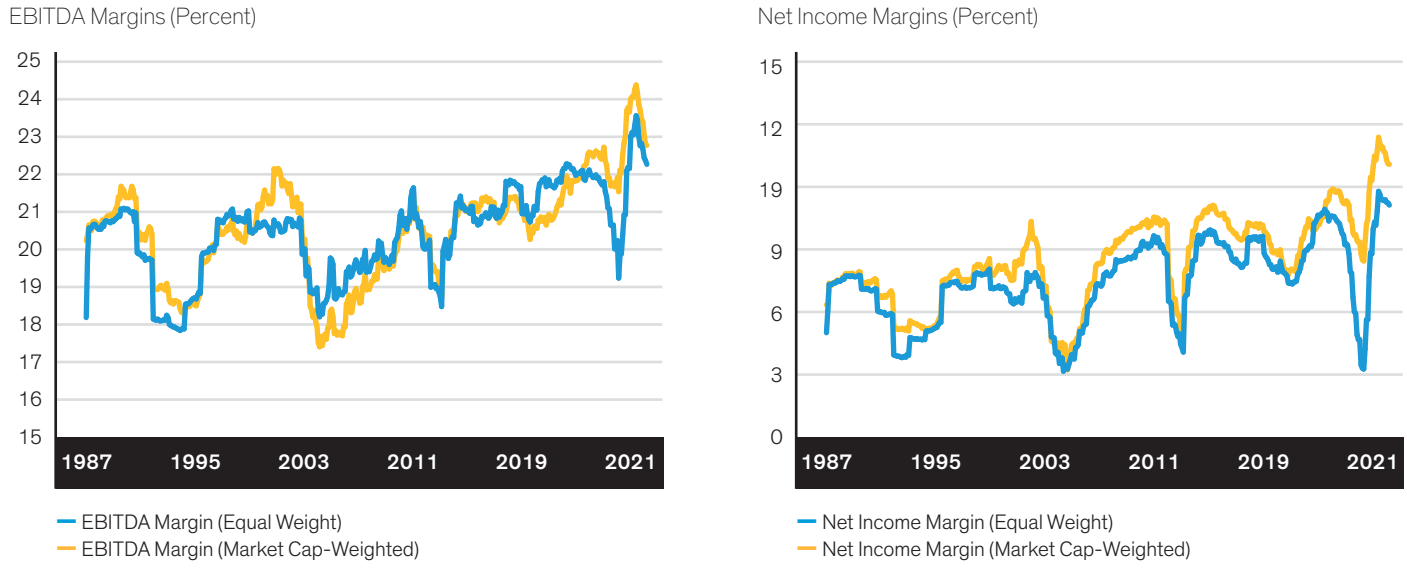
DISPLAY 48: US LABOR COSTS HAVE RISEN SHARPLY SINCE THE START OF 2021



Historical analysis and current forecasts do not guarantee future results.

Through September 30, 2022 | **Source:** Thomson Reuters Datastream, US Bureau of Labor Statistics and AB

DISPLAY 49: MARGINS FOR NORTH AMERICAN COMPANIES HAVE BEEN ELEVATED



Historical analysis and current forecasts do not guarantee future results.

Time series are constructed from equal-weighted and market-cap-weighted sector margins.

Through October 31, 2022 | **Source:** Thomson Reuters Datastream and AB

A Drag on Equity Market Returns

Over a strategic time horizon, real equity return drivers can be expressed as the following equation:

Real equity return = dividend yield + net buyback yield + real growth per capita + population growth + change in profit share of GDP + multiple expansion / contraction

The current US dividend yield is 1.6%, and the buyback yield over the past 10 years averaged 1.7%. Long-term real GDP growth per capita is 1.5% annualized, and the long-run US population-growth estimate from the UN is 0.5% annualized. However, we think the share of this growth that can accrue to the owners of equity capital will decline.

To estimate the long-term impact on corporate profitability, we can construct a simple profit-and-loss account for nonfinancial corporations using the Z.1 Financial Accounts of the United States. We assume that revenue growth is in line with the average of the past five years, and that the employee-compensation share of sales will return to the pre-2000 average of 63.5% from its current 59.5%. We also assume a higher corporate tax rate of 20% versus 17.7% now. To adjust for the impact from higher inventory levels, we assume that the inventory share of sales will return to its pre-2000 average.

Based on this exercise, the after-tax profit margin for nonfinancial corporations would decline from its current 12% to around 10%, which we use as a proxy for the decline in profit share of GDP. This result is broadly in line with the average profit share of GDP from 1950 to 2010, before the very elevated levels of recent years. We acknowledge that the composition of the cap-weighted market has shifted toward technology, so the role of inventories and median-worker compensation may arguably matter less. But tech has seen an outsize benefit from the reduction in the effective tax rate, so we believe it's right to apply this profit-share adjustment to the whole corporate sector.

We'll leave the question of the correct multiple aside for the moment, and as a first step will assume it stays constant. In that case, the above equation simplifies to:

Real equity return = dividend yield + buyback yield + real growth per capita + population growth + change in profit share of GDP

Real equity return = 1.6% + 1.7% + 1.5% + 0.5% – 0.2% = 5.1%

Here, we assume a decline in the profit share of GDP of 2 percentage points spread over the next 10 years. This is a real-return forecast, so it's still a high nominal-return forecast. However, we then need to layer in the impact of a change in multiple. For forecasting 10 years ahead, we find the Shiller PE Ratio to be one of the most useful metrics.[49] While the current 29× Shiller PE multiple is elevated versus history, we don't expect it to revert all the way down to its historical average, given our outlook that real rates will remain close to 0% in the coming years.

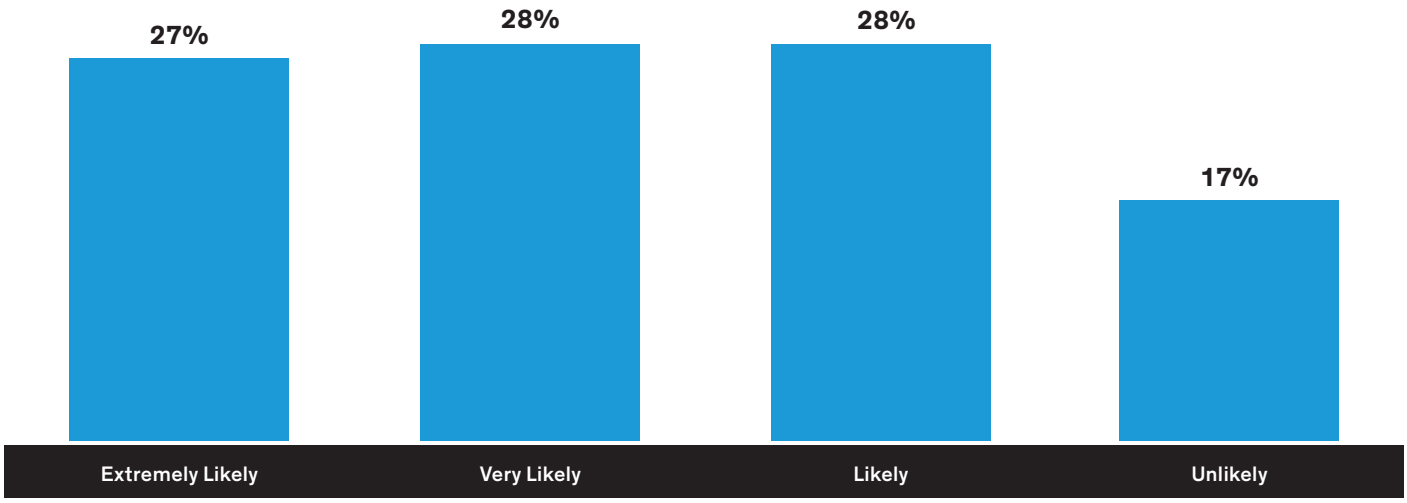
DISPLAY 50: SHILLER EQUITY RISK PREMIUM

Historical analysis and current forecasts do not guarantee future results.

Through July 31, 2022 | **Source:** Robert Shiller's database and AB

49 For more details, see Alla Harmsworth, *An Equity Outlook: Are Stocks the Biggest Real Asset Out There?*, AllianceBernstein, March 1, 2022.

DISPLAY 51: HOW LIKELY ARE YOU TO REPLACE AN OVERSEAS SUPPLIER WITH A NORTHERN AMERICAN SUPPLIER IN THE NEXT 12 MONTHS?



Historical analysis and current forecasts do not guarantee future results.

As of June 3, 2022 | **Source:** Bernstein Research; 2021 Manufacturing CFO Outlook Survey, BDO USA; *State of North American Manufacturing: 2021 Annual Report*, Thomas Publishing Company; and AB

As *Display 50, page 61,* shows, the ex ante Shiller Equity Risk Premium (ERP) is currently 3.1%, compared with its 4.1% historical average since the 1950s. If we assume that real yields stay at 0% and the ERP returns to 4.1%, this implies a 24× Shiller PE market multiple. A multiple compression from the current level to 24× over 10 years would imply an annual 1.8 percentage point drag on equity returns.

Adding the effect of multiple compression to the earlier equation, the real return falls to 3.3%:

Real equity return = 1.6% + 1.7% + 1.5% + 0.5% – 0.2% – 1.8% = 3.3%

This might seem low, but it's not bearish in real terms, and it's still more than a 6% annualized nominal return, assuming our inflation target of 3% 10 years forward. This is lower than our previous long-run equity forecast, because we're incorporating a higher equity risk premium as a function of deglobalization. Because this is a discussion about equilibrium levels, not sudden movements in valuations, the market could arrive at this lower multiple over a period of years.

Reshoring and Automation Are Likely to Be Lasting Themes

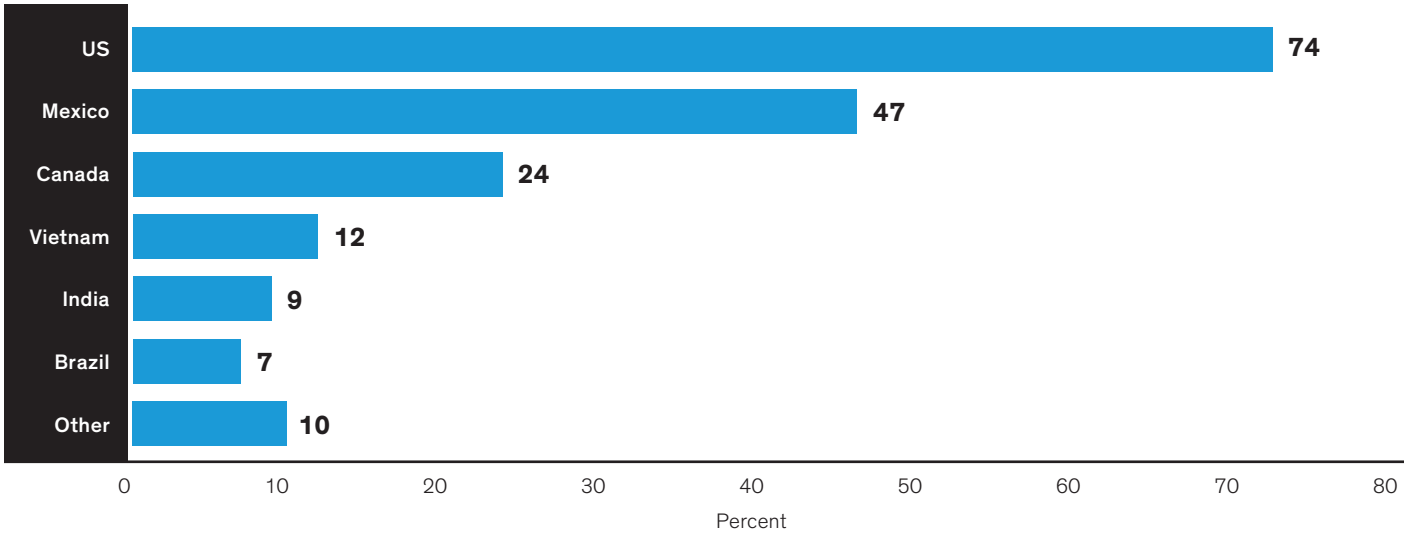
In our view, the related themes of automation and "reshoring," bringing supply chains back within national borders, will be central for many years to come. They'll have macro implications and could influence a strategic thematic tilt in portfolios.

Bernstein's US Multi Industry & Electrical Equipment research team noted a recent manufacturing CFO survey showing a high level of interest in reallocating production from overseas.[50] North America was the favored destination for future investment (*Display 51 and Display 52, page 63*).

Reshoring brings with it automation—a growing economic theme of the past decade that's been sharply accelerated by the pandemic. As we show in *Display 53, page 64,* Japan's robot export volume has risen sharply over the past two years, reflecting strong demand. That demand is corroborated by data from the Association for Advancing Automation (A3) that shows the highest-ever quarterly orders in the first quarter of 2022.[51]

50 Please see Brendan Luecke and Amir Farahani, "Rockwell & Reshoring. We Think This Time Is Different. What Does the Data Tell Us?," Bernstein Research, April 5, 2022.
51 For more details, please see "A3: Robot Sales in North America Continue Record Increase into 2022," *Modern Materials Handling* (May 31, 2022).

DISPLAY 52: WHAT COUNTRIES ARE YOU MOVING TO OR CONSIDERING MOVING TO?



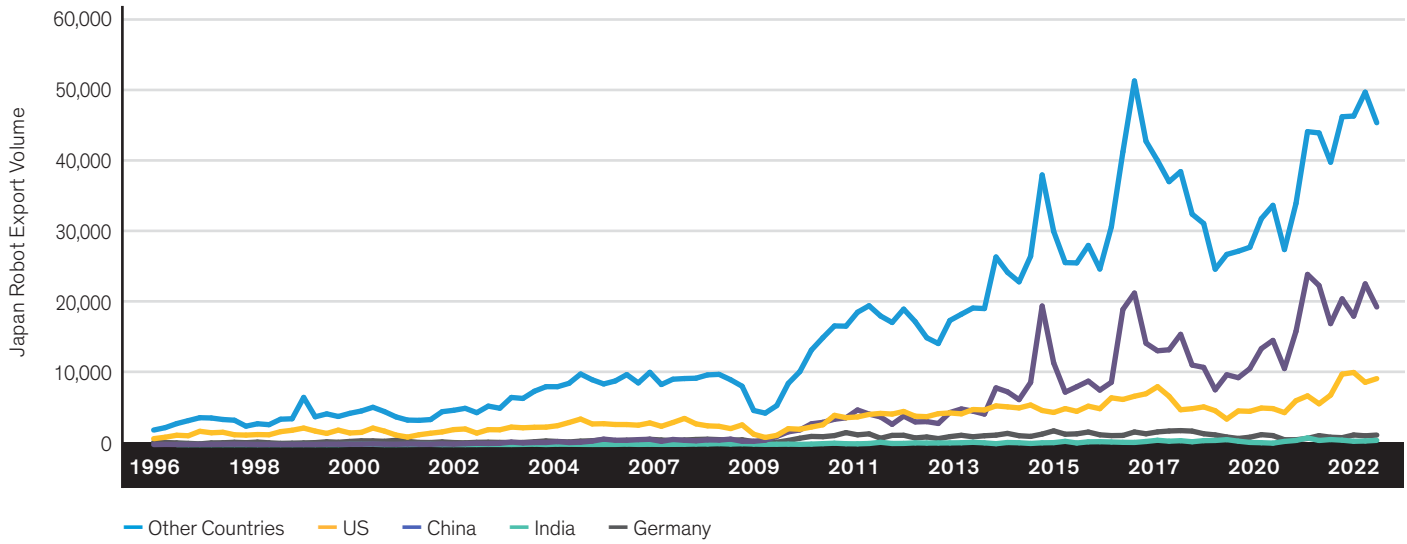
Historical analysis and current forecasts do not guarantee future results.

As of June 3, 2022 | **Source:** Bernstein Research; 2021 Manufacturing CFO Outlook Survey, BDO USA; State of North American Manufacturing: 2021 Annual Report, Thomas Publishing Company; and AB

The auto industry has historically been the biggest source of demand for robots, but its share has been overtaken in recent quarters by nonautomotive industries such as food and consumer goods, construction, and agriculture. This leadership change shows that demand for automation is increasingly spreading across diverse sectors of the economy.

Deglobalization and onshoring (or even near-shoring) of production should provide strong structural tailwinds for the continued automation wave. In our view, automation will be a key disinflationary economic force in the coming years. Increased competition from robots will counterbalance some of workers' bargaining power, keeping wage growth in check. Companies may also see productivity gains and cost reductions from operating more efficiently with fewer workers, and from reduced transportation costs with production closer to end markets, offsetting some of the broader expected decline in margins.

DISPLAY 53: THE PANDEMIC BOOSTED ROBOT SALES; ONSHORING COULD CONTINUE THE TREND



Historical analysis and current forecasts do not guarantee future results.

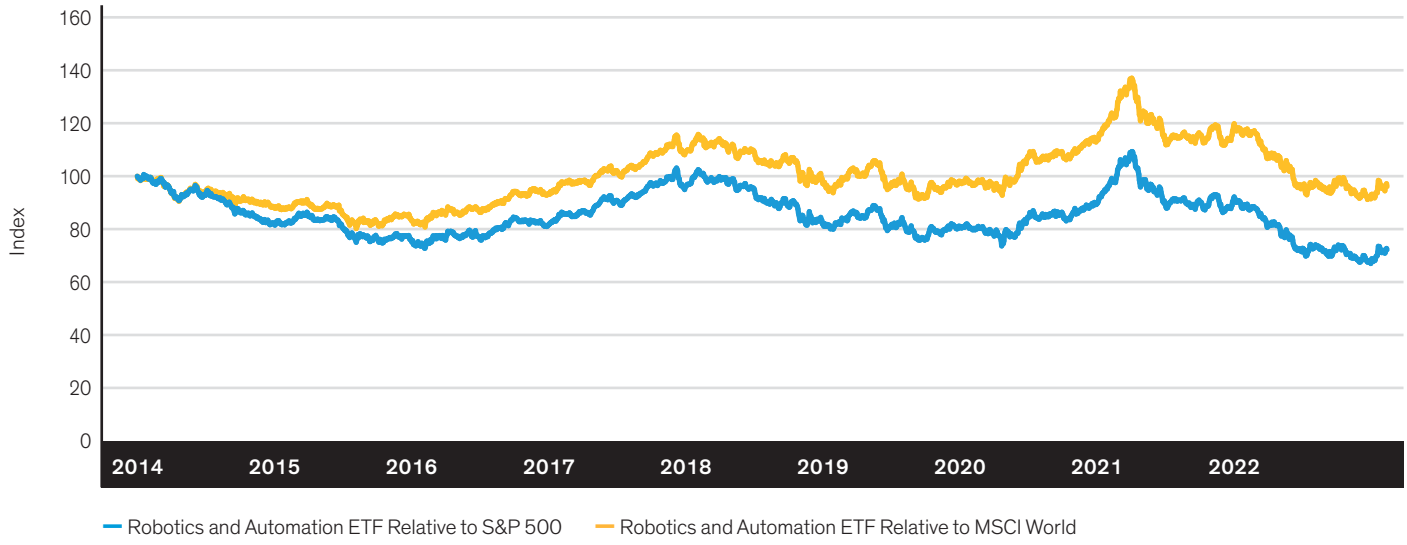
Through March 31, 2022 | **Source:** Bloomberg, Ministry of Finance and AB

But a structural tailwind isn't enough to create an investment theme; valuation is equally important. In *Display 54, page 65*, we show the relative performance of the ROBO Global Robotics and Automation ETF versus broader equity markets. These types of companies have suffered so far in 2022, along with the larger universe of long-duration growth companies, as real yields have risen. As a result, both absolute and relative valuations have become much less demanding than at their peak at the start of 2021 (*Display 55, page 65*).

From a factor perspective, we're happy to have an allocation to long duration within the equity market. Despite the recent rise in real yields, they're still low historically, and we expect them to stay that way. In that context, justifying the valuation of growth companies isn't the problem, per se. Instead, the key issue is identifying conviction that the level of growth can be maintained. In the case of automation and robotics companies, we think that's indeed the case.

DISPLAY 54: ROBOTICS AND AUTOMATION HAVE STRUGGLED SO FAR IN 2022

ROBO Global Robotics and Automation ETF Relative Performance

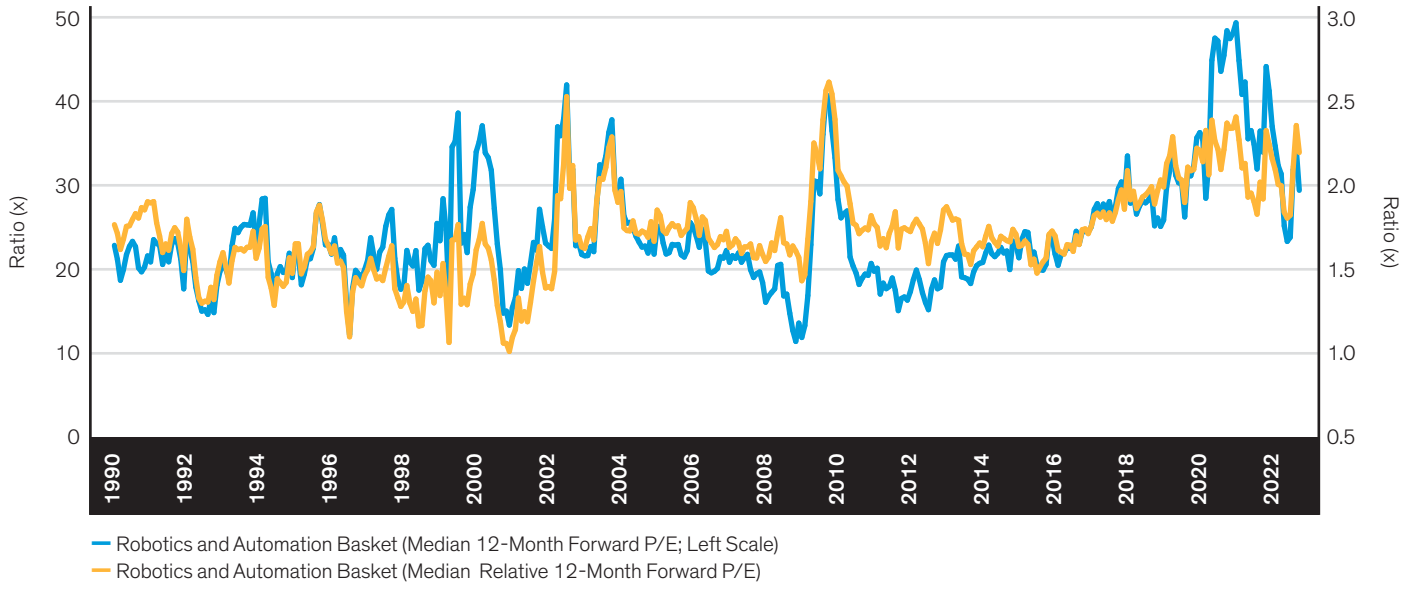


Historical analysis and current forecasts do not guarantee future results.

Through August 31, 2022 | **Source:** MSCI, S&P, Thomson Reuters Datastream and AB

DISPLAY 55: MUCH LESS DEMANDING ROBOTICS AND AUTOMATION VALUATIONS

Absolute and Relative Valuation of the Top 15 Stocks in the ROBO Global Robotics and Automation ETF

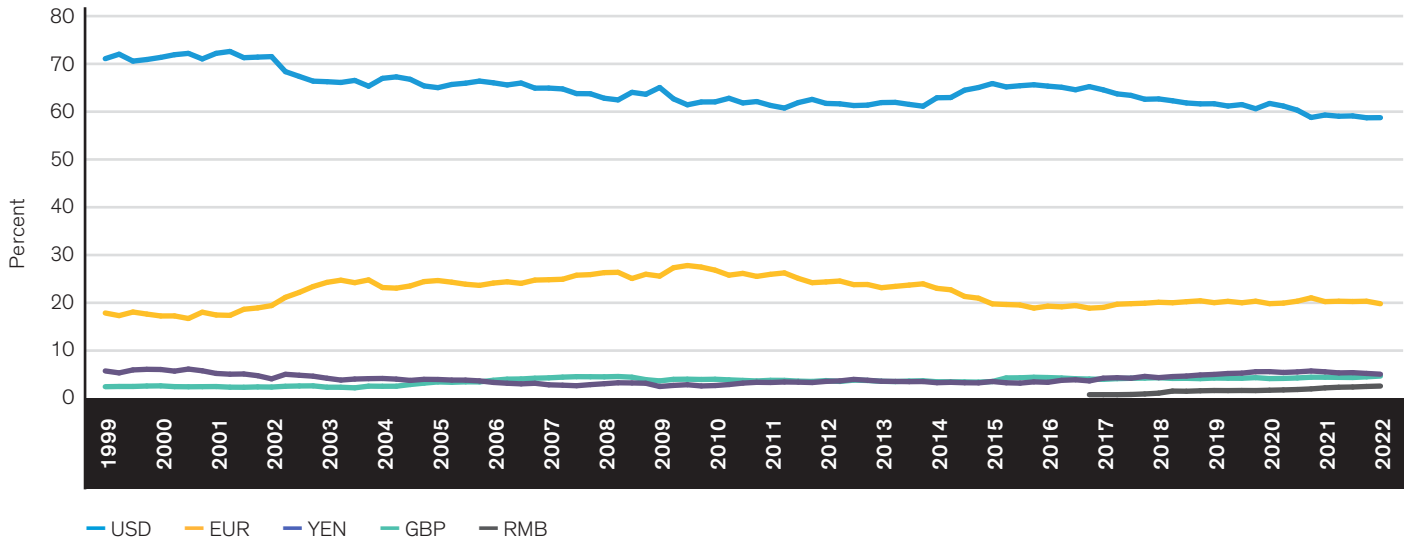


Historical analysis and current forecasts do not guarantee future results.

Through October 31, 2022 | **Source:** FactSet, Thomson Reuters Datastream and AB

DISPLAY 56: THE DOLLAR'S SHARE OF FX RESERVES HAS FALLEN

Currency Composition of Global FX Reserves



Historical analysis and current forecasts do not guarantee future results.

March 31, 1999, through March 31, 2022 | **Source:** International Monetary Fund (IMF) and AB

De-dollarization: A Likely Effort to Reduce Dollar Dependence

The prospect of de-dollarization is distinct from deglobalization but a related topic, so we think it's appropriate to include it in this chapter. A key reason why de-dollarization has become a more urgent topic is the recent weaponization of the dollar as an extension of foreign-policy goals. This is prominent in the case of Russia, but was also the case with policy directed at Iran before that.[52]

That's why countries will likely make a concerted attempt to reduce their dependence on the US dollar. This effort is currently centered on China and Russia but is likely to spread to other countries. For instance, at the BRICS Summit in June 2022, Russia announced plans to develop a new reserve currency based on a basket of currencies from the group's members—Brazil, Russia, India, China and South Africa.[53] Other recent initiatives aimed at undermining the US dollar include using Chinese yuan to pay for coal and oil imports by Chinese firms, and Russia's offer to accept payment in rupees and United Arab Emirates dirhams for oil to a number of Indian corporations.[54]

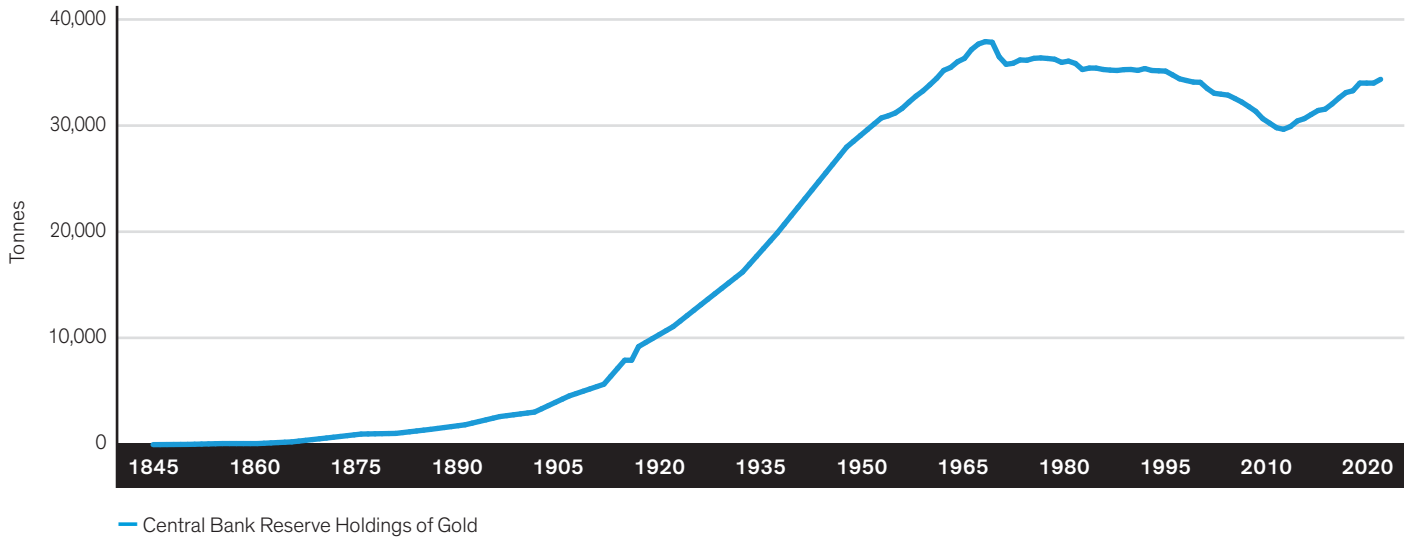
The US dollar's share of global foreign exchange reserves has fallen from above 70% in 2000 to below 60% today (*Display 56*). Despite a brief increase in holdings of euros early in that currency's history, there's been no sustained meaningful increase in holdings of the other major currencies.

Allocations to gold as part of central bank reserves, on the other hand, have started to rise over the past 10 years—the first meaningful increase since the 1950s (*Display 57, page 67*).

What are the implications for this renewed interest in gold? One is a background tailwind for gold, especially when coupled with a limited ability to increase the gold supply and an outlook that calls for higher inflation.[55] That said, shifts in real yields matter much more for the price of gold over short-term horizons.

52 Inigo Fraser Jenkins et al., *The Remonetization of Gold in the Context of US Dollar Weaponization…Updating Our Thesis on the Precious Metal,* Bernstein Research, October 23, 2019.
53 George Glover, "Russia and China Are Brewing Up a Challenge to Dollar Dominance by Creating a New Reserve Currency," BusinessInsider.com (June 24, 2022).
54 "Russia Coal and Oil Paid for in Yuan Starts Heading to China," *Bloomberg News* (April 7, 2022).
55 Fraser Jenkins et al., "The Remonetization of Gold."

DISPLAY 57: CENTRAL BANKS' GOLD HAS BEEN RISING FOR THE FIRST TIME SINCE WWII



Historical analysis and current forecasts do not guarantee future results.

December 31, 1845, through August 31, 2022 | **Source:** Bernstein Research, World Gold Council and AB

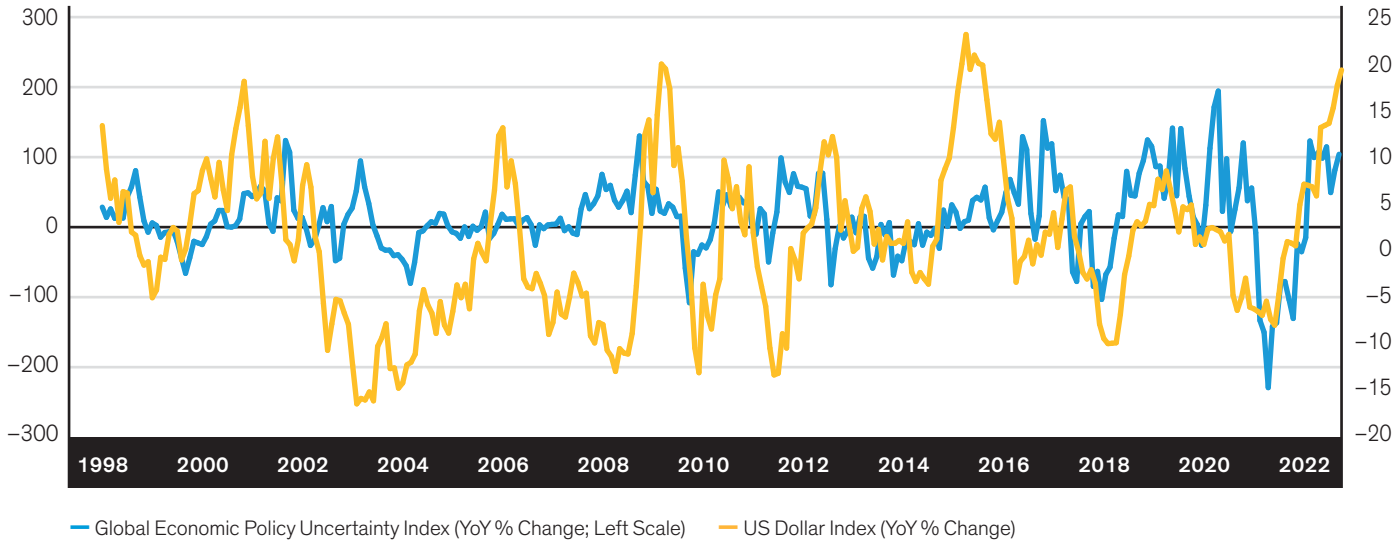
Other things being equal, this backdrop implies diminishing dollar demand from central banks. But with trade-weighted gold prices reaching new highs, interest-rate differentials clearly matter far more in the near term—it would take a brave strategist to use de-dollarization as a case for near-term dollar weakness. In a world where synchronized debt monetization by developed countries could be an implicit policy goal, it implies that the US at least has a greater ability to undertake such a policy.

There's still a tendency for the dollar to be seen as a safe-haven asset, with increases in global economic policy uncertainty positively correlated with changes in the dollar index (*Display 58, page 68*).

Ben S. Bernanke has argued that the most important reason for the dollar retaining its trade preeminence in the post–Bretton Woods world is simply inertia.[56] Is there any plausible alternative? The great hope (for enthusiasts at least) was that crypto would be the alternative. The tumbling of crypto in 2022 will likely delay any such move. In our own interactions with asset owners, we find that questions about crypto have entirely dried up this year. The day Russia invaded Ukraine was a stark case in point—gold went up and Bitcoin went down. One worked and the other didn't.

56 Ben Bernanke, "The Dollar's International Role: An 'Exorbitant Privilege'?" Brookings (January 7, 2016).

DISPLAY 58: DOLLAR STILL REGARDED AS A KEY SAFE HAVEN INSTRUMENT



Historical analysis and current forecasts do not guarantee future results.

Through October 15, 2022 | **Source:** Economic Policy Uncertainty, Thomson Reuters Datastream and AB

Despite the crypto collapse this year, we think there's a long-run case for a subset of crypto assets to play a role, especially if fiat currencies depreciate in response to current debt levels. The recent rout in crypto could be a useful mechanism to clear out coins that don't have enough of an economic case to survive.

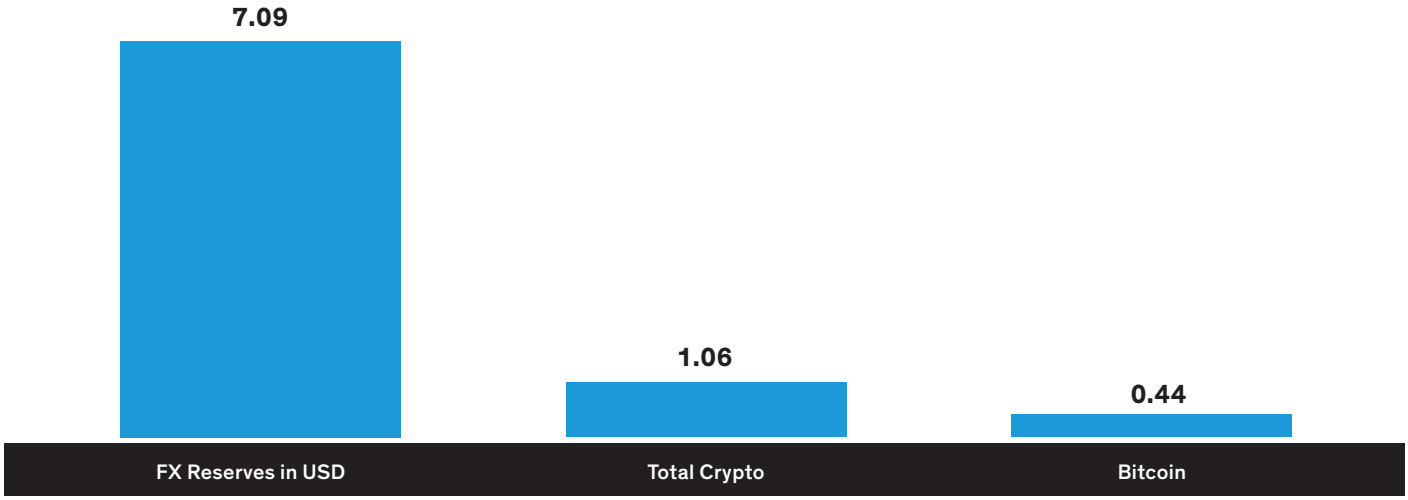
The current market cap of all cryptocurrencies is very small compared with the size of FX reserves denominated in US dollars (*Display 59, page 69*), and regulation is likely to increase, not decrease. China has limited the use of crypto as a way to circumvent capital controls.[57] Using dollar access as a tool of foreign policy has also spurred calls to restrict crypto use if it's being used to evade sanctions. Also, if crypto ever accounted for a large part of the price-setting mechanism in an economy, it would likely impede the ability to implement monetary policy, attracting the ire of policymakers. The bottom line is that despite its recent declines, we think crypto's share will rise somewhat, but there are very real limits on how large its share can become in any plausible near-term scenario.

Is China's yuan an alternative? The major constraint is capital controls, which won't likely be relaxed anytime soon. An internationalized currency would imply the opening of access to financial markets,

57 "Crypto Crackdown Stifles China's Ability to Offshore Cash," *Financial Times* (May 2, 2022).

DISPLAY 59: CRYPTO ASSETS ARE SMALL COMPARED WITH FX RESERVES

Market Size (USD Trillions)



Historical analysis and current forecasts do not guarantee future results.

As of August 1, 2022 | **Source:** CoinMarketCap, IMF and AB

which would weaken China's control. Moreover, while international users of the dollar are aware of the risk of sanctions, surely the same applies for users of China's currency. Both forces imply that any increase in renminbi holdings will more likely be in specific countries that need access (such as Russia), rather than a wholesale switch.

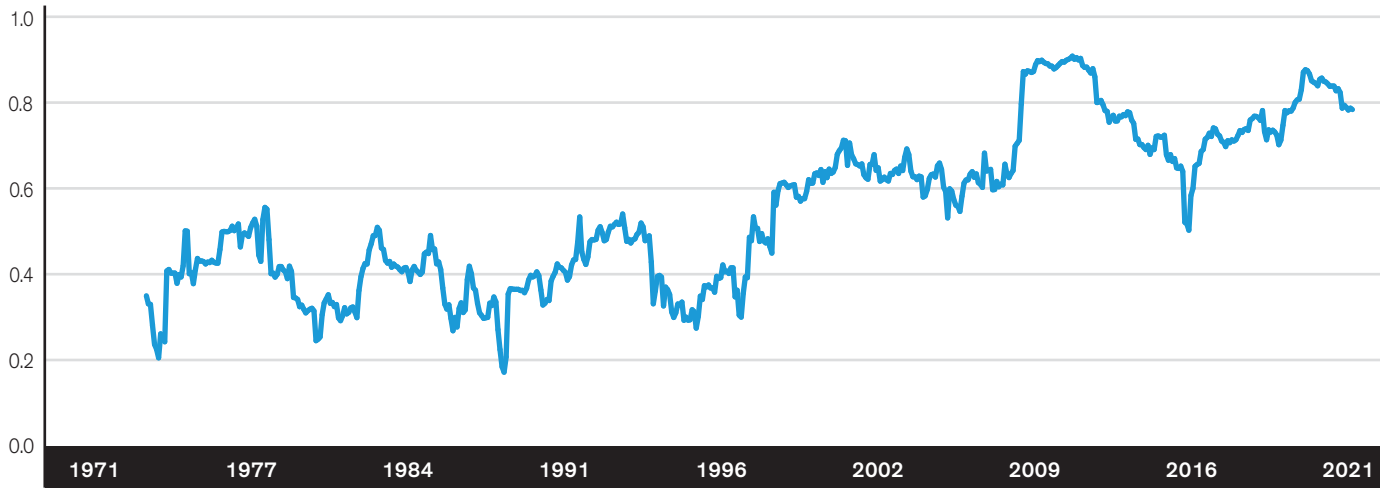
As for the euro, there was a brief increase in global holdings early in the common currency's adoption, but the eurozone debt crisis put the kibosh on that process. The currency's long-run stresses in debt differentials, growth and retirement funding among members are well known. What could be new here is the astonishing speed with which German policy has changed on a number of fronts since Russia's invasion of Ukraine. This includes willingness to allocate a higher share of government spending to defense and to play an active role in regional defense (including signing off on weapons exports), and the rapid change to energy policy that could delay the country's transition away from nuclear and fossil fuels.

It's true that these shifts don't directly relate to monetary policy, but we've argued that Germany is one of the countries with the most to lose from deglobalization. Its economy has relied on the ability to export globally (to China and elsewhere), on cheap energy imports (from Russia) and (heavily) on the US security guarantee. To counter these forces, a logical reaction might be to double down on pan-European cooperation, such as the common bond issuance of the COVID-19 assistance funds. Germany's reaction to the Ukraine crisis implies that it's able to shift policy faster than previously thought.

In the near term, the euro is suffering from the country's interest-rate differential with the US and from Europe being in the eye of the energy-supply storm. It would be hard to have a tactically bullish view on the currency when the region faces the very real possibility of significant energy rationing over the next year. Nevertheless, this crisis might cause Germany to blink—in that context, the strategic, longer-term prognosis for the euro may be somewhat more positive now than it's been in recent years. But the currency isn't about to displace any central bank holdings of US dollars.

DISPLAY 60: CORRELATION OF REGIONAL EQUITY MARKETS HAS RISEN...UNTIL NOW

Regional Pairwise Correlation (36-Month Rolling) of Equity Markets



Historical analysis and current forecasts do not guarantee future results.

36-month rolling correlation between US, Japanese, European and emerging-market equity markets in US-dollar terms

Through March 31, 2022 | **Source:** Thomson Reuters Datastream and AB

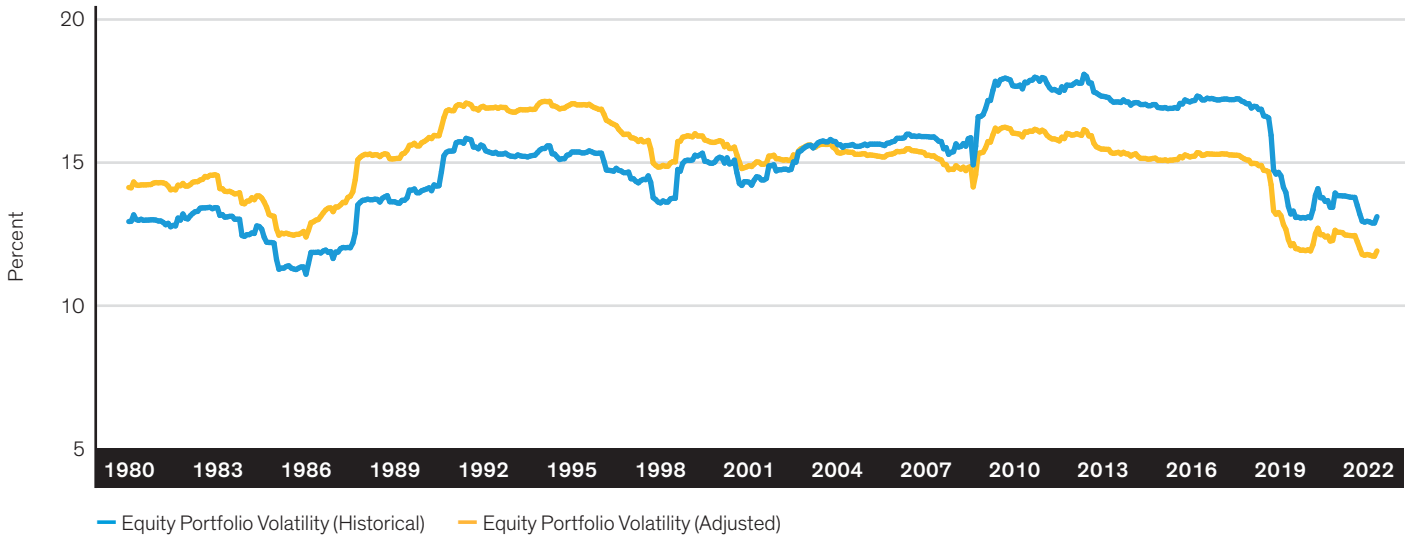
Portfolio Diversification: Regional Asset Correlations Are Likely to Fall

Investors might habitually praise globalization for boosting asset prices while decreasing costs and discount rates, but there's been one clear negative consequence for portfolios—higher correlations. Globalization has been associated with a steady increase in the correlation between assets in different regions, impairing diversification. Investors haven't minded so much, because the negatives have been outweighed by the positive impact on asset-price returns. We think this may change.

Since the late 1980s, the average pairwise correlation of equity returns across major regions has seen a pronounced upward shift (*Display 60*). Globalization has almost certainly been the prime cause, although it's actually been a blend of macroeconomic linkages, corporate exposure and globalization of investment portfolios. Any reduction in this correlation between regions could, in theory, be helpful for investors.

It's all very well to make a directional statement on regional diversification, but can we quantify how big an effect this could have?

DISPLAY 61: 10-YEAR ROLLING GLOBAL EQUITY PORTFOLIO VOLATILITIES



Historical analysis and current forecasts do not guarantee future results.

Ten-year rolling volatility of an equal-weighted portfolio of US, European, Japanese and emerging-market equities. The volatility-adjusted portfolio assumes that the cross-correlation between each country is equal to its average since 1970 and that the variance of each region evolved as per its history.

Through April 29, 2022 | **Source:** MSCI, Thomson Reuters Datastream and AB

In *Display 61*, we show the 10-year rolling realized volatility of a global equity portfolio. We compare it to what volatility would be if regional cross-correlations had stayed at their average level for the entire period since 1970, but also assuming that the variance of each region evolved in line with its history. Imposing constant cross-correlations would have reduced portfolio volatility over the past decade.

It's hard to say at this stage what level of diversification between regions may be possible. But if we assume, for argument's sake, a return to the average intraregional correlations since 1970, it could be expected, *ceteris paribus*, to reduce equity portfolio volatility by one percentage point.

This is one area where it's critical to see the impact of deglobalization on portfolios in a broader context. One of our key conclusions is that it leads to higher equilibrium inflation. We show in the next chapter, "What Happens When Diversification Disappears?," that higher inflation can be expected to raise the correlation of stocks and bonds from its deeply negative level of recent decades to closer to zero, and possibly even to a positive correlation. Negative stock-bond correlation has been the key engine of diversification for many portfolios for decades, so any benefit from greater regional diversification needs to be viewed in this context.

In *Display 62, page 72*, we try to calibrate the scale of these effects, using 60/40 stock/bond portfolios as an example. First, we show the effects of the 10-year rolling stock/bond correlation rising to 0.1, which would result in an 85 basis point (b.p.) increase in overall portfolio volatility. Second, the impact of lower regional equity market correlations would be about 70 b.p. less volatility.

The net result is a plausible case that if global portfolios can be designed to take advantage of increased diversification between regions, and that if regional correlation falls back to its long-run average, it could go a long way toward offsetting the higher risk that seems likely from an increased correlation between stocks and bonds.

A change in regional correlations might prompt investors to shift away from accepting a simple "passively" weighted global equity index in favor of investing by region, or more actively on a global basis. The supporting case is made all the starker by the somewhat artificial weight for China in some global indices, given the open question of how much of an "inclusion factor" to allow for markets that aren't fully open. A less globalized world should make investors less willing to passively accept the effect of these types of index-inclusion decisions on portfolios.

DISPLAY 62: THE EFFECT OF STOCK/BOND CORRELATION AND CROSS-REGION EQUITY CORRELATION ON A 60/40 PORTFOLIO

	Base Case	Stock/Bond Correlation of 0.1	Regional Diversification	Correlation and Regional Diversification
Equity Weight	60%	60%	60%	60%
Bond Weight	40%	40%	40%	40%
Equity Volatility	13%	13%	12%	12%
Bond Volatility	7%	7%	7%	7%
Correlation	–24%	10%	–24%	10%
Portfolio Volatility	**7.71**	**8.56**	**7.04**	**7.88**

Historical analysis and current forecasts do not guarantee future results.

Effect on 10-year rolling portfolio volatility of stock/bond correlation rising to 0.1 and increased diversification of an equal-weighted global equity portfolio comprising US, Japanese, European and emerging-market equities through a lower cross-correlation between each region.

As of May 31, 2022 | **Source:** MSCI, Thomson Reuters Datastream and AB

III: How Should Investors Respond to Deglobalization?

Implications for Portfolios

We argue that the case for deglobalization outlined here amplifies the need to construct a strategic asset allocation that protects portfolios against inflation in the long run. This imperative implies a prolonged requirement for a high allocation to real assets, whether private assets or public equities and factor strategies. In tandem, inflation is probably the true benchmark for many investors, and more migration in that direction is likely, which would amplify the focus on generating real returns.

The corporate sector has managed a historically unusual stretch of high profitability in the most recent period of globalization, and margins will most likely fall from here. Still, equity's role as a real asset as well as the size and liquidity of the market implies that it will remain a core portfolio anchor.

However, the 60/40 portfolio is in danger—we've been saying this for a while, and many investors have moved away from the structure. However, it still plays an outsize role in allocations, including as a default. The increase in yields in 2022 implies that expected returns for the 60/40 portfolio are higher than they were six months ago, though they're still materially below trend. Moreover, its volatility is set to rise as the stock/bond correlation becomes less negative, and its woeful performance in the first half of the year has probably shaken many investors out of their assumption that the 60/40 was somehow low risk.

Implications for "Passive" Investing

Deglobalization raises specific issues for passive investing, aside from the potential indirect impact of higher risk premia. If a bigger share of portfolio diversification comes from intra-asset-class regional diversification than from inter-asset-class diversification, that shift implies relatively less investor interest in buying passive exposure to global asset classes.

Moreover, the weighting of Chinese assets in indices will likely become a more prominent issue, in terms of how that weighting is determined (it's hard for that process to be truly "passive"). Another facet is the implication for the changing nature of the global market if the weighting is large (affecting the relative shares of liberal open-market economies and alternative governance structures). This is an issue that passive investing hasn't had to face before at this scale.

Relative Winners: The Candidates

Below we outline a series of themes or secular trends that are candidates to become long-term overweight positions in portfolios:

- **Automation companies.** These are set to benefit from a long-term process of "reshoring."
- **Renewables.** We see the question of energy security as an accelerating factor in the energy transition.
- **Inflation protectors.** The need for more inflation protection is a key investment consequence of deglobalization, in conjunction with demographic changes. For most asset owners, this elevates the need for long-run inflation protection. In other words, this means defining "inflation protection" as assets that can generate positive real returns even when inflation is high, versus having a high-frequency correlation with inflation expectations. We see this need leading to higher long-run allocations to real assets, such as real estate, farmland and power delivery, as well as to private debt (with its floating rates) and liquid public assets, such as equities and the value factor. Taken together, these constitute key elements of inflation protection.

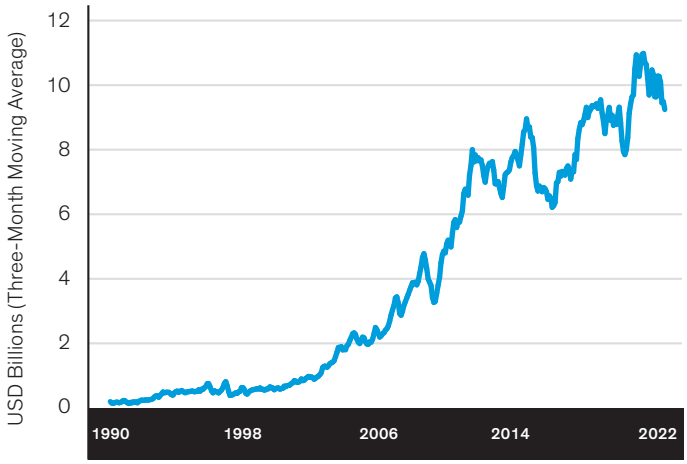
Relative Losers: The Candidates

Likewise, some themes or secular trends are candidates to become long-term underweight positions in portfolios:

- **Specific countries.** Some nations risk losing more than others. Germany stands out, given its reliance on Russia for energy, China for exports and the US for a defense umbrella. Germany's exports to China constitute 3% of GDP, so any geopolitical deterioration from deglobalization would put it in a very uncomfortable position (*Display 63*). Taiwan and South Korea are other countries that could fall into this category.

DISPLAY 63: GERMANY'S RELIANCE ON CHINA FOR EXPORTS

German Monthly Exports to China

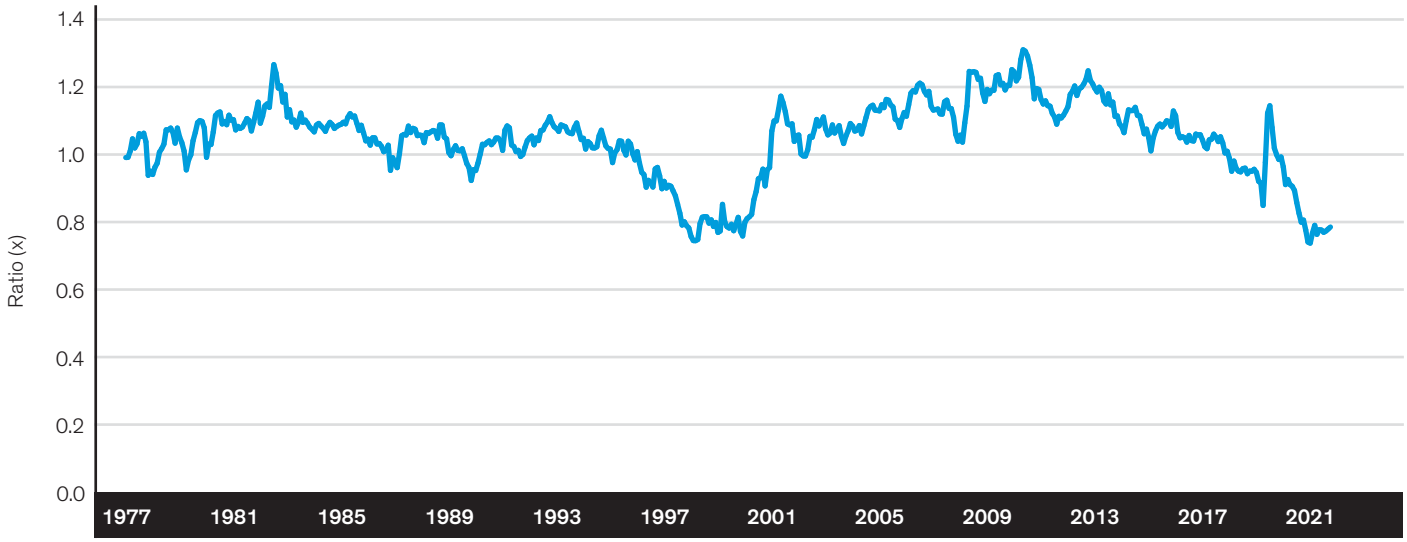


Historical analysis and current forecasts do not guarantee future results.

Through August 15, 2022 | **Source:** Thomson Reuters Datastream and AB

DISPLAY 64: SMALLER COMPANIES ARE HISTORICALLY CHEAP VS. LARGE CAPS

Small 1,000 vs. S&P 500 (12-Month Forward P/E)



Historical analysis and current forecasts do not guarantee future results.

Small 1,000: 1,000 stocks by market capitalization that come after the largest 1,000 stocks in the US market.

Through September 15, 2022 | **Source:** FactSet, S&P and AB

- **Mega-cap stocks.** Mega-caps have benefited both directly and indirectly from globalization. The direct benefit is plain to see in the benefits of scale for revenue generation and the benefits of tax and labor "arbitrage" to minimize costs. The indirect benefit historically came via lower interest rates and their implications for the valuation of long-duration growth stocks.

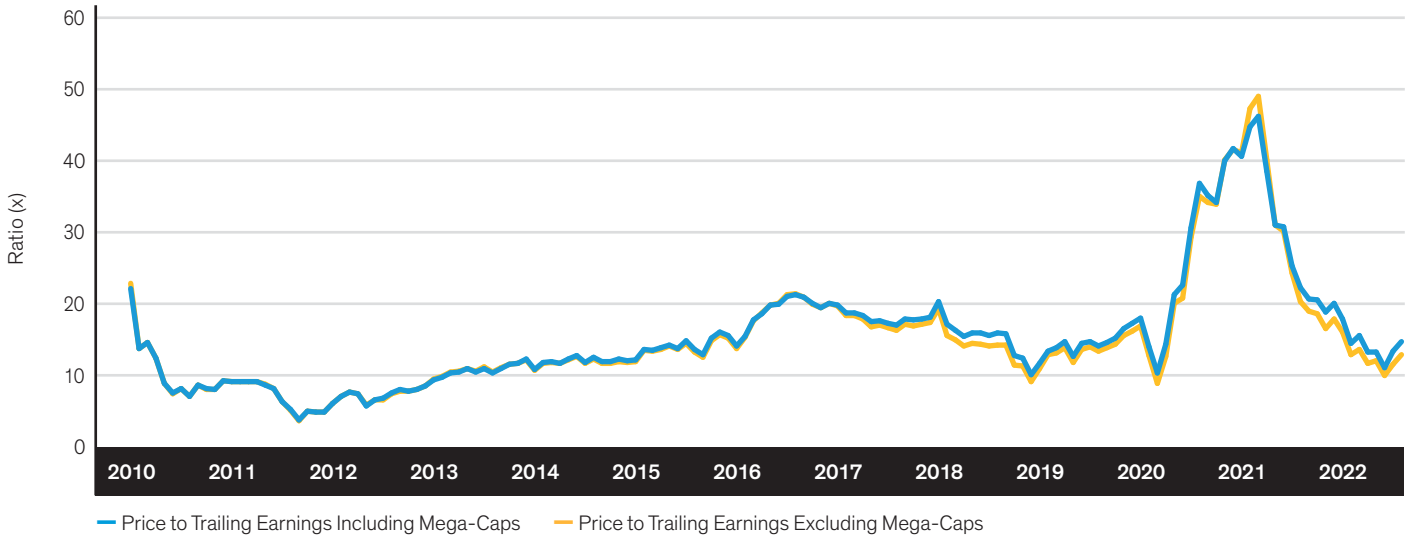
  The case against mega-caps from here is the fading of those benefits, though there are countervailing forces: First, any re-onshoring requires automation, and therefore greater scale and capital. Second, an increase in the risk premium could impact smaller, higher-risk companies. And third, the prospect of real yields staying low in the long term, along with evidence that the profitability of higher-profitability companies tends to be more persistent, implies that some benefits of large growth companies will last until a politician takes them apart.

Given these countervailing forces, valuation is key. Smaller companies are at historically cheap multiples versus large-caps in the US (*Display 64*). We're wary that small-caps tend to underperform going into a recession, which could account for some of this valuation spread, but nonetheless the gap is at a historical extreme. In *Display 65, page 75*, we show the impact of removing only mega-caps from the valuation of the market rather than simply comparing large and small companies. The spread is less dramatic, but still shows that the presence of mega-caps raises the market's valuation.

This valuation spread, alongside the macro forces we've outlined, implies that we would want to underweight the largest companies. This could be achieved either by explicitly targeting the indices of mid-size or smaller companies or by gaining exposure to indices that reduce the impact of the very largest companies.

DISPLAY 65: THE PRESENCE OF MEGA-CAPS BOOSTS MARKET VALUATION

1,500 Largest US Stocks, Both Including and Omitting the Mega-Caps (Trailing P/E)



Historical analysis and current forecasts do not guarantee future results.

Valuation of the largest 1,500 US stocks, with the same series excluding Apple, Microsoft, Meta Platforms, Alphabet Inc., Tesla and Amazon

Through August 31, 2022 | **Source:** Bernstein Research and FactSet

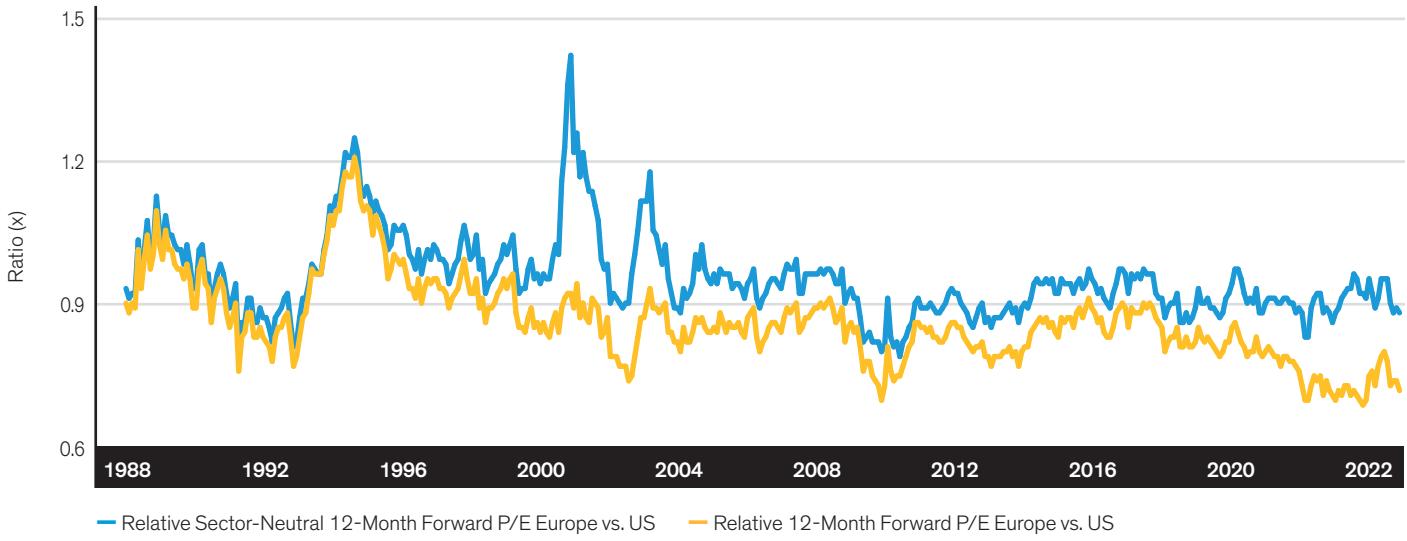
- **Gold.** For many asset owners, gold is a difficult investment to hold: its 170-year real return is just barely positive, it provides no income and it can't be valued. Still, we think the implication of this chapter is for investors to hold an "overweight" allocation to gold versus their base starting point. Gold is an effective inflation/debasement hedge, its lack of correlation to equities doesn't change with the inflation level and it can be a low-risk asset in a world where truly risk-free assets may no longer exist.

  The recent rise in real yields, leading to the underperformance of gold, will likely be a significant obstacle for investors. However, this is a primarily tactical chapter, and the growth implications of both deglobalization and demographic changes imply subdued real-yield levels over strategic horizons. Investors who are more tactically disposed need only compare the performance of gold and Bitcoin on the day Russia invaded Ukraine to see which asset is preferred as a risk-off hedge.

- **Commodities.** As borne out by the price dynamics over the past year, commodities have a key role as a tactical inflation hedge. Given our strategic view that inflation will remain higher than its pre-pandemic level, one might expect an overweight in commodities to be a natural result, but there are headwinds:

  1. There are prospects for a near-term recession, which tends to be damaging for commodities. Despite their recent price declines, there's still huge uncertainty as to the scope of the slowdown.
  2. Long-term investors seek to generate real returns from diversifying assets in portfolios. Commodities are a highly effective tactical inflation hedge, but there's a broader range of real assets to consider over longer horizons—and commodities' procyclical nature means they're not such effective diversifiers.
  3. We think ESG investing is evolving, but those considerations will make it hard for some investors to have a large allocation to traditional commodities.

DISPLAY 66: US/EUROPE VALUATION SPREAD IS ONLY SMALL ON A SECTOR-NEUTRAL BASIS



Historical analysis and current forecasts do not guarantee future results.

Through November 30, 2022 | **Source:** FactSet and AB

Perhaps the most important question is, which commodities to hold? The energy transition implies a wider dispersion of returns within commodities over strategic horizons. On balance, we advocate a neutral position over strategic horizons, but with a skew toward commodities that are positively exposed to the energy transition.

Overweight US vs. International Equities

According to financial theory, given the established, liquid and deep nature of US markets, investors should demand a higher return from holding non-US assets than US assets. This notion is reflected in the near-universal default assumption that the US will underperform international developed markets over long horizons. This assumption is often embedded in long-run forecasting models through capital-market assumptions, so they have to forecast a higher relative return for international assets.

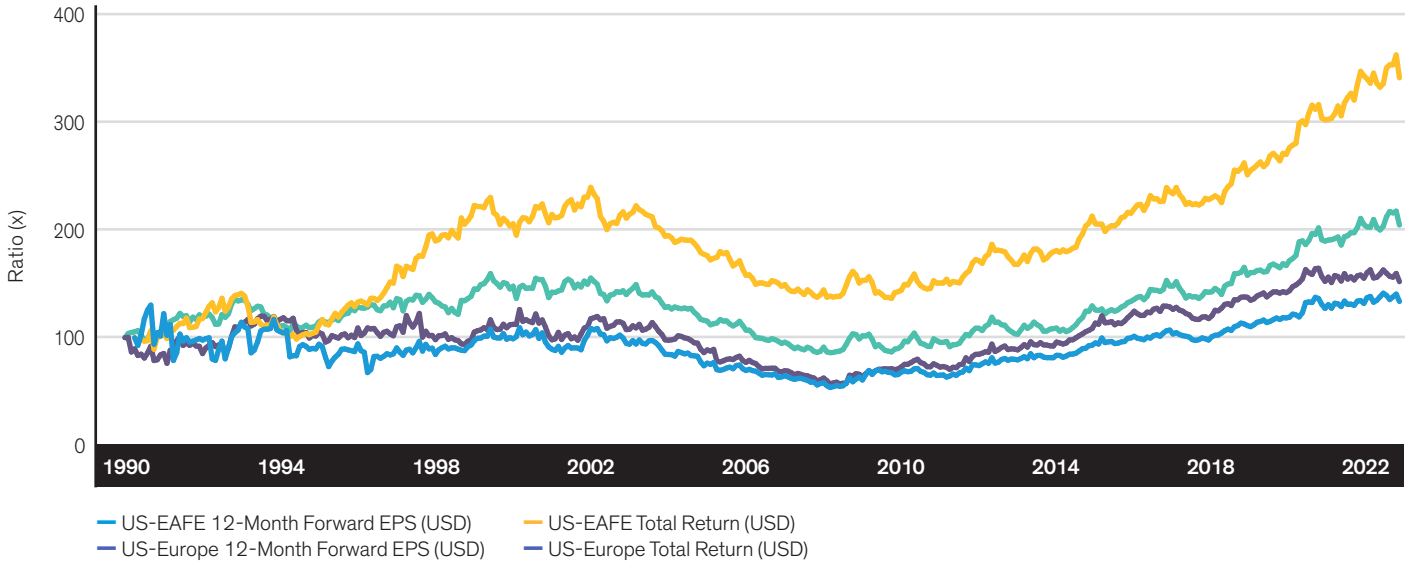
However, the pedagogical arguments only hold in "equilibrium." One can endlessly debate how close to such a mythical state markets may come. The US could be expected to lose out if the US-led multilateral order falls apart or is at least curtailed. We're not so sure. This isn't like the case of Britain when its hegemonic position fell apart. The US is larger, self-sufficient in key commodities and has one of the most robust demographic profiles of developed nations.[58]

At some point, de-dollarization implies a weaker US dollar, but there's no sign of that in the near term. The scale of that impact is also highly unclear compared with the benefit of somewhat better demographics and energy security. At this point, it would usually be helpful to turn to asset valuation. European equities, perhaps unsurprisingly, look cheaper than US equities (*Display 66*), but the gap is much smaller on a sector-neutral basis, and—crucially—not far from its historical average.

58 See, for example, Peter Zeihan, *The Accidental Superpower: The Next Generation of American Preeminence and the Coming Global Disorder* (New York: Twelve, 2014).

DISPLAY 67: THE CLOSE LINK BETWEEN RELATIVE RETURNS AND EARNINGS GROWTH

Relative Performance of US vs. International Markets and Relative Earnings per Share (EPS) Growth



Historical analysis and current forecasts do not guarantee future results.

Through November 30, 2022 | **Source:** Thomson Reuters Datastream, Thomson Reuters I/B/E/S and AB

The relative returns of US and international equities are very closely linked to relative earnings growth (*Display 67*). On this basis, relative value is less important on a long-term basis than the ability to deliver growth. We would struggle to suggest that non-US developed-market earnings are set to outgrow the US for the foreseeable future, so we think it might be time to revisit models that suggest that developed international markets can outperform. We suggest an overweight US bias, though this is a strategic—not a tactical—view.

A Nuanced Impact on Fixed Income

As deglobalization becomes more entrenched as a theme, we see implications across fixed income. On one level, this narrative is about higher risk, which might incline asset owners to shift toward lower-risk assets, but we think the story is more subtle than that.

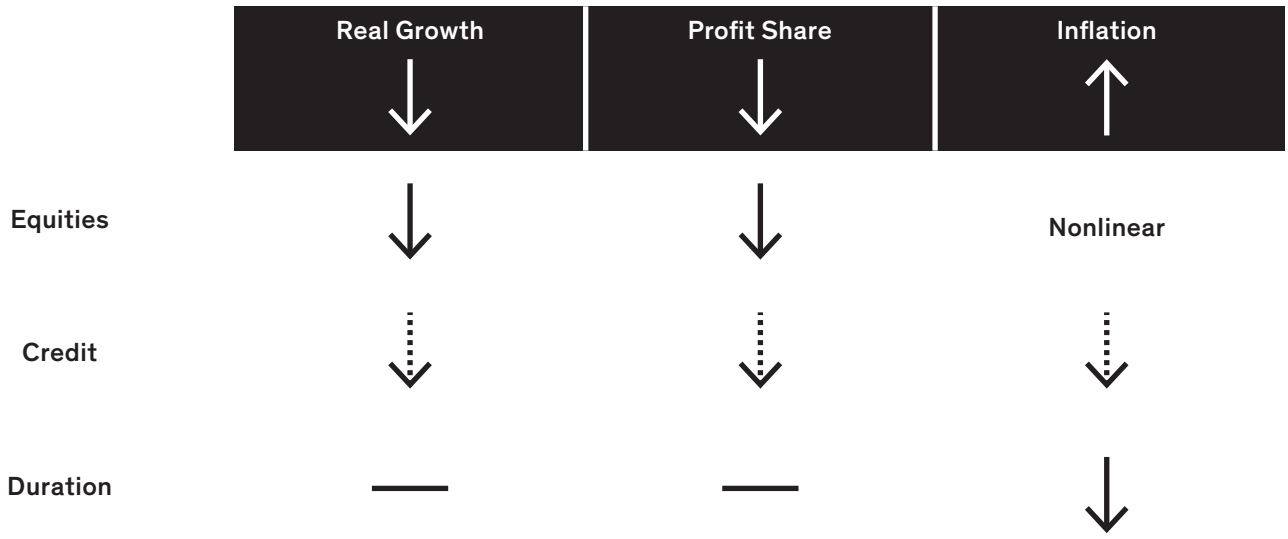
As we see it, this will be more about a general increase in the level of risk, which differs from predicting a big drawdown. When it comes to protecting against a sudden drawdown, high-grade fixed income has a special role to play. If the problem is instead a more generalized increase in risk, then the portfolio-construction challenge is more about finding diversification.

For this purpose, we've illustrated that a broader mix of assets is needed in today's environment (see Chapter 4), including real assets and factor strategies. The key conclusion is that investors should expect inflation to be higher and more volatile—given the prospect of an economy with more government involvement—leading to a negative view on duration.

The prospect for credit is somewhat more complicated. The exposure to inflation is less negative for credit than it is for longer-duration government bonds. However, there's a somewhat negative force being exerted on the asset class from lower corporate margins—though the effect is less significant for credit than it is for equities.

We've summarized these effects in *Display 68, page 78*, looking at the three big macro implications of deglobalization. Equity returns have a negative relationship to changes in real growth and margins, but a nonlinear relationship to inflation. A 2%–3% inflation range is benign for equities, allowing them to behave as a real asset; inflation only becomes a more negative force at much higher or lower levels. Credit has a weak negative link to all three macro forces; duration isn't (directly) linked to margins and growth, but it has a strong negative link to inflation.

DISPLAY 68: THE RELATIONSHIP OF DURATION, CREDIT AND EQUITY TO DEGLOBALIZATION TRENDS



Historical analysis and current forecasts do not guarantee future results.

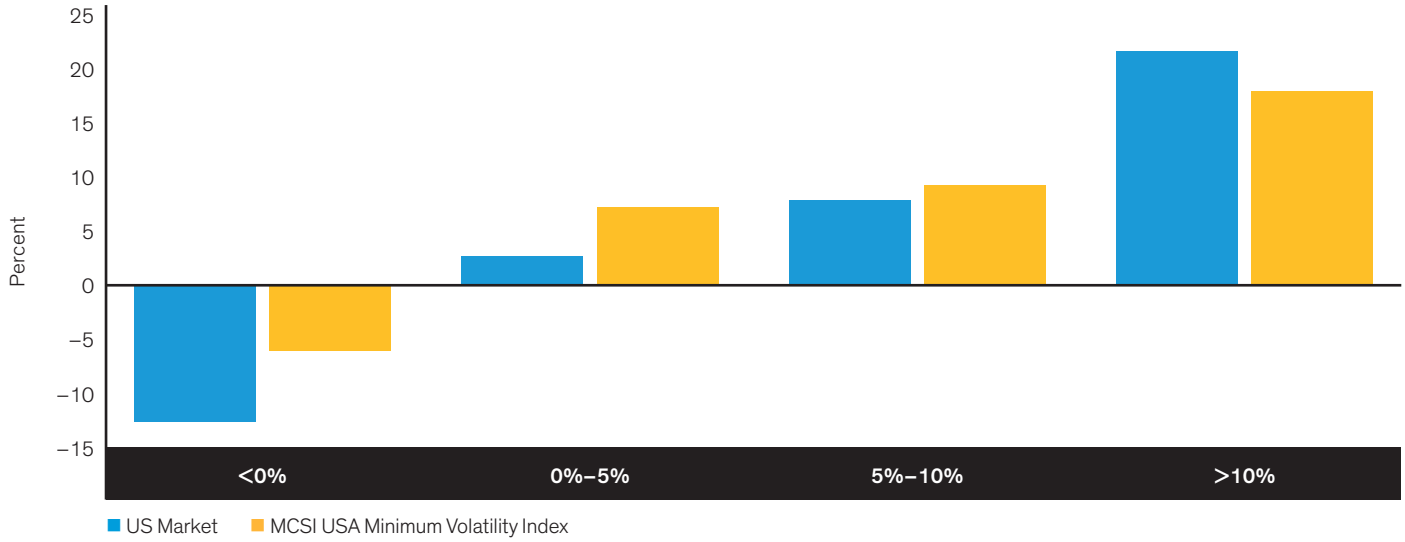
As of August 31, 2022 | **Source:** AB

Bolstering the Case for the Low-Volatility Factor

As a factor trade, we think deglobalization further boosts the case for low volatility at the margin:

1. We expect the unstitching of globalization to drive a somewhat higher default risk level, which tends to boost low-volatility strategies.
2. While we expect equity returns to be positive, deglobalization mutes them; low volatility fares worst when equities rally strongly, which becomes less likely as a default expectation.
3. We see deglobalization cementing an outlook for high inflation, but not as high as current extremes, which tends to support low volatility.

DISPLAY 69: LOW VOLATILITY PERFORMANCE IN DIFFERENT MARKET RETURN REGIMES



Historical analysis and current forecasts do not guarantee future results.

Annual data from 1988 through 2022

As of August 12, 2022 | **Source:** MSCI, Thomson Reuters Datastream and AB

Display 69 shows the average annual performance of the MSCI US Minimum Volatility Index based on different ranges of broad US market returns. The low-volatility factor returns are higher on average in all cases, except when market returns surpass 10%.

The Deglobalization Theme: Valuing the Investment Options

So far, we've outlined a series of asset or thematic views that we think make sense in steering a portfolio, given the forces of deglobalization. It's all very well to claim that a secular force is acting on these options, but what about valuation? Most long-only asset classes are above their long-run average valuations (*Display 70, page 80*), which is to be expected given the path of yields in recent decades. However, while their z scores are positive, they still aren't very high. We include gold, even though it can't be valued; its z score is based on price, which arguably makes it look worse than other assets.

How to Think About Scaling Deglobalization Options

The scaling of investment positions is a crucial process—marking the shift from a series of views related to deglobalization to actually changing a portfolio. The answer for any given client will depend on their risk tolerance, ability to hold particular kinds of assets, and degree of conviction in the strength of deglobalization versus other secular and tactical forces. The conclusion that equilibrium inflation will be higher aligns with the conclusion of the demographics and ESG secular themes, so we think it should be a high-conviction conclusion and core to the scaling decision.

We attempt to show the scale of the shift needed by plotting real return against volatility (*Display 71, page 81*). Over the past 10 years, with nominal returns high, inflation low and stock/bond correlation negative, the return of a 60/40 mix of US equities and government bonds was very favorable. We think that return/risk space is probably unattainable for most investors, as we show in our current prognosis for the 60/40 at the bottom of the display. Note: this framework is for US assets; on a global basis, the real-return outlook is slightly worse, though more diversification is available.

DISPLAY 70: VALUATION OF SELECT ASSETS AND THEMES RELEVANT TO DEGLOBALIZATION POSITIONING

Start Date	Asset	Valuation Z Score
Jan 1988	US vs. EAFE	1.21
Jan 1970	US Equities	0.83
Jan 1987	Emerging-Market Equities	0.46
	Fixed Income	
Jan 1970	US 10-Year Government Bonds	0.98
Jan 1997	US High-Yield Credit	0.21
Jan 1997	US Investment-Grade Credit	0.15
	Inflation Hedges	
Jan 1975	US Residential Real Estate	4.01
Jan 1970	Gold	2.35
Sep 1971	US TIPS 10-Year	1.14
Jan 1973	US REITs	0.21
	Thematic Investments	
Jan 1990	Global Automation Stock Basket	–0.14
Dec 1977	US Small-Caps vs. Large-Caps	–2.76
Dec 2010	US Min Vol Equities vs Market	–0.61

Historical analysis and current forecasts do not guarantee future results.

Data from 1970, or longest available history indicated in the start date column. For equities, valuation metric is the cyclically adjusted earnings yield (1/CAPE ratio). For bonds, the valuation is measured by the bond yield.

Credit index valuation is measured by the option-adjusted spread. REITs sector valuation is measured by the dividend yield.

US residential real estate is valued by the price to rent ratio, which is calculated as the ratio of the Freddie Mac (pre-1991) and FHFA House Price indices divided by the index of the Shelter in US City average component of the US CPI.

A higher z-score value indicates a higher premium to historical valuation.

As of July 31, 2022 | **Source:** BLS, Federal Housing Finance Agency, Freddie Mac, Global Financial Data, MSCI, Thomson Reuters Datastream and AB

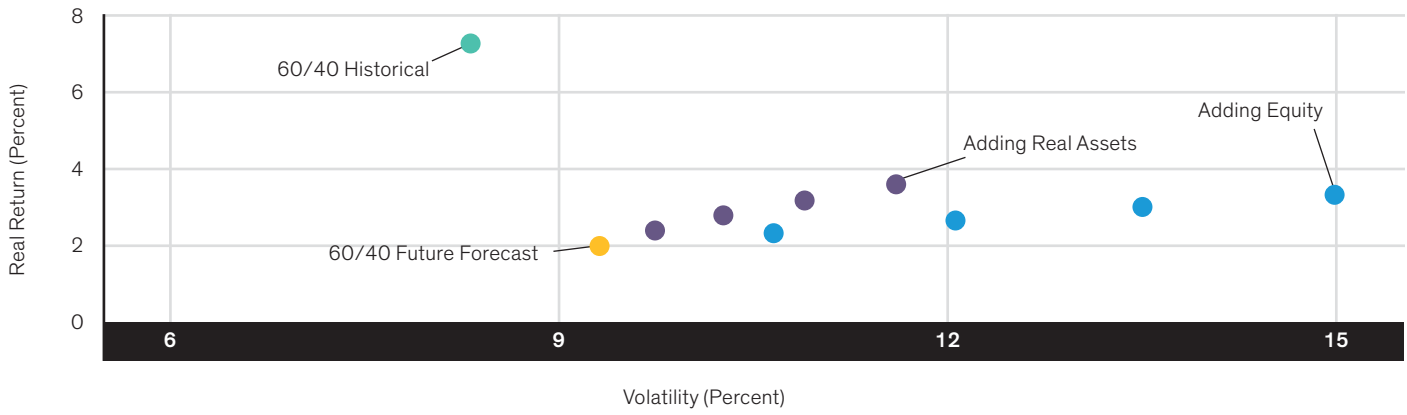
For each option, we also show two indicative paths: each progressively reallocating 10% from the 40% US government bond allocation—one path leading to equities and the other to a basket of real assets. That basket could include many permutations of the assets and factors outlined in this chapter, but to keep things simple we've arbitrarily set the mix at 60% global real estate, 20% private debt (in this case US middle market debt), 10% low-volatility equities and 10% farmland. At the most extreme position, shown on the right-hand side of the chart, this real-asset portfolio would be 40% of the overall portfolio (24% real estate, 8% private debt, 4% low-volatility equities and 4% farmland).

These allocations can make up some of the lost ground in real returns. Total portfolio volatility is higher than in the 60/40 portfolio, because these assets are all more volatile than the high-grade bonds that fund them. They also have positive correlations with equities, so diversification is imperfect. The correlation number could be reduced with a bigger allocation to long/short factors, active strategies and physical real assets.

We're assuming that the volatility of private assets is akin to their economic volatility, not the *prima facie* low volatility of their reported returns, which are smoothed by not being marked to market. If one is allowed to pull off that ruse, then the apparent lower portfolio volatility is eminently achievable!

This scaling exercise also highlights the scale of the task investors face. The traditional portfolio construction approach would be to start with the target return/risk level and then work out the required asset allocation to achieve it. We think that approach won't be sufficient for these purposes, because maintaining a given level of real return will require a higher risk level than has been typical in the past.

DISPLAY 71: SCALING THE RESPONSE TO DEGLOBALIZATION



Historical analysis and current forecasts do not guarantee future results.

As of September 14, 2022 | **Source:** Cliffwater, FactSet, Thomson Reuters Datastream and AB

Conclusion

This chapter makes the case that the deglobalization theme is here to stay. The period of globalization that started in the early 1980s is coming to a close, and we're entering a new paradigm. This transition has implications for directional views on return streams, and it poses methodological questions: What's the best way to achieve diversification? How does this impact the nature of passive investing?

In the final chapter of Thomas Mann's magisterial *The Magic Mountain*, the residents of the alpine resort that represent the comfortable cosmopolitan life of the European elite from Russia to France and Italy find themselves suddenly shaken out of their sedate lives. The assassination in Sarajevo, "the thunderbolt," sends them "heels over head, five thousand feet downwards to the catastrophe-smitten flat-land."[59]

Thankfully, the ending of this particular chapter of globalization is nowhere near as violent or abrupt as the end of that previous—and in many ways equivalent—age of globalization. Nevertheless, we think it could be of a similar order in terms of the need to rethink economic rules. Globalization has been enmeshed in the methodology of building investment portfolios for the entire careers of most of today's financial professionals. Rethinking investment practice for deglobalization requires profound changes.

Twin forces are at work: rising domestic unease with globalization among developed markets and greater China-US tensions. When we add other forces happening in parallel, particularly the demographic shift that's reducing the working-age population, this shift has sizable implications that investors have yet to account for in their strategic asset allocations.

For the investment environment, this cements the case for higher-equilibrium inflation than before the pandemic. Bluntly, we think this means 10-year forward US inflation will be closer to 3% than to the Fed's target of 2%. Deglobalization also brings downward pressures on corporate margins: higher labor costs, higher effective tax rates and higher inventory levels. Nevertheless, all of those developments still enable positive real returns for equities—just at lower levels.

On a positive note, this heralds greater opportunities for regional diversification within asset classes; as we've shown, this could make up for at least some of the lost diversification from a higher stock/bond correlation. Specific themes, such as automation and renewables, are set to enjoy a prolonged tailwind, and we'd prefer US over international assets.

Deglobalization also points to more government intervention in markets, either directly in terms of supply chain or energy security or indirectly as country "blocs" become entrenched. "Friend-shoring," remapping supply chain locations to friendly countries, is an ugly neologism but a term that investors should expect to hear more often. Although the topic of deglobalization has certainly been prominently discussed in many quarters, its implications for inflation, risk and asset returns imply that it still hasn't been reflected in strategic asset-allocation decisions.

59 Thomas Mann, *The Magic Mountain* (New York: Alfred A. Knopf, 1927).

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CHAPTER 4

What Happens When Diversification Disappears?

The big shock of 2022 from a portfolio design perspective was how the stock-bond correlation jumped into positive territory and stayed there. Changing inflation and policy regimes raise questions about the path ahead for the correlation between stocks and high-grade bonds. If correlations rise, it could pose a portfolio duration problem, sparking a hunt for new diversification sources—and likely intensifying the reallocation into illiquid assets.

- Investors' ability to keep portfolio volatility generally low has historically rested on the ability of stocks and high-grade bonds (namely the duration element) to diversify each other.
- The transformed inflation and policy regime in the wake of the pandemic raises the question of whether that diversification can persist. Over the longer sweep of history, the stock-bond correlation has usually been positive, with the past 20 years looking like an aberration.
- In this chapter, we discuss the empirical and theoretical drivers of stock-bond correlations and why we see a regime change. The first realistic prospect of higher equilibrium inflation in decades—and higher inflation volatility—fundamentally changes bonds' ability to diversify equity risk.
- Rising stock-bond correlations imply that cross-asset investors have a portfolio duration problem that has been masked until now by substantially negative stock-bond correlations.
- Recent decades have seen lower portfolio volatility enabled by negative correlations, but also a shifting of retirement-saving risks toward individuals. This prompts a crucial question of how individuals should think about this risk, intensifying a focus on long-run real returns.
- The change in correlation regime has sparked a hunt for new diversification sources within and beyond fixed income, and will intensify the reallocation into illiquid assets. It also requires a debate on the extent to which stale prices masquerade as diversification—and creates a need to explore other diversifiers, including factors.
- We assess how large a reallocation would be required to bolster diversification if correlations were to normalize—and discuss which assets should be the destinations.

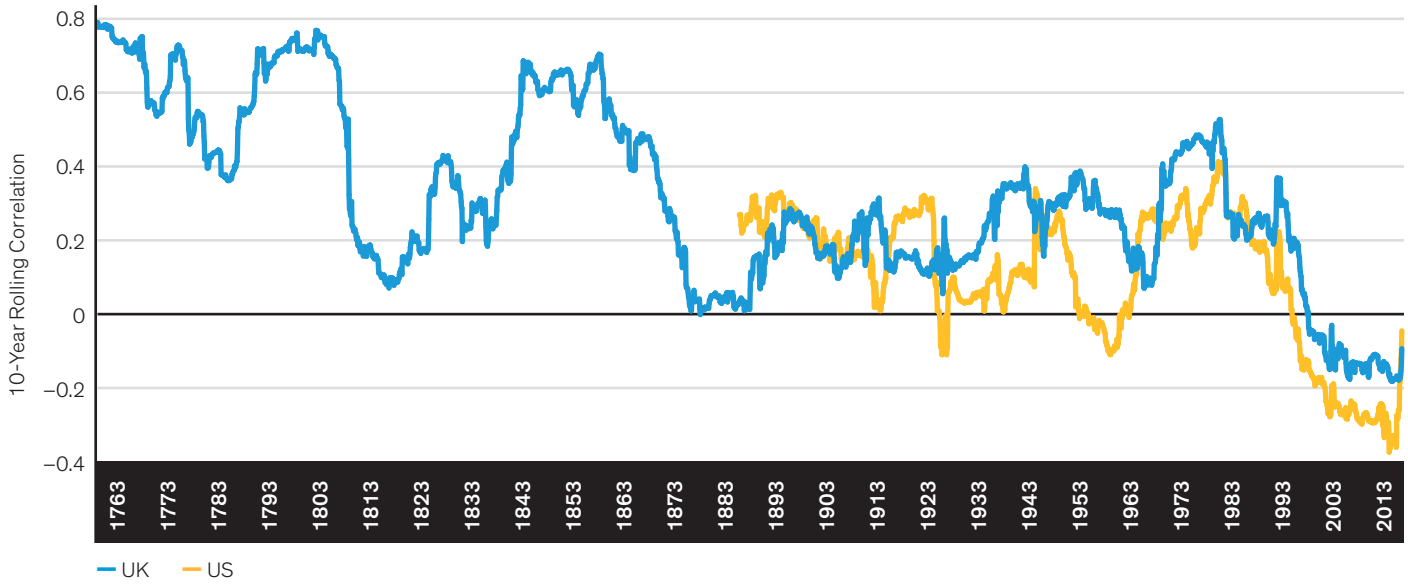
Diversification is a well-traveled topic that has become more urgent over the past year as investors grapple with the realization that stocks and bonds might not diversify each other as much as they have in the past. We suggest that investors may need to get used to this state of affairs. We start this chapter with some blunt observations:

1. **The past 20 years have been really abnormal.** The past two decades have been an extreme outlier versus the longer run of history (*Display 72, page 84*). While we don't wish to get bogged down in a debate about the drivers of stock-bond correlation in the 18th century (the relevance is debatable), the last 20 years have been unusual. One should not dismiss the recent past, since it's the basis of most investment models. However, we worry that, in times of change, there's too much reliance on it as a guide to the future.

   If the pandemic doesn't count as a regime change, we don't know what does. This is one reason why the author of this piece declared that he is "no longer a quant."[60] Against that backdrop, we think it's important to have a longer run of data that looks across many different economic and sociopolitical regimes. In this case, a stock-bond correlation that's closer to zero or even slightly positive seems more likely than a negative correlation.

60 See Inigo Fraser Jenkins, *Are We Human or Are We Dancer?*, Bernstein Research, July 2021.

DISPLAY 72: LONG-RUN 10-YEAR ROLLING STOCK-BOND CORRELATION FOR US AND UK



Historical analysis and current forecasts do not guarantee future results.

Rolling 10-year correlation between stock and bond returns

Through September 30, 2022 | **Source:** Bank of England (BoE), Global Financial Data, Robert Shiller's database, Thomson Reuters Datastream and AB

2. **If it weren't for this abnormally negative stock-bond correlation, simple multi-asset portfolios would have had significantly higher volatility.** Recent decades have witnessed the triumph of a simple 60/40 stock/bond portfolio. Indeed, this strategy has evolved from an investment heuristic to assume the mantle of a nearly passive default allocation. This is a fallacious view—it's nothing of the sort—but the 60/40 portfolio's success has allowed it to be heralded in this way. We've discussed the lower-return prognosis for such an approach elsewhere; here we'll focus on its risk.

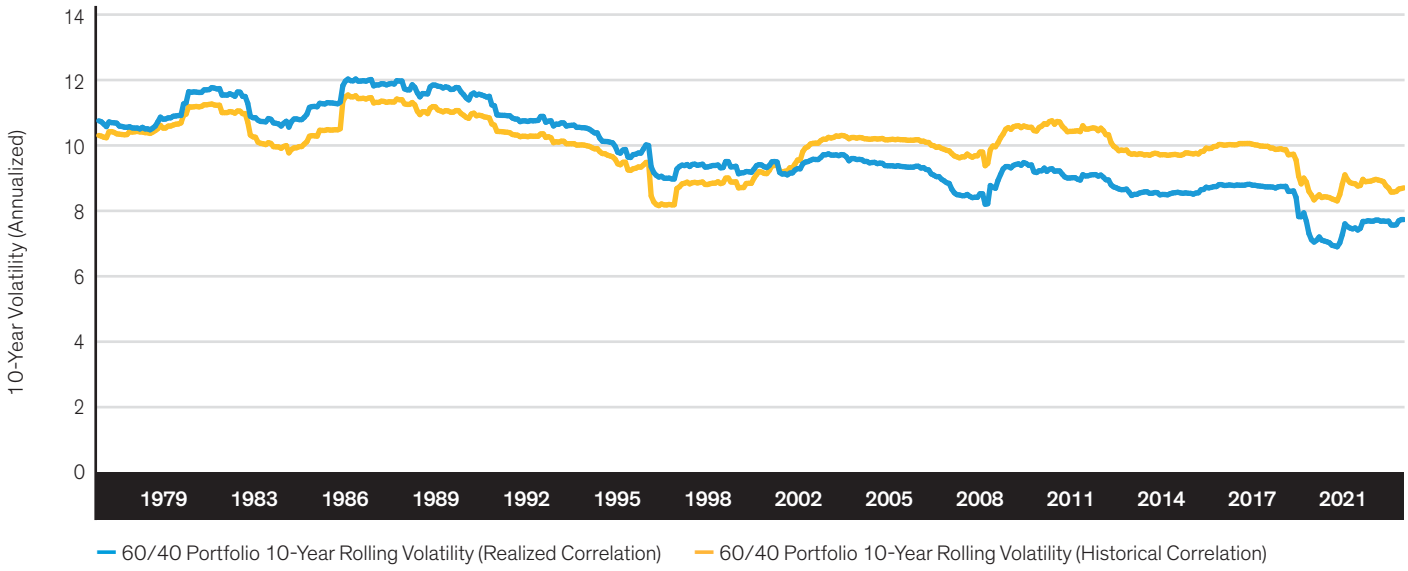
   In *Display 73, page 85*, we show the realized volatility of a portfolio of 60% passive US equities and 40% US 10-year government bonds. We also show what its volatility would have been if the stock-bond correlation had stayed at its long-run average of the last 150 years, 0.13, instead of plunging into negative territory.

   Prior to the early 2000s, the two series tracked closely. After 2001, though, as the stock-bond correlation turned negative, they diverged. As a result, the realized 60/40 volatility is substantially lower than it would have been with the historical average correlation. Over the last 10 years, the average realized volatility has been 8.2%; using the historical average correlation, volatility would have been 9.5% over the same period.

   While negative correlation has kept portfolio risk lower in recent decades, there's been a contemporaneous shift in retirement-saving risks toward individuals, stemming more from corporate and government policy choices than from the negative stock-bond correlation. However, the transition of more risk to individuals has been made easier by healthy returns from the major asset classes, and the diversification inherent in this model has guided views about what an appropriate risk measure is—views that are now entrenched.

   This situation raises the crucial question of how individuals should think about this risk. Ultimately, that question can't be separated from the question of what investment time horizon should be used, which will intensify a focus on long-run real returns, with a risk measure to match. In other words, defining risk as the probability of missing an outcome rather than an observed volatility.

DISPLAY 73: THE VOLATILITY OF 60/40 PORTFOLIOS HAS BEEN ABNORMALLY SUPPRESSED



Historical analysis and current forecasts do not guarantee future results.

The display shows the realized volatility of a passive 60/40 portfolio invested in 60% US equities and 40% US government bonds. It also shows the volatility of the same portfolio assuming a stock-bond correlation of 0.13.

Through March 31, 2022 | **Source:** Global Financial Data, Thomson Reuters Datastream and AB

3. **Cross-asset investors have a duration problem.** We can also demonstrate the importance of this issue by showing the scale of the duration problem facing investors. The downward path of bond yields in recent decades means that the duration of a position in, say, US 10-year Treasury bonds has mechanically increased. One might think that the duration of a multi-asset portfolio that included a significant bond allocation would have increased too, but these have actually been spared.

   We can show the duration increase empirically—the first derivative of price with respect to the change in 10-year rates (*Display 74, page 86*). On this basis, a large negative number is a sign of long duration in the conventional sense—an upward shift in rates would cause a negative return. The decline in the lower line in the chart (the 10-year rolling bond duration) shows how the duration on 10-year bonds is as high as it's ever been. The middle line, which shows a 60/40 portfolio, shows no such change and has been stable for the last decade.

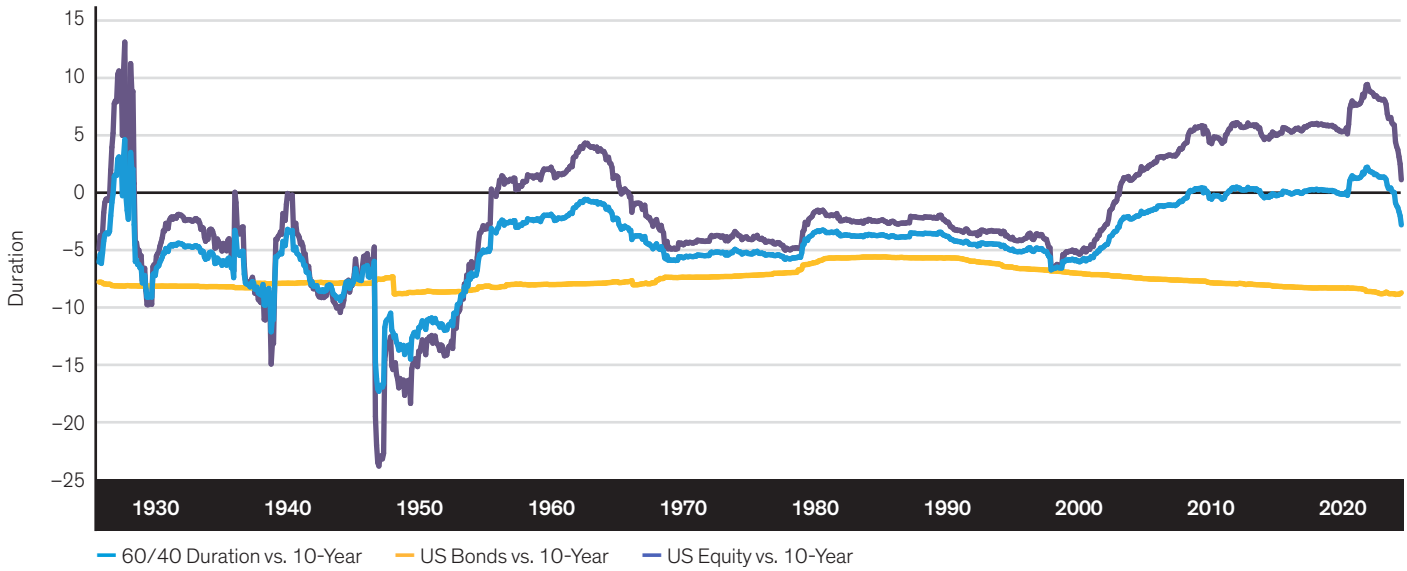
   It turns out that a shift to strongly negative stock-bond correlations means that equity duration has effectively changed sign, offsetting the increase in bond duration. If the stock-bond correlation were to revert closer to zero, this "cushion" would be removed, with the duration of a simple multi-asset portfolio rising. This shift could boost portfolio interest-rate risk just when there's an unprecedented level of strategic uncertainty about the nature and direction of policy.

Why Is There a Risk that Correlation Rises Now?

We think a strong case can be made in the post-pandemic environment that the historically "easy" diversification of stocks and bonds may no longer be reliable. This eventuality was on display in early 2022, when stocks and bonds were positively correlated. To be clear, our focus is strategic, not tactical, but this could be a taste of things to come. Stock-bond correlation has fluctuated over short periods, but the question that concerns us here is: What average correlation level can be expected over the next decade for investors who don't want to consider rapid tactical portfolio changes in their hunt for diversifying return sources?

The key environmental change is the first realistic prospect in decades of strategically higher inflation—and there's a case that inflation volatility will also be higher. We'll show below—empirically and theoretically—that this outlook includes a case to act on stock-bond correlations. One can choose to question whether the outlook really is new after the pandemic, but we believe a regime change has occurred. We won't address that topic here because we've covered it elsewhere. We made the case in Chapter 1, "Assessing the Inflation Trajectory and Portfolio Responses," that equilibrium inflation will be higher, and we outlined the case for a broader permanent shift in the investment environment in *Are We Human or Are We Dancer?*

DISPLAY 74: 60/40 DURATION RISK, HELD DOWN BY A NEGATIVE STOCK-BOND CORRELATION, IS SET TO RISE



Historical analysis and current forecasts do not guarantee future results.

Duration is calculated by running a regression of bonds, equities and 60/40 monthly returns against the monthly change in the US 10-year yield on a 10-year rolling basis.

January 31, 1930, to July 31, 2022 | **Source:** Global Financial Data, Robert Shiller's database, Thomson Reuters Datastream and AB

Here, we'll review some of the forces identified in the academic literature as being important for correlations, and then we'll show the results from our own empirical analysis.

From a theoretical perspective, stock and bond prices are driven by discount models that share common elements. They can be used as a structure to think about which forces increase and which forces decrease correlations between these assets. The stock and bond price equations may be written as follows:

$$P_S = E\left[\sum_{t=1}^{\infty}\left(\frac{1+g}{1+Y_t+ERP_t}\right)^t * D\right]$$

where P is the stock price, g is the expected growth rate of dividends (D), ERP is the equity risk premium, D is the starting level of dividends and Y is the government bond yield,

and

$$P_B = E\left[\sum_{t=1}^{T}\frac{C_t}{(1+Y_t)^t} + \frac{100}{(1+Y_T)^T}\right]$$

where P is the bond price, C is the bond coupon and Y is the discount rate.

Stock and bond prices represent the present values of expected future cash flows discounted by a rate that includes relevant risk premiums. Government bonds have fixed cash flows, but stock dividends are uncertain—the expected dividend growth rate has a critical impact on valuations. Thus, while both stocks and bonds share uncertain discount rates, they have different sensitivities to macroeconomic conditions, which can turn correlation positive or negative.

Ewan Rankin and Muhummed Shah Idil at the Reserve Bank of Australia use a discounted cash flow model in their overview of the determining factors in the stock-bond correlation.[61] Specifically, they focus on the impact of growth and inflation shocks and the uncertainty of these variables. Changing expectations for growth and inflation translate into forecasts for dividends and interest rates. Stronger economic growth and higher inflation lead to higher-interest-rate forecasts, because tighter monetary policy is expected in the future. These conditions also lead to higher-dividend forecasts as corporate profit expectations rise.

So, the ultimate impact on the stock-bond correlation depends on how much expected dividends change relative to the discount rate. Growth shocks should have a greater positive impact on expected dividends but only an indirect impact on interest rates, so stock prices should rise and bond prices should fall—producing negative correlation. Inflation shocks directly increase interest rates, while the positive impact on dividends might be muted (depending on the ability of firms to pass through prices). This scenario should hurt prices for both asset classes—leading to positive correlation.

More uncertainty in the growth outlook will hurt stock prices, as the equity risk premium rises, but will benefit bond prices. More inflation uncertainty will raise both the discount factor for stocks and the term premium in bond yields, increasing correlation. Rankin and Idil's lengthy series of stock-bond correlations for the US, UK, Australia and Japan, dating back to the 1900s, demonstrates that positive correlation has been the norm for most of the 20th century, underscoring how unusual the negative correlations of the past 20 years have been.

Antti Ilmanen's analysis focuses on four key dimensions that drive stock and bond returns: the business cycle or growth outlook, the inflation environment, volatility conditions and the monetary-policy stance.[62] Based on this structure, better economic growth prospects should be positive for equities because of higher expected dividend growth, while bonds don't benefit, leading to negative correlation.

High inflation is unambiguously negative for bonds, while the impact on equities is nonlinear. With low positive inflation, discount rates are relatively stable, and a positive expected dividend growth rate should dominate, resulting in lower correlation. With high inflation, common discount-rate changes dominate both stock and bond prices, leading to positive correlation. High volatility drives a "flight to safety" from equities to government bonds, turning correlation negative. Ilmanen also shows that monetary-policy easing benefits both equity and bond returns.

Ilmanen focused mainly on the US, with a brief mention of Japan and Germany, while Lieven Baele and Frederiek Van Holle extend the analysis to a sample of 10 developed markets.[63] They emphasize the importance of monetary policy, showing that no matter the inflation and growth regime, correlations are always positive when monetary policy is restrictive.

Meanwhile, negative correlations are associated with periods of accommodative monetary policy—but only in periods of low inflation. Lingfeng Li, examining the G7 markets, finds a strong link between uncertainty about long-term expected inflation and the stock-bond correlation: greater inflation concerns likely lead to positive stock-bond correlation.[64] The paper also finds that uncertainty about real interest rates and unexpected inflation also influence stock and bond co-movement, but to a lesser degree.

Our own empirical analysis closely matches the documented academic results.

We examined the key drivers of the five-year rolling correlation of US stock and bond returns since the 1970s. In what we found to be the most parsimonious model (*Display 75, page 88*), the 10-year real

61 Ewan Rankin and Muhummed Shah Idil, "A Century of Stock Bond Correlations," *Reserve Bank of Australia Bulletin* (September 2014), https://www.rba.gov.au/publications/bulletin/2014/sep/pdf/bu-0914-8.pdf.

62 Antti Ilmanen, "Stock-Bond Correlations," *Journal of Fixed Income* 13, no. 2 (2003).

63 Lieven Baele and Frederiek Van Holle, "Stock-Bond Correlations, Macroeconomic Regimes and Monetary Policy" (working paper, Department of Finance, Tilburg University, Netherlands, October 2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3075816.

64 Lingfeng Li, "Macroeconomic Factors and the Correlation of Stock and Bond Returns" (working paper No. 02-46, International Center for Finance, Yale School of Management, New Haven, CT, November 2002), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=363641.

DISPLAY 75: REGRESSION SUMMARY OF FIVE-YEAR ROLLING STOCK-BOND RETURN CORRELATION DRIVERS

Variable	Beta	T-Stat
Intercept	–0.36	**–6.00**
US 10-Year Real Government Bond Yield	0.14	**11.08**
US 10-Year Break-Even Rate	0.04	**4.55**
US Industrial Production (YoY)	0.01	**3.16**
US Equity vs. Bond Volatility (Five-Year Rolling)	–0.01	–1.74
Adjusted R-Squared	**59.4%**	

Historical analysis and current forecasts do not guarantee future results.

The table shows regression results for the US five-year rolling stocks vs. bond return correlation. The regression period is from September 1971 to September 2021. The equity vs. bond volatility difference is defined as five-year rolling average annualized standard deviation. The pre-1997 10-year break-even rate is a backtest of implied inflation calculated by Jan J. J. Groen and Menno Middeldorp from the Federal Reserve Bank of New York. The real 10-year government bond yield is calculated by subtracting the 10-year break-even rate from the nominal bond yield. The t-stats are adjusted for autocorrelation using Newey-West (1987) methodology.

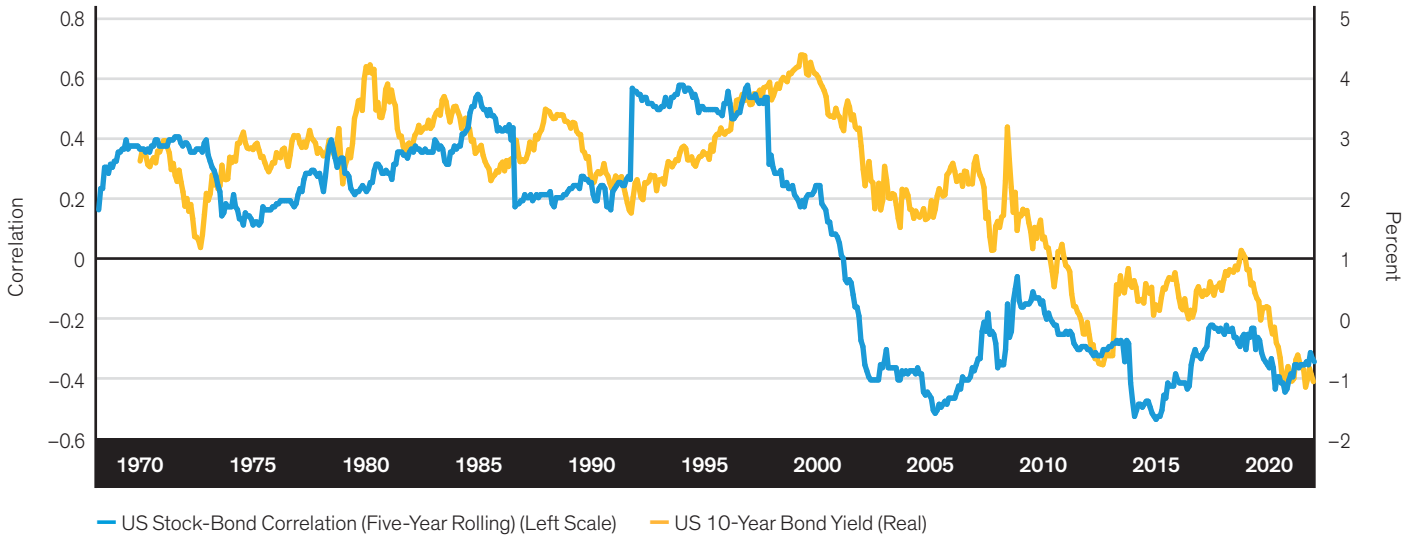
September 30, 1971, through September 31, 2021 | **Source:** Global Financial Data, New York Fed, Thomson Reuters Datastream and AB

government bond yield is the most statistically significant variable, and it captures the common discount-rate factor shared by stocks and bonds. The beta coefficient is positive—a rising discount rate is negative for both equities and bonds, driving positive correlation. The 10-year break-even rate captures the impact of inflation; as outlined above, rising inflation is negative for bond returns, and a large jump in inflation can undermine equities at the same time, so it's positively linked to the stock-bond correlation.

The negative coefficient on equity versus bond volatility captures "flight to safety" episodes, where investors choose bonds when equities see bouts of volatility. Industrial production, a proxy for the business cycle and growth expectations, is also statistically significant with a positive coefficient. The positive link to stock-bond correlation runs counter to the economic rationale, suggesting that positive growth news should cause stock and bond returns to diverge. The rationale holds that dividend-growth expectations should rise, while bonds don't benefit—and might even be hurt by expectations of higher future yields. However, the coefficient is near zero, and growth expectations and the potential for future higher yields might already be partly captured by the 10-year real and break-even rates.

Our view is that policymakers (more politicians than central bankers) may grow more comfortable with moderately higher inflation as a way to address high debt levels. If we're correct, we would expect more accommodative policy, given a certain level of inflation. As mentioned earlier, Baele and Van Holle suggest that accommodative policy is associated with a negative stock-bond correlation, but only when inflation is low. We expect longer-run inflation to settle above the historical average, so the long-run policy outlook wouldn't stop the correlation from increasing.

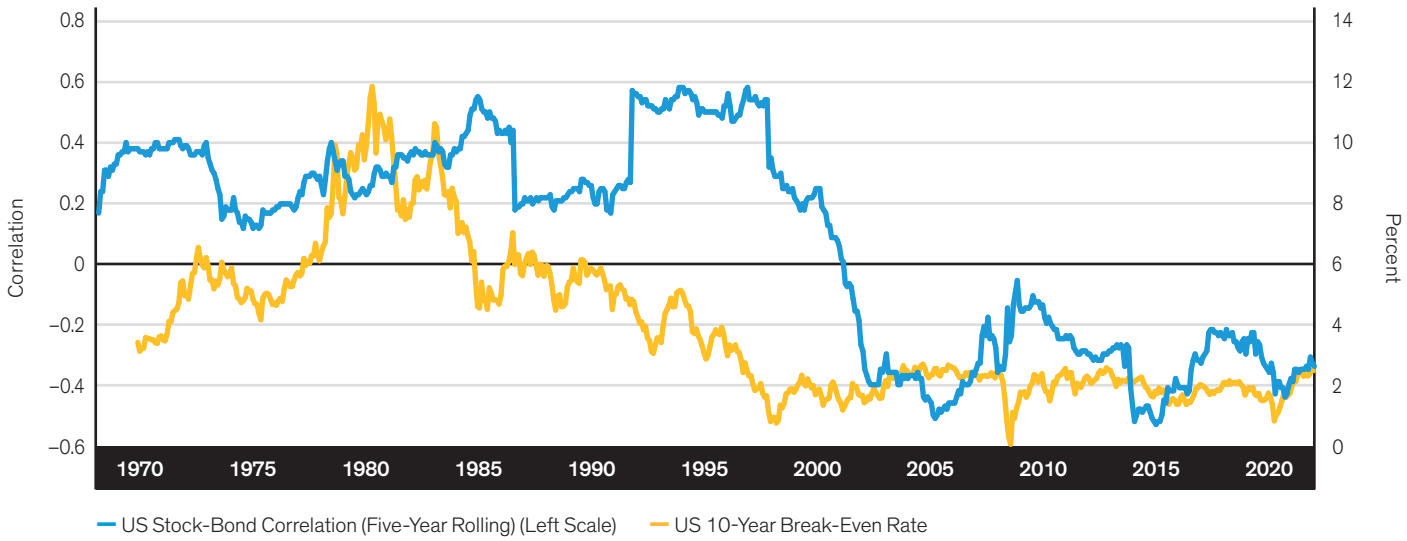
DISPLAY 76: REAL US 10-YEAR BOND YIELDS AND US STOCK-BOND CORRELATION



Historical analysis and current forecasts do not guarantee future results.

Through November 30, 2021 | **Source:** Global Financial Data, Thomson Reuters Datastream and AB

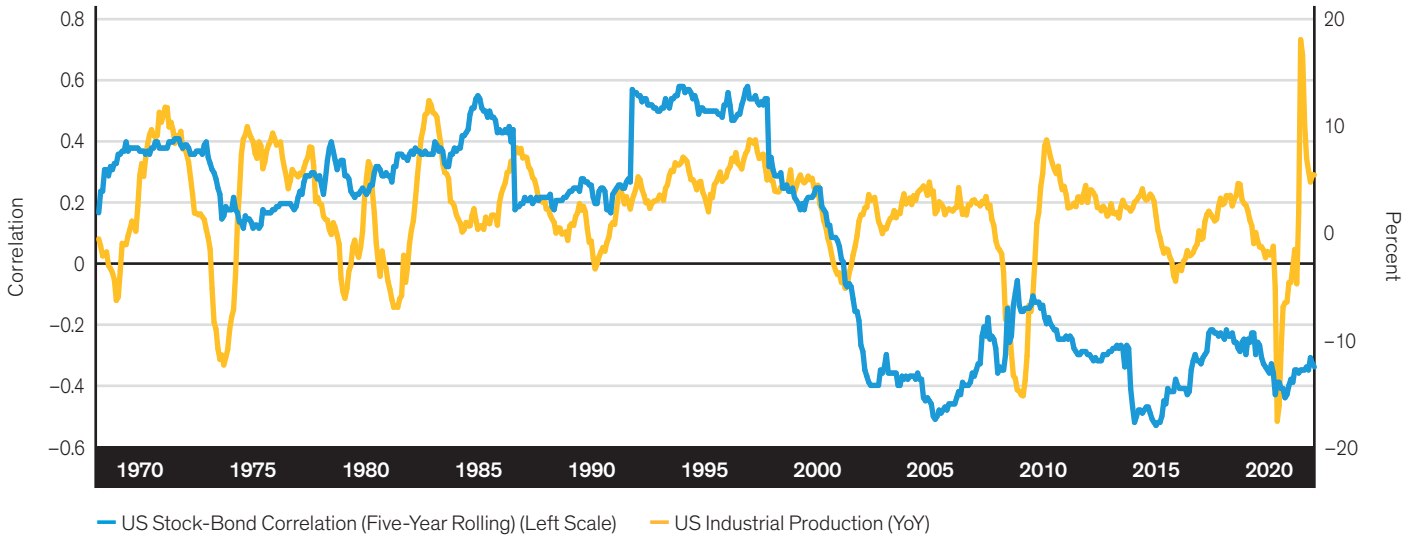
DISPLAY 77: REAL US 10-YEAR INFLATION BREAK-EVEN RATE AND US STOCK-BOND CORRELATION



Historical analysis and current forecasts do not guarantee future results.

Through November 30, 2021 | **Source:** Global Financial Data, Thomson Reuters Datastream and AB

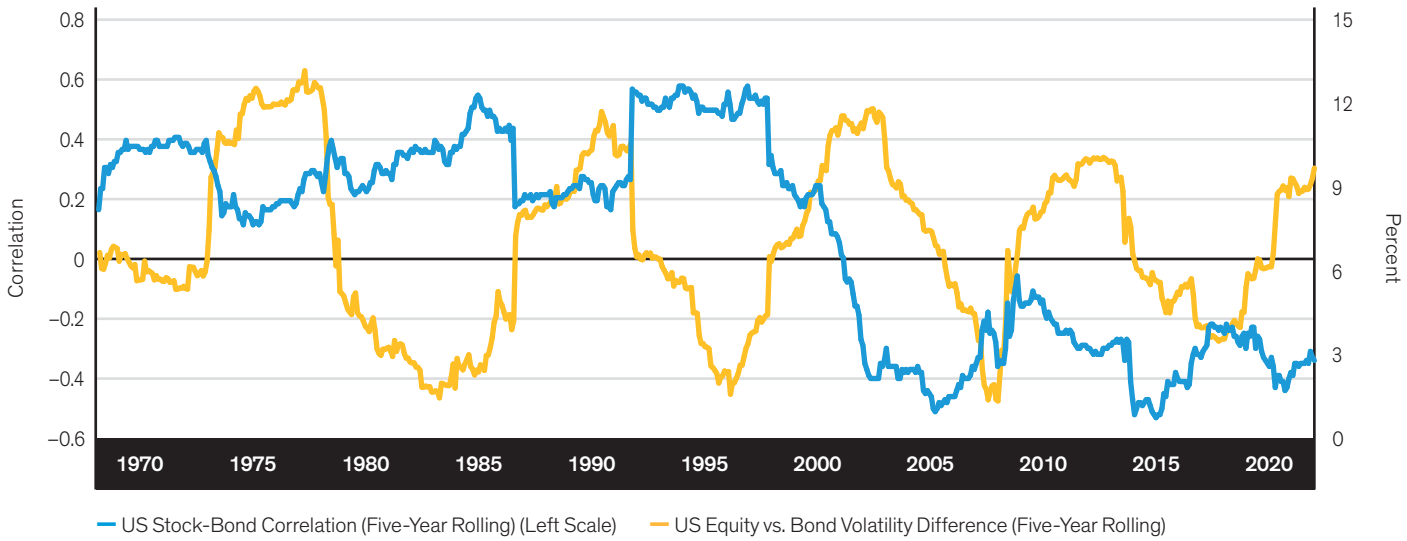
DISPLAY 78: US INDUSTRIAL PRODUCTION AND US STOCK-BOND CORRELATION



Historical analysis and current forecasts do not guarantee future results.

Through November 30, 2021 | **Source:** Global Financial Data, Thomson Reuters Datastream and AB

DISPLAY 79: US EQUITY/BOND VOLATILITY DIFFERENCE AND US STOCK-BOND CORRELATION



Historical analysis and current forecasts do not guarantee future results.

Through November 30, 2021 | **Source:** Global Financial Data, Thomson Reuters Datastream and AB

DISPLAY 80: SUMMARY OF UNIVARIATE REGRESSIONS OF FIVE-YEAR ROLLING US STOCK-BOND RETURN CORRELATION

Variable	Beta	T-Stat	Adjusted R-Squared
US 10-Year Government Bond Yield	0.035	**7.32**	11.29%
US Equity Volatility (Five-Year Rolling)	–0.004	**–2.44**	1.10%
US 10-Year Government Bond Volatility (Five-Year Rolling)	–0.008	–1.23	0.59%
US CPI (Five-Year Rolling)	0.007	**2.21**	0.78%
US CPI Volatility (Five-Year Rolling)	0.007	**4.87**	5.08%
US Equity vs. Bond Volatility (Five-Year Rolling)	–0.003	–1.75	0.59%

Historical analysis and current forecasts do not guarantee future results.

The table shows results from univariate regressions of five-year rolling US stock-bond return correlation during the period from January 1876 to September 2021. The t-stats are calculated using the Newey-West (1987) adjustment for serial correlation.

January 31, 1876, through September 30, 2021 | **Source:** Global Financial Data, Thomson Reuters Datastream and AB

In *Displays 76–79* (*pages 89–90*), we show the history of the key stock-bond correlation drivers identified in our model.

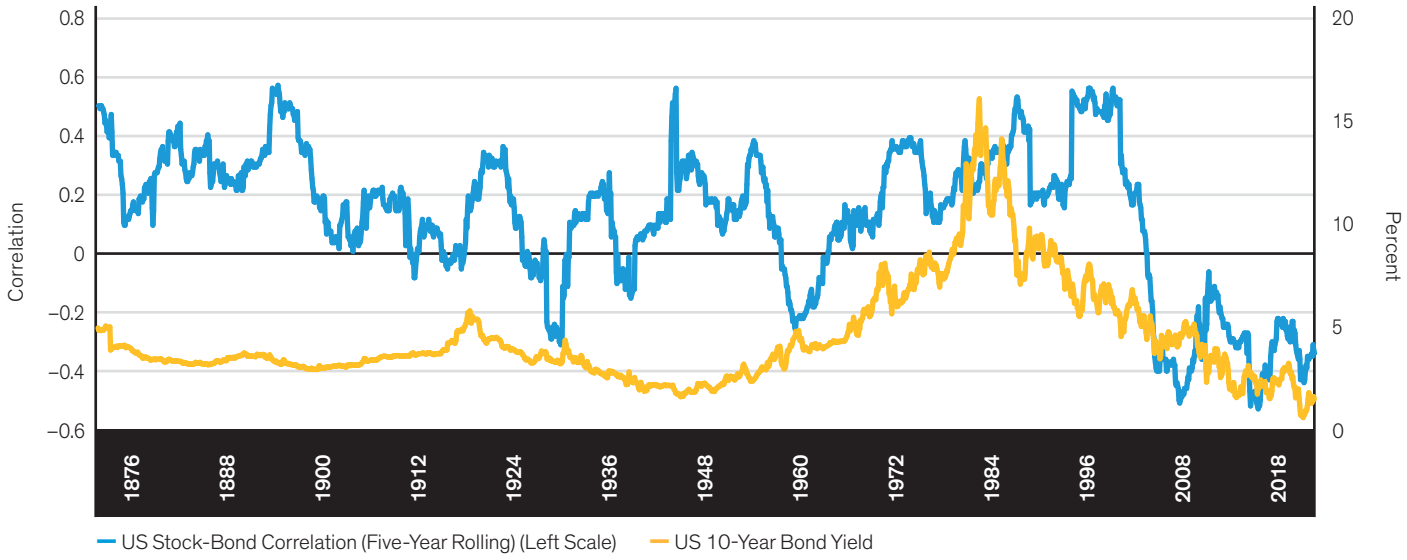
The pandemic creates the possibility that we're in a different regime, so we feel it's important to analyze correlations over a horizon that's significantly longer than "only" the last 50 years. Our data are less complete and crucially lack a measure of inflation expectations, so we show this longer-term analysis separately. We also analyze on a univariate basis, rather than striving for a multivariate model (*Display 80*).

The common discount rate, proxied by the US 10-year government bond yield, is still the most statistically significant variable. Inflation and inflation volatility are also important, as is the "flight to safety" effect from high equity volatility, though the coefficient is very close to zero.

Displays 81–84, pages 92–93, show the history of the most statistically significant variables plotted against the five-year rolling stock-bond correlation.

Continued on page 94

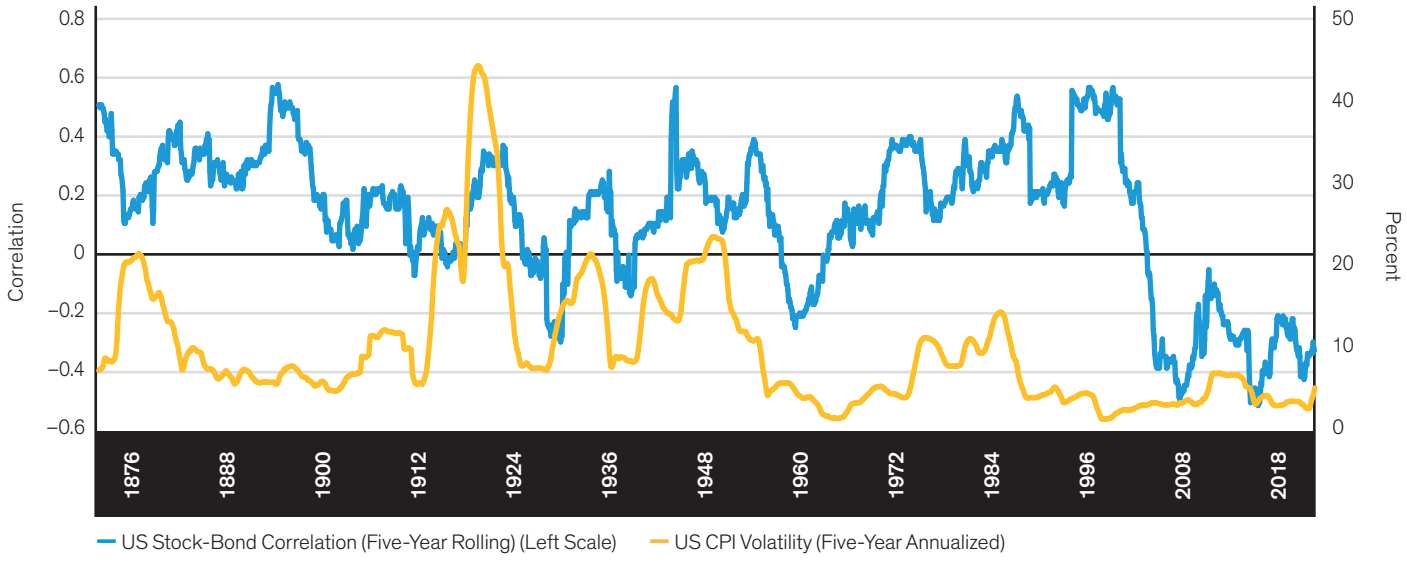
DISPLAY 81: US 10-YEAR BOND YIELDS AND US STOCK-BOND CORRELATION



Historical analysis and current forecasts do not guarantee future results.

Through November 30, 2021 | **Source:** Global Financial Data, Thomson Reuters Datastream and AB

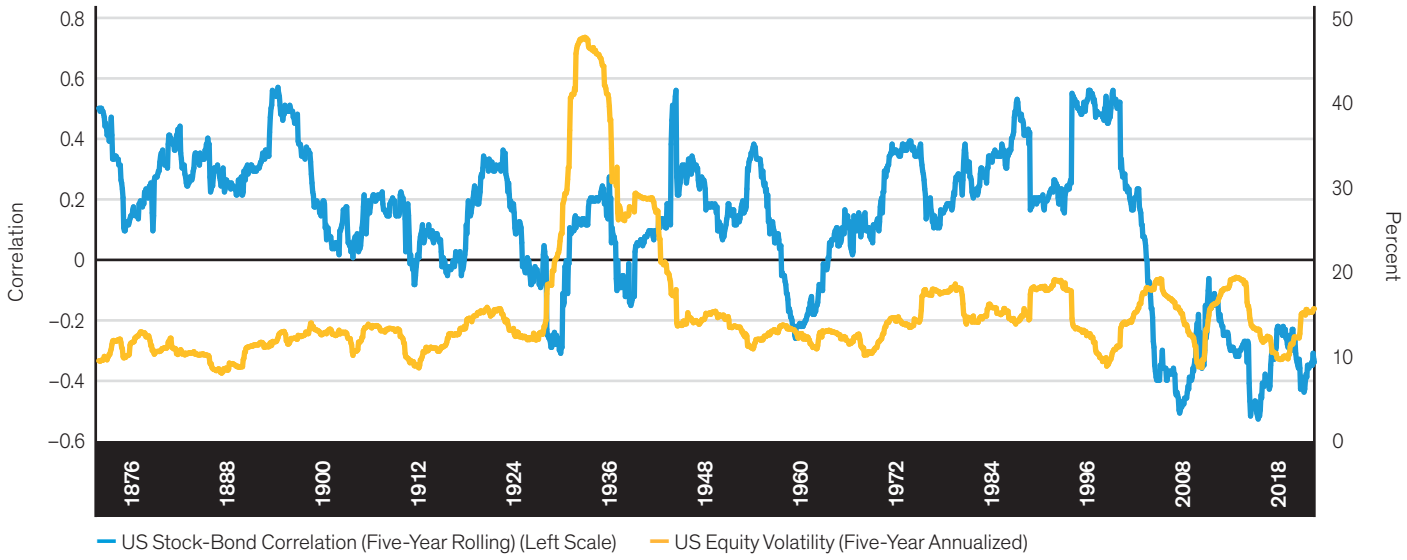
DISPLAY 82: US CPI VOLATILITY AND US STOCK-BOND CORRELATION



Historical analysis and current forecasts do not guarantee future results.

Through November 30, 2021 | **Source:** Global Financial Data, Thomson Reuters Datastream and AB

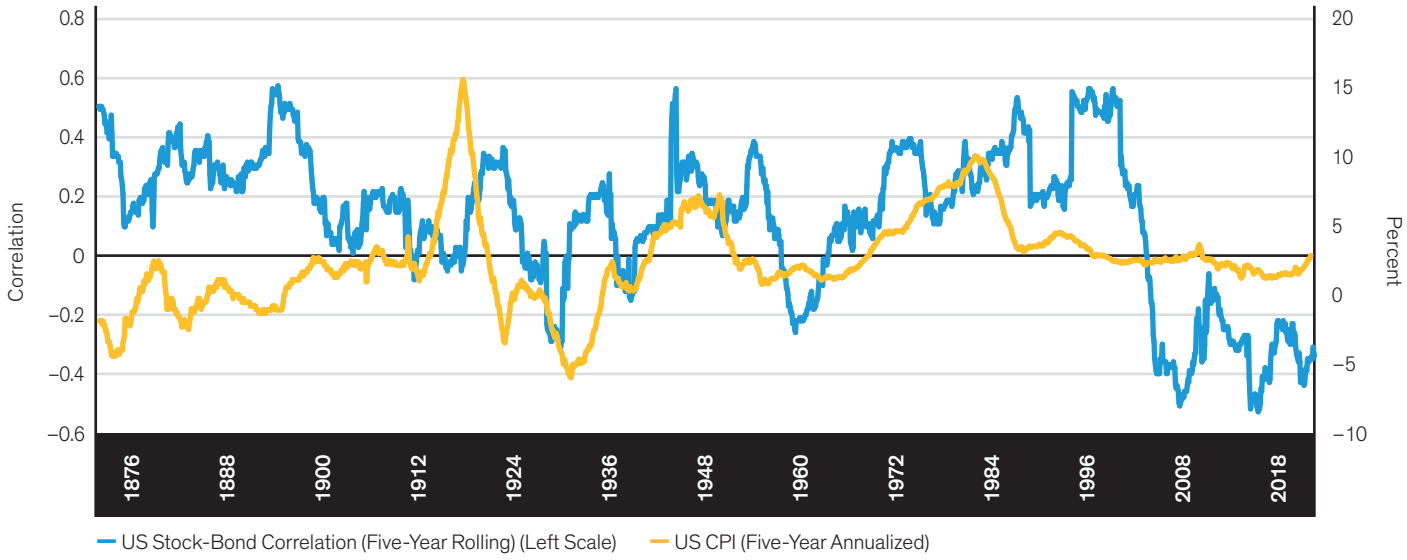
DISPLAY 83: US EQUITY VOLATILITY AND US STOCK-BOND CORRELATION



Historical analysis and current forecasts do not guarantee future results.

Through November 30, 2021 | **Source:** Global Financial Data, Thomson Reuters Datastream and AB

DISPLAY 84: US CPI AND US STOCK-BOND CORRELATION



Historical analysis and current forecasts do not guarantee future results.

Through November 30, 2021 | **Source:** Global Financial Data, Thomson Reuters Datastream and AB

DISPLAY 85: SUMMARY OF UNIVARIATE REGRESSIONS FOR THE UK MARKET

Variable	Beta	T-Stat	Adjusted R-Squared
CPI volatility (five-year rolling)	0.01	**8.95**	25.9%
10-year government bond volatility (fiive-year rolling)	0.02	**5.62**	9.9%
10-year government bond yield	0.02	**4.06**	2.6%
CPI (five-year rolling)	0.01	**3.11**	1.2%
Equity volatility (five-year rolling)	0.00	–0.60	0.0%
Equity vs. bond volatility (five-year rolling)	–0.03	**–6.96**	14.9%

Historical analysis and current forecasts do not guarantee future results.

The table shows results from univariate regressions of five-year rolling UK stock-bond return correlation during the period from January 1795 to September 2021. The t-stats are calculated using the Newey-West (1987) adjustment for serial correlation.

Note: The UK CPI Index is spliced (wholesale/PPI from 1790 to 1914, BoE CPI from 1914 to 1988, Thomson Reuters Datastream CPI from 1988)

January 31, 1795, through September 30, 2021 | **Source:** BoE, Global Financial Data, Thomson Reuters Datastream and AB

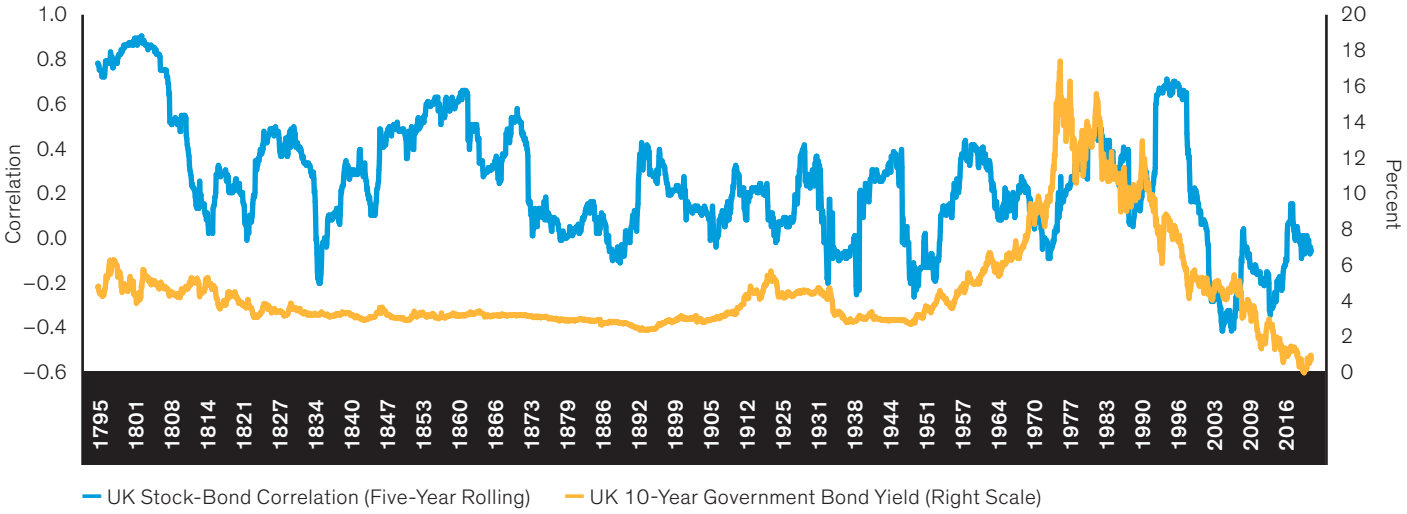
Continued from page 91

For international comparison, we also include the long-run analysis of the UK market—and we have a significantly longer data history (*Display 85*). The conclusions are broadly similar, with the UK 10-year government bond yield, inflation and volatility all having statistically significant impacts. But UK inflation volatility is much more statistically significant, with more explanatory power, than in the US. Bond volatility in the UK has a strong, statistically significant impact but isn't significant in the US.

Displays 86–89, pages 95–96, show the history of the most statistically significant variables plotted against the five-year rolling stock-bond correlation in the UK.

Continued on page 97

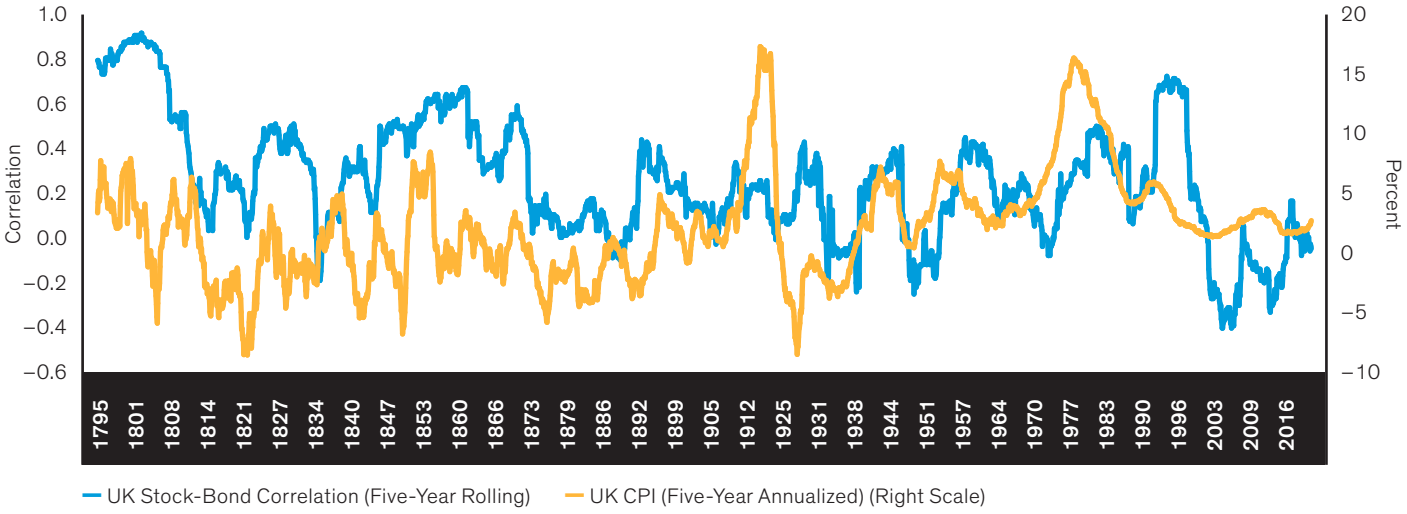
DISPLAY 86: UK 10-YEAR GOVERNMENT BOND YIELD AND UK STOCK-BOND CORRELATION



Historical analysis and current forecasts do not guarantee future results.

Through November 30, 2021 | **Source:** BoE, Global Financial Data, Thomson Reuters Datastream and AB

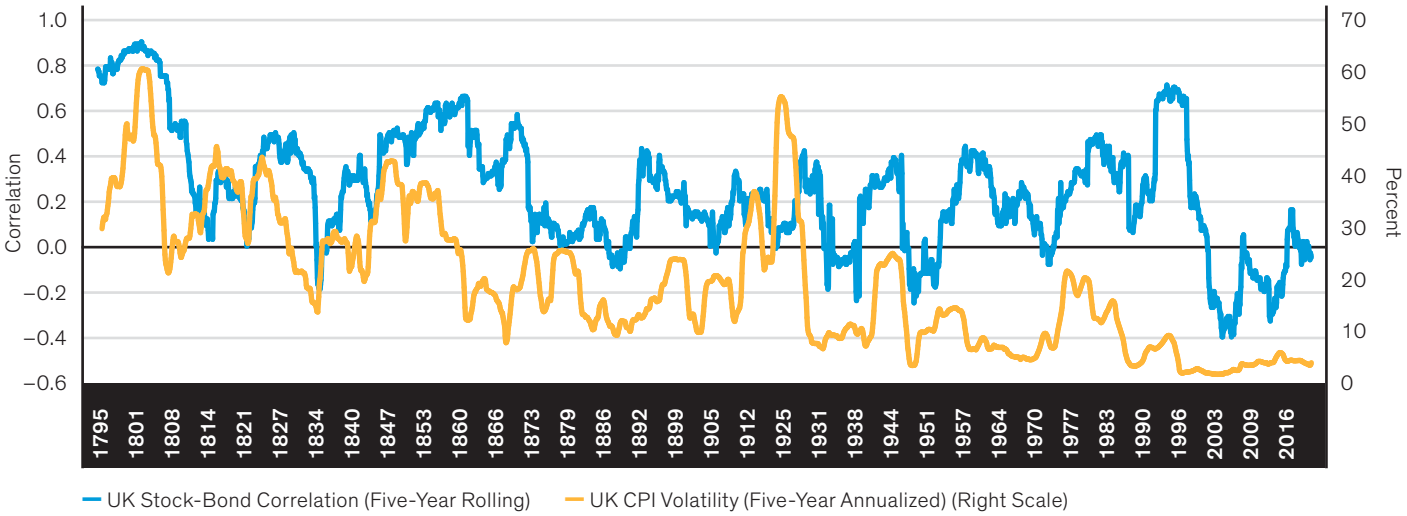
DISPLAY 87: UK CPI AND UK STOCK-BOND CORRELATION



Historical analysis and current forecasts do not guarantee future results.

Through November 30, 2021 | **Source:** BoE, Global Financial Data, Thomson Reuters Datastream and AB

DISPLAY 88: UK CPI VOLATILITY AND UK STOCK-BOND CORRELATION

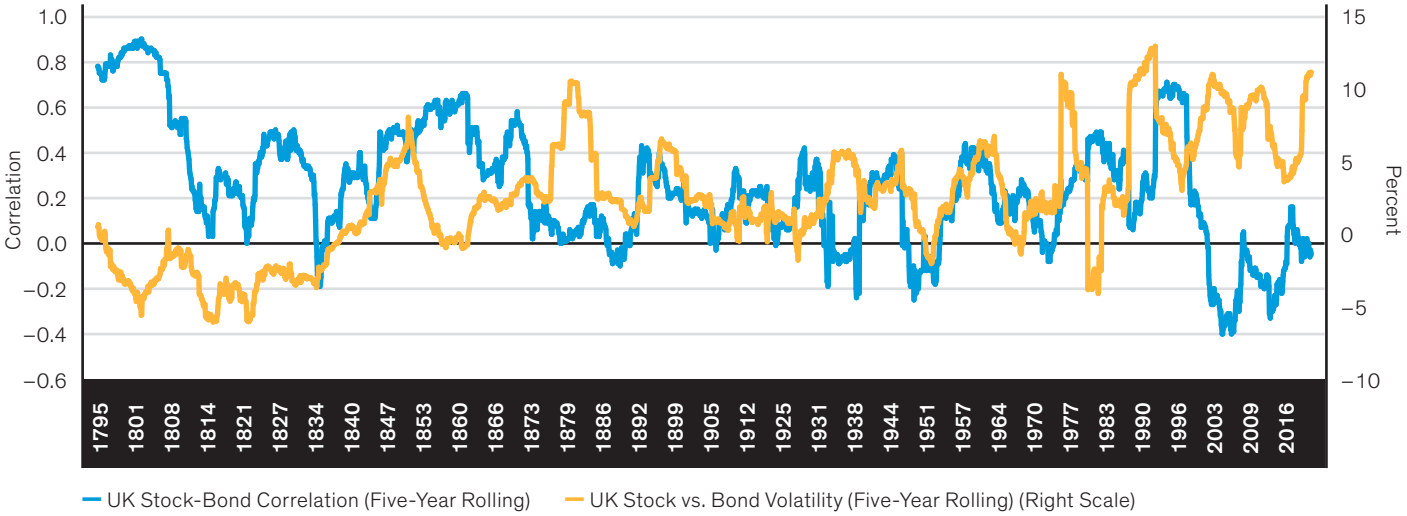


Historical analysis and current forecasts do not guarantee future results.

UK CPI Index is spliced (wholesale/PPI from 1795 to 1914, BoE CPI from 1914 to 1988, Thomson Reuters Datastream CPI from 1988).

Through November 30, 2021 | **Source:** BoE, Global Financial Data, Thomson Reuters Datastream and AB

DISPLAY 89: UK STOCK/BOND VOLATILITY AND UK STOCK-BOND CORRELATION



Historical analysis and current forecasts do not guarantee future results.

Through November 30, 2021 | **Source:** BoE, Global Financial Data, Thomson Reuters Datastream and AB

Continued from page 94

Applying a multivariate regression with the statistically significant variables from the univariate regressions discussed earlier, inflation volatility remains the most statistically significant variable (*Display 90*). The 10-year bond yield and the volatility difference between stocks and bonds also remain very significant statistically, while the level of inflation is borderline significant.

A Three-Way Trade-Off: Time Horizon, Diversification and Cost

For decades, a long-duration position has played many roles in a portfolio—including as a source of income and a diversifier for higher-risk assets. Both of these functions are now moot, leading to the question of what exactly diversification is. This topic must be discussed and is inextricably linked to time horizon; in fact, the entire question of how to measure risk is inseparable from time horizon, though the industry may have lost sight of this point in the explosion of benchmarking (a topic for future research).

Strategies that are effective at reducing the effect of abrupt short-term losses aren't necessarily the same as those that offer a diversifying return stream over decades-long periods. We can show this as a three-way trade-off (*Display 91, page 98*) between income (cost), drawdown mitigation and diversification. Investors' location on the axis between diversification and drawdown protection is determined by their time horizon and sensitivity to short-term losses.

The chapter focuses mainly on longer-term investors, so in the following sections we'll delve into longer-term diversification. In this context, the income/cost parameter is net-of-fee return, which can range from highly positive, for an asset whose income exceeds fees by a wide margin, to negative. An example would be strategies that provide an insurance-like return of protection at critical times but otherwise exact a net cost.

In the past, high-grade bonds could perform all these functions while also providing an income stream, rather than imposing a cost. They may still have a role in reducing drawdowns, but if they no longer fulfill the other two roles, we suggest a few other options (in blue) available to investors. Bonds have played these various roles so effectively for so long that it may take more time until a broad swath of investors accept that they need a new way to think about this three-way trade-off.

We can separate these roles in a portfolio by looking at the trade-off between 1) income and long-run diversification; and 2) income and drawdown protection. In *Display 92, page 99*, we show the annualized net return of strategies plotted against their correlations with US equities. Because this chapter is for long-horizon investors, we measure net returns and correlations with equities since 1990.

DISPLAY 90: SUMMARY OF LONG-RUN MULTIVARIATE REGRESSION FOR THE UK MARKET

Variable	Beta	T-Stat
Intercept	–0.0118	–0.33
10-Year Nominal Bond Yield	0.0194	**3.97**
CPI (Five-Year Rolling)	0.0049	**1.57**
CPI Volatility (Five-Year Rolling)	0.0090	**7.72**
Equity vs. Bond Volatility (Five-Year Rolling)	–0.0101	**–3.09**
Adjusted R-Squared	**34%**	

Historical analysis and current forecasts do not guarantee future results.

The table shows results from a multivariate regression of five-year rolling UK stock-bond correlations from January 1795 to September 2021. The t-stats are calculated using the Newey-West (1987) adjustment for serial correlation.

UK CPI Index is spliced (wholesale/PPI from 1790 to 1914, BoE CPI from 1914 to 1988, Thomson Reuters Datastream CPI from 1988).

January 1, 1795, through September 30, 2021 | **Source:** BoE, Global Financial Data, Thomson Reuters Datastream and AB

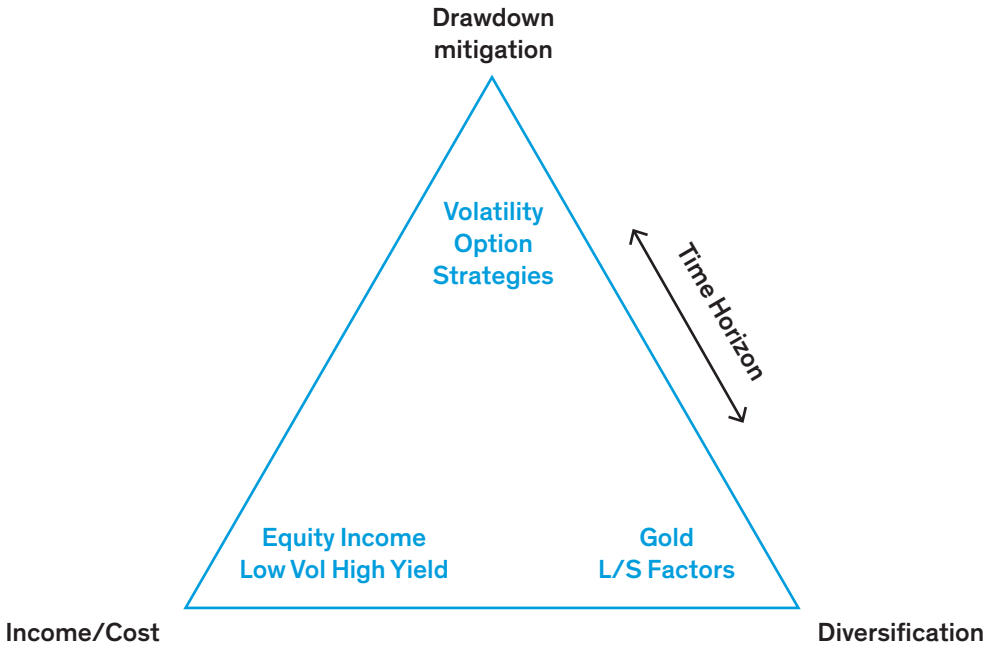
High-grade fixed income (represented by 10-year US Treasury bonds) has played a special role in this context. Over the past three decades, it's been the only return stream that's meaningfully in the top left quadrant—delivering positive income and an outright negative correlation with stocks. The dotted arrow indicates where we think 10-year bonds will move over the next decade. That point might be obvious, but we think presenting it this way clarifies how other options fit into the dynamic.

Gold is the asset closest to the historical behavior of 10-year bonds, with a positive nominal annualized return and zero correlation to US equities over the past three decades. We've made the case elsewhere[65] that we think gold's real performance has been slightly positive over the very long run, and that there's a case for it to outpace a 60/40 portfolio over the next decade, given starting bond yields and equity valuations.

More important is the historical evidence suggesting that gold's zero correlation with equities, as opposed to bonds, is robust at different inflation levels. TIPS have also demonstrated low correlation to US equities with a higher nominal return than gold, but they're one of the most expensive inflation hedges right now, so their future return outlook could be lower than gold's.

65 Inigo Fraser Jenkins and Alla Harmsworth, *IQ:2022 Strategic Investment Outlook: Four Strategic Allocation Issues for Asset Owners in 2022*, Bernstein Research, January 10, 2022.

DISPLAY 91: THE TRADE-OFF BETWEEN INCOME (COST), DRAWDOWN MITIGATION AND DIVERSIFICATION



For illustrative purposes only.

Source: AB

Illiquid assets have constituted a larger share of institutional portfolios in recent years, mainly given their higher expected returns, but they could also be useful in the search for diversifying assets. One caveat: some of the diversification of these illiquid assets is "fake"; over short time horizons, an apparently low correlation between listed and nonlisted assets could simply be an artifact of mark-to-market frequency. The useful aspect of diversification stems from the underlying distinctive nature of the return stream—if, for example, it involves encouraging corporate change (as in the case of private equity) or isn't as fundamentally connected to the business cycle (as in the case of farmland).

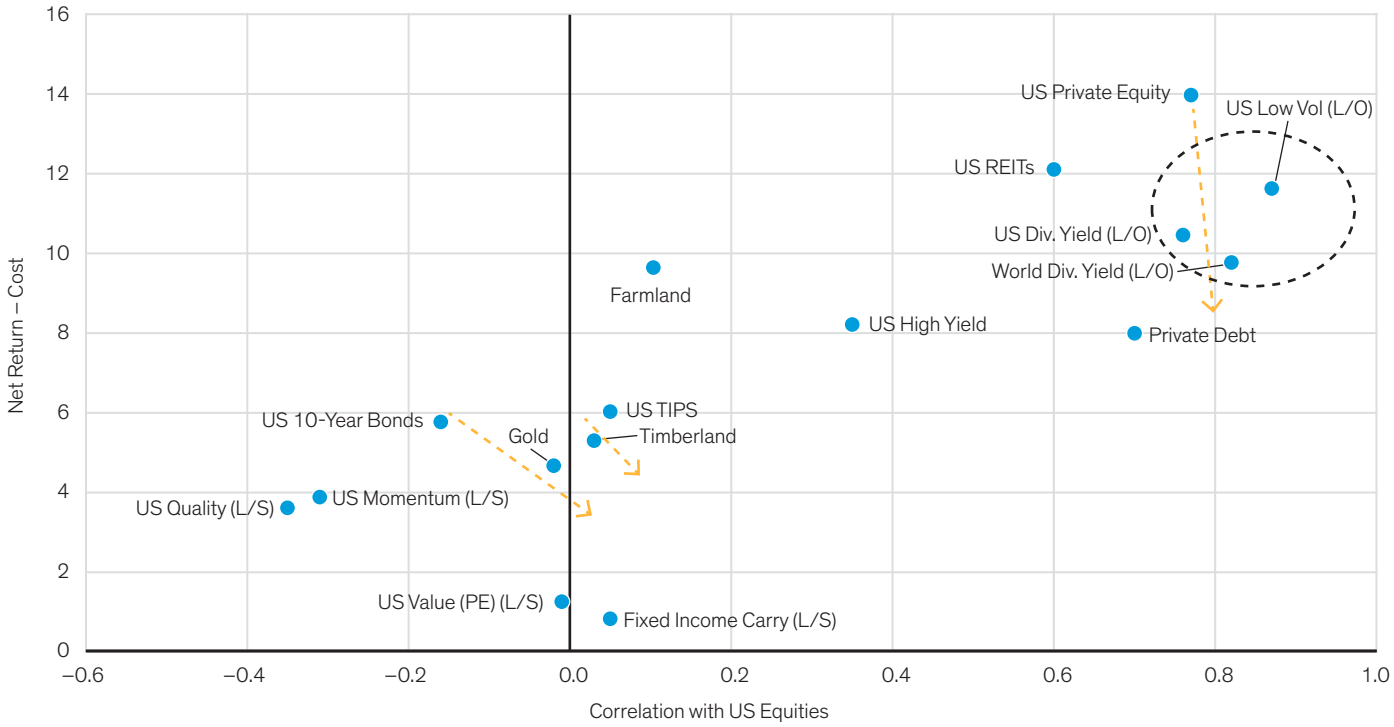
Based on quarterly returns since 1990 (*Display 92*), private equity's historical performance seems very attractive. However, as we show in our recent research on illiquid assets (see Chapter 5, "Private Assets and the Future of Asset Allocation"), we think the build-up of dry powder with consequently higher buyout multiples and a potentially less supportive path of credit yields implies much lower future returns. To be fair, high multiples are present in nearly all asset classes—driving our view of lower nominal returns. However, in the case of private equity, they could erode most of the post-fee advantage over public equity.

Two assets stand out as potentially very attractive on this basis: farmland and timberland. If our prognosis regarding the income/diversification trade-off for bonds and private equity is correct, of the assets shown here, farmland and timberland are in very advantageous positions. We pointed out in Chapter 2, "The Intimate Linkage of ESG and Inflation," that they're important because they lie at the intersection of inflation-protecting assets and ESG, and that they've consistently delivered positive real returns in high-inflation periods. Unlike private equity, the fundamentals of farmland and timberland are less likely to be tied to the business cycle, as public equities are.

Factor strategies could also play an important role. We show two long/short factor strategies with outright negative correlations to equities, though with negative post-fee returns. We also include long-only strategies such as equity low volatility and equity dividend yield, which have a less-than-perfect correlation with equities and positive income streams. We highlight them to show the distinct risk/return space they occupy. We think such strategies are an important part of the response to lower real returns and less diversification, as we outlined in *Asset Classes and Factors: What's the Difference?*[66]

66 Inigo Fraser Jenkins and Alla Harmsworth, *Asset Classes and Factors: What's the Difference?*, AllianceBernstein, November 2021.

DISPLAY 92: NET RETURN VS. CORRELATION WITH US EQUITIES FOR VARIOUS INVESTMENTS



Historical analysis and current forecasts do not guarantee future results.

Note: Private equity, private debt, farmland and timberland series are quarterly, and we match the drawdown periods to the nearest quarter. We assume a 10 b.p. fee for US 10-year bonds, gold, REITs, TIPS and high-yield bonds. We assume a 20 b.p. fee for long-only factors and a 50 b.p. fee for long/short factors. For timberland, farmland and private debt we assume a 150 b.p. fee. Multi-asset trend strategy is based on 12-month momentum across equities, fixed income, FX and commodities implemented through most liquid futures contracts with a 12% annualized volatility target. To calculate the annualized return for this strategy, we add back the annualized three-month Treasury bill return and subtract a 200 b.p. fee.

January 31, 1990, through March 31, 2022 | **Source:** Bloomberg, Cambridge Associates, Cliffwater, Global Financial Data, National Council of Real Estate Investment Fiduciaries (NCREIF), Thomson Reuters Datastream and AB

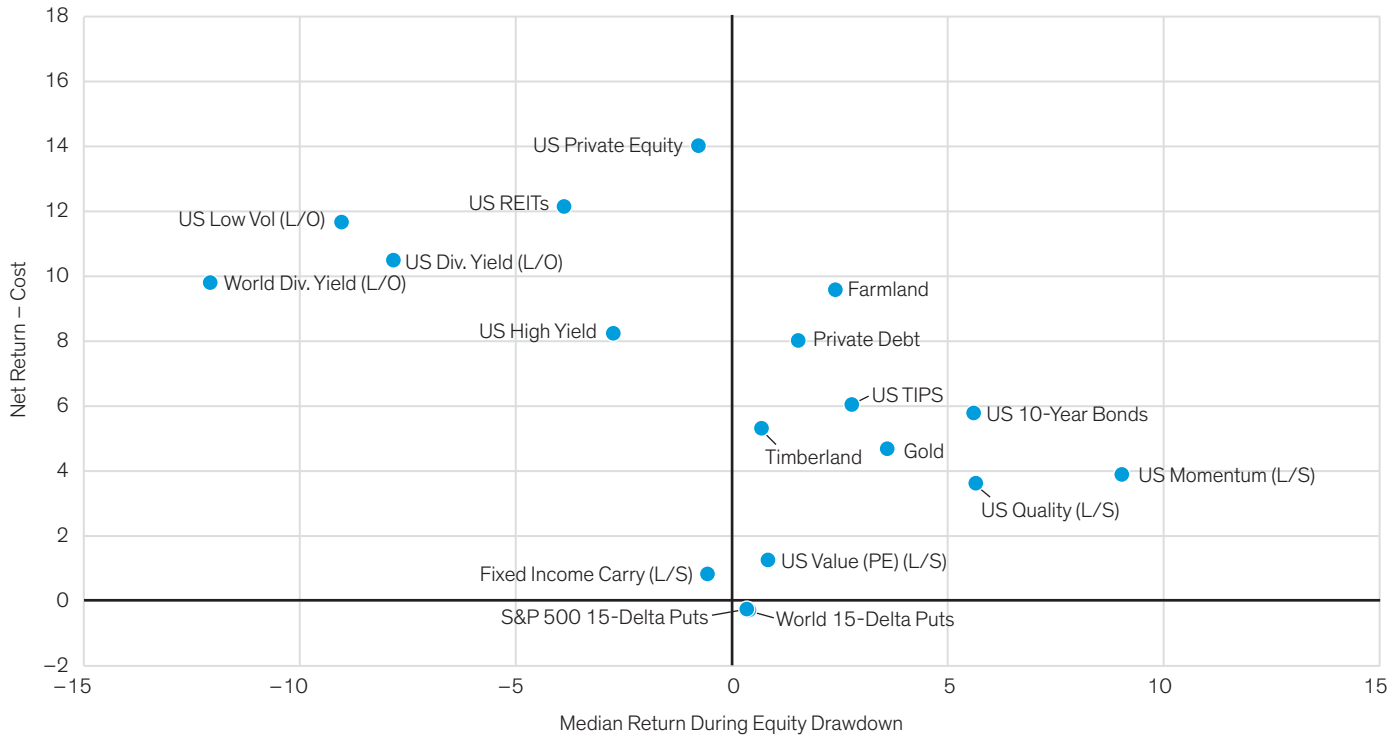
The other trade-off in our three-way framework is for investors who are more sensitive to short-term losses. They can't avoid a shorter time horizon, which results in an inescapable trade-off between income (cost) and protection against risk-asset drawdowns. Digging deeper, we show the trade-off between after-fee returns and drawdown mitigation for a range of strategies (*Display 93, page 100*), comparing annualized returns after fees with asset-class performance during the 10 largest US equity drawdowns since 1990. The conclusion is similar to that in Display 92, which showed net return versus equity-diversification potential.

Over the past 30-plus years, US government bonds have been the best asset for providing protection during US equity drawdowns and delivering a solid nominal net-of-fee return. Gold and US TIPS are the closest to government bonds for drawdown mitigation. US private equity also shows very favorably, with high net-of-fee returns and a small drawdown, though some of this advantage over public markets is overstated because of mark-to-market frequency and the policies in determining illiquid asset values. We also add option strategies to the list of assets for drawdown mitigation, as they provide strong protection against losses but at a relatively high cost, with a negative annualized return.

One notion this analysis reinforces is what we've described as the conundrum facing investors—that the current model seems likely to lead to declining real returns.[67] Our analysis also confirms that no single asset can replace high-grade bonds; instead, a portfolio of assets is needed, a case we've made before.[68]

67 See Inigo Fraser Jenkins and Alla Harmsworth, *Alpha, Beta and Inflation: An Outlook for Asset Owners*, AllianceBernstein, July 2021.
68 See the chapter "An Urgent Need to Replace Fixed Income" in *A New Paradigm for Investing*, Bernstein Research, April 2020.

DISPLAY 93: NET RETURN VS. EQUITY DRAWDOWN PROTECTION FOR VARIOUS INVESTMENTS



Historical analysis and current forecasts do not guarantee future results.

Note: Private equity, private debt, farmland and timberland series are quarterly, and we match the drawdown periods to the nearest quarter. We assume a 10 b.p. fee for US 10-year bonds, gold, REITs, TIPS and high-yield bonds. We assume a 20 b.p. fee for long-only factors and a 50 b.p. fee for long/short factors. For timberland, farmland and private debt we assume a 150 b.p. fee. The option strategies are shown for one-year 15-delta puts, market-cap weighted and delta-hedged daily. Multi-asset trend strategy is based on 12-month momentum across equities, fixed income, FX and commodities implemented through most liquid futures contracts with a 12% annualized volatility target. To calculate annualized return for this strategy we add back the annualized three-month Treasury bill return and subtract a 200 b.p. fee. Drawdown periods include December 1999 to March 2000, September 2000 to September 2002, September 2007 to March 2009, March 2011 to September 2011, March 2012 to June 2012, June 2015 to September 2015, September 2018 to December 2018, March 2019 to June 2019, December 2019 to March 2020 and September 2020 to December 2020.

January 31, 1990, through March 31, 2022 | **Source:** Bloomberg, Cliffwater, Cambridge Associates, Global Financial Data, NCREIF, Thomson Reuters Datastream and AB

What This Means for Portfolio Construction

What should investors do about the prospect of higher stock-bond correlations when considering their portfolio allocations?

In *Display 94, page 101*, we show how the correlations of various assets with equities have evolved at various inflation ranges, highlighting the 2%–4% inflation range—our expected equilibrium. The key for investors is to find assets with a stable and low correlation as inflation rises. In the fixed-income section, we show how the correlation of US 10-year government bonds with equities turns positive in a moderately higher inflation regime. US investment-grade corporate bonds and TIPS still offer diversifying power, though even their correlation with equities tends to rise with inflation. Global high-yield bonds, however, still provide diversification, as do Japanese bonds.

Real assets become a very important diversifier as inflation rises.[69] The correlation of oil with equities flips from positive to negative, in part because of the 1970s experience, when oil was the main source of inflation. The world is very different now, but even outside of that period, evidence remains that oil can diversify equity risk, so we think this result remains valid. ESG constraints are the more immediate limiting factor in our view, though we think those constraints may ease over time as the nature of ESG investing—and what counts as commodity investing—evolves.[70]

Real estate's overall correlation with equities remains low as inflation rises, while the correlation of real estate investment trusts (REITs) with equities increases as inflation rises. This revives the long-standing question of whether the difference between REITs

69 Infrastructure shows up in these tables as a positive correlation, but here we are using a proxy in the form of listed equity assets, so we think that biases the results for these purposes.
70 Since 1980 the average correlation of US equities and oil prices has been –0.05 in years when the 10-year break-even rate was higher than 3%.

and direct, broader real estate investment is fundamental or just an artifact of how often prices are updated. Studies have shown that the correlation of REITs with direct real estate increases as the time horizon of return sampling increases, implying that the frequency of price updates plays a role.[71]

However, the correlation isn't perfect, even over longer time horizons. Fundamentally, the income stream from rents is a function of the real economy and therefore inflation, though the timing isn't perfect because rent-review cycles may be slower than changes in the inflation rate. However, REITs do play an important role over strategic horizons, as real assets with a correlation to equities (even if an imperfect one), making them useful in diversification.

Crucially, gold has a near-zero correlation with equities even as inflation rises, so even if gold's long-run expected real return is close to zero, the asset's diversification potential means it may play a larger role in portfolios. This potential also may point to a strategic diversification role for cryptocurrencies, another zero-duration non-fiat asset.[72]

Factor return streams—across asset classes—play a key role in diversification, especially when defined on a long/short basis. Factors such as equity low volatility could become better diversifiers as inflation rises, while momentum and value factors in both equities and fixed income can still deliver return streams with a very low correlation to equity beta, regardless of inflation level.

Equity sectors tend to have a high absolute correlation to equities overall, but the relative performance of some sectors tends to have a negative correlation at higher inflation levels. Two categories of sectors stand out here—those that are the listed vehicles for real-asset exposure (such as energy and real estate) and those with a more stable or lower-beta profile (such as consumer staples, insurance and utilities).

DISPLAY 94: CORRELATION WITH US EQUITIES BY INFLATION BAND

	Average Correlation with US Equities (Annual)				
Break-Even Bands	**<2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
Break-Even Average	0.02	0.02	0.04	0.05	0.07
Break-Even Frequency	0.25	0.24	0.10	0.10	0.31
US 60/40 Portfolio	0.95	0.92	0.91	0.97	0.95
Equities	**<2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
EM Equities	0.71	0.71	0.32	0.43	0.24
World Equities	0.96	0.95	0.73	0.85	0.82
Japan Equities	0.59	0.48	0.23	0.51	0.20
Fixed Income	**<2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
US 10-Year Gov. Bonds	–0.27	–0.19	0.31	0.42	0.37
Japan 10-Year Gov. Bonds	–0.14	–0.11	0.16	0.05	0.06
World 10-Year Gov. Bonds	–0.15	0.00	0.24	0.44	0.22
US Investment-Grade Bonds	0.08	0.13	0.27	0.41	0.45
World Investment-Grade Bonds	0.57	0.59	0.18	0.03	–0.06
US High-Yield Bonds	0.32	0.37	0.30	0.06	0.50
World High-Yield Bonds	0.61	0.64	–0.06	–0.18	0.07
US TIPS (10-Year)	–0.08	0.03	0.34	0.29	0.27
US Municipal Bonds	–0.08	0.03	0.37	0.69	0.57
Real Assets	**<2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
Broad Commodity Index	0.23	0.30	0.03	–0.08	0.04
Oil	0.23	0.20	0.01	–0.04	–0.03
Gold	–0.06	0.15	–0.08	–0.20	–0.09
US REITs	0.51	0.54	0.47	0.64	0.72
World REITs	0.56	0.61	0.57	0.69	0.70
US Real Estate	0.07	–0.14	–0.09	–0.07	0.02
World Infrastructure	0.51	0.67	0.47	0.67	0.73

Continued on next page

71 See, for example, Andrew Ang, *Asset Management: A Systematic Approach to Factor Investing* (Oxford University Press, 2014): 378.
72 Jenkins and Harmsworth, *IQ:2022 Strategic Investment Outlook*.

Continued from previous page

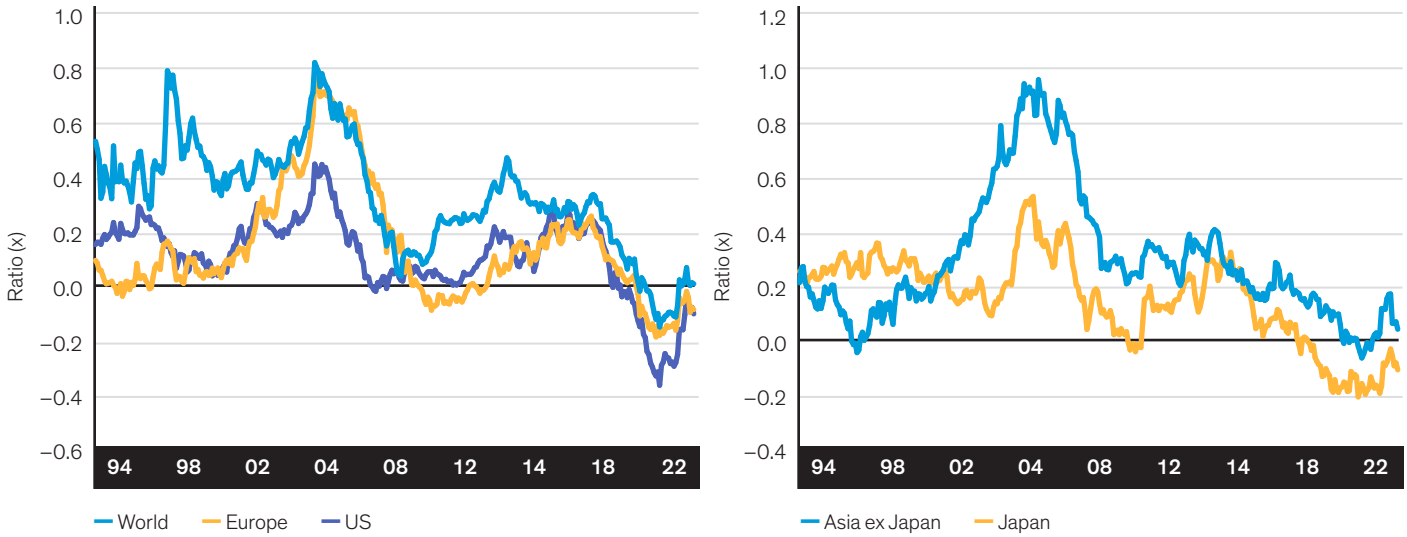
	Average Correlation with US Equities (Annual)				
Factors (Long/Short)	**<2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
Equity Price to Book	0.04	0.16	0.15	0.03	–0.28
Equity PE	–0.01	–0.04	0.10	0.04	–0.23
Equity Quality	–0.38	–0.28	–0.24	–0.11	0.00
Equity Dividend Yield	–0.36	–0.33	–0.28	–0.34	–0.59
Equity FCF Yield	–0.08	–0.17	0.09	–0.03	–0.34
Equity Low Vol	–0.59	–0.48	–0.34	–0.37	–0.56
Equity Momentum	–0.37	0.00	–0.09	0.12	0.08
Fixed Income Value	0.01	0.18	–0.02	0.17	0.10
Fixed Income Momentum	0.05	0.00	0.12	–0.12	–0.01
Fixed Income Carry	–0.11	0.10	0.09	–0.10	–0.06
FX Value	0.10	–0.15	0.11	0.14	–0.11
FX Momentum	–0.03	0.24	0.07	–0.05	0.05
FX Carry	0.48	0.40	–0.03	0.13	0.08
Factors (Long Only)	**<2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
Equity Price to Book	0.85	0.87	0.81	0.79	0.89
Equity PE	0.86	0.88	0.88	0.84	0.90
Equity Quality	0.97	0.95	0.93	0.95	0.98
Equity Dividend Yield	0.73	0.80	0.73	0.84	0.81
Equity FCF Yield	0.85	0.84	0.90	0.81	0.91
Equity Low Vol	0.83	0.93	0.89	0.96	0.94
US Relative Sectors	**<2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
Industrials	0.27	0.23	0.10	0.18	0.36
Materials	0.16	0.25	0.00	0.28	0.37
Metals & Mining	0.32	0.29	0.02	0.18	0.13
Consumer Cyclicals	0.12	0.12	0.18	0.14	0.31
Consumer Staples	–0.53	–0.44	–0.08	–0.10	–0.16
Energy	–0.10	0.09	–0.18	–0.17	–0.12
Banks	0.20	0.08	0.08	0.07	–0.05
Insurance	–0.11	–0.05	–0.05	0.00	0.10
Healthcare	–0.41	–0.27	–0.02	0.11	–0.14
Real Estate	–0.32	–0.16	–0.15	0.33	0.25
Technology	0.38	0.26	0.14	–0.03	0.10
Telecoms	0.14	–0.25	–0.13	–0.39	–0.42
Utilities	0.51	–0.55	–0.29	–0.39	–0.52

Historical analysis and current forecasts do not guarantee future results.

The table shows the average 12-month correlation with US equities for different assets in different inflation regimes. The data history is from 1970 or longest available history. Inflation regimes are proxied by the US 10-year TIPS implied break-even inflation rate. Pre-1997, the 10-year break-even rate is a backcast of implied inflation calculated by Jan Groen and Menno Middeldorp from the Federal Reserve Bank of New York. For more details, please see: https://libertystreeteconomics.newyorkfed.org/2013/08/creating-a-history-of-us-inflation-expectations/. Equity long-only factors show the market-cap-weighted absolute return of a portfolio of top-quintile-ranked stocks based on the factor characteristic. Equity long/short factors show the market-cap-weighted return of a portfolio that is long the top-quintile-ranked stocks and short the bottom-quintile-ranked stocks. World Investment-grade and high-yield bond returns are shown in excess of duration. US CPI Index is used to convert nominal to real returns. We do not subtract the change in CPI for relative sector returns.

January 1, 1970, to May 31, 2021 | **Source:** AQR Data Library, Bloomberg, Federal Reserve Bank of St. Louis, Global Financial Data, Kenneth R. French Data Library, New York Fed, Robert Shiller's database, Thomson Reuters Datastream and AB

DISPLAY 95: RECENT FACTOR RETURNS HAVE BEEN LACKLUSTER, BUT THERE'S EVIDENCE IT'S CYCLICAL



Historical analysis and current forecasts do not guarantee future results.

Display shows the five-year annualized return/risk ratios averaged for seven factors—P/B, dividend yield, ROE, long-term growth, price momentum, small cap and FCF yield—in each region. Baskets are rebalanced quarterly, and we use total long/short USD returns.

Through May 31, 2022 | **Source:** FactSet, Thomson Reuters I/B/E/S and AB

The Question of Return Stability

This discussion raises the question of how much confidence there is in the durability of relationships between financial variables. This chapter is predicated on the idea that the pandemic has heralded a regime change. If high-grade bonds can no longer diversify, can investors be confident in the other potential diversifying relationships we present? There are broader considerations around the extent to which the post-pandemic world constitutes a new set of economic rules, which we discussed more broadly in *Are We Human or Are We Dancer?*. However, we can highlight a few specific cases.

There's at least a normative case that real assets like real estate, farmland and timberland *should* continue to diversify, since their income streams are predicated on interactions in the real economy. In Chapter 2, "The Intimate Linkage of ESG and Inflation: ESG and the Hegelian Dialectic," we highlighted a risk that financializing residential real estate could elicit a backlash, given that it's linked to broader social questions of fairness and inequality. That's a danger that needs to be monitored, but perhaps more as a longer-run concern, and it would be unlikely to fully undermine the ability, say, of rents to respond to inflation in the coming years.

The role of factor returns may be more pressing in this regard. These returns have been subpar over the last decade (*Display 95*), partly due to the value factor's travails, but the struggles are broader than that. However, this isn't the first prolonged period of factor underperformance, so we think this is more likely cyclical than structural—a case we detailed in *Asset Classes and Factors: What's the Difference?*

How Much Reallocation Would Offset a Higher Stock-Bond Correlation?

It's hard to give a one-size-fits-all answer to the question of how large a reallocation would be needed to offset the impact of a higher correlation between stocks and high-grade bonds. It depends on an institution's investment goals, ability to buy different kinds of return streams, sensitivity to overall portfolio risk and investment time frame. If the stock-bond correlation returned to some kind of long-run average, there would clearly be other sizable shifts in expected returns and asset correlations. It would be artificial from a portfolio-allocation perspective to consider this change in isolation, but it can be useful as a scaling exercise.

One approach would be to consider how much the overall portfolio duration would need to change to make up for the increase in duration from a different stock-bond relationship. As we showed in Display 74, page 86, the deeply negative correlation between stocks and bonds has kept the empirical duration of a 60/40 portfolio stable at near zero, despite a rising bond duration in recent years. If the stock-bond correlation were to rise to zero, and if we assume (for argument's sake) that nothing else has changed, the 60/40's empirical duration would change to –3.6. Given the scale of adjustment necessary, an overall portfolio solution is likely needed rather than a single adjustment in the holdings of one asset class.

Another scaling exercise considers the role of individual assets on a univariate basis. Take, for example, the role of directly held real estate. If one assumes for argument's sake that its stated volatility is real (another debate entirely), one could ask how large an allocation to real estate would be needed to make up for the reduced diversifying role of high-grade bonds. For a 60/40 portfolio to correct for higher portfolio volatility if the equity-bond correlation were to rise to zero, based on historical covariance and variance, a 12% allocation out of fixed income into real estate could in theory correct for this, *ceteris paribus*. This exercise assumes that inflation is in a "moderate" 2%–4% range, an environment in which real estate has been a helpful return source.

However, such a simple substitution wouldn't work for many return streams. For example, the low-volatility equity factor looks like an excellent portfolio addition to maintain diversification. This is due to its return and ability to maintain a low correlation with equities at a higher inflation level, especially when a stable inflation level has been reached; this ability is reduced when inflation expectations are rising. The low-volatility equity factor can make up for less diversification from bonds at higher inflation, but its absolute volatility level is higher than that of bonds, so it can't simply be added to a portfolio at a given weight to reduce overall volatility. This doesn't mean the substitution is misguided; it simply shows that a broader conversation is needed about the trade-off between real income and risk levels.

In our conversations with investors, we often hear illiquid assets cited as an important—indeed, almost inescapable—part of the response to any reduction in diversification. The issue with this view is that some part of the face-value low correlation between many illiquid assets and equities stems from the smoothing inherent in stale prices. Stale prices aren't diversification: a high allocation to illiquid assets would likely result from a simple mean-variance optimization, but a lack of liquidity implies that allocations should be penalized if they endanger capital availability.

There's no single definitive answer to this quandary, but our working assumption is that the correlation of an illiquid asset with equities is between the (often low) number implied by smoothed stated prices and a higher number, which would be the correlation of the most similar liquid asset. The bottom line: for many investors, the desire to maintain a given level of real return leaves no choice but for risk—measured as realized volatility—to rise. The real strategic debate lies in the tension between two kinds of risk: risk measured as volatility and risk measured as the probability of a significantly lower payout for beneficiaries.

Macro Implications for Savings Rates

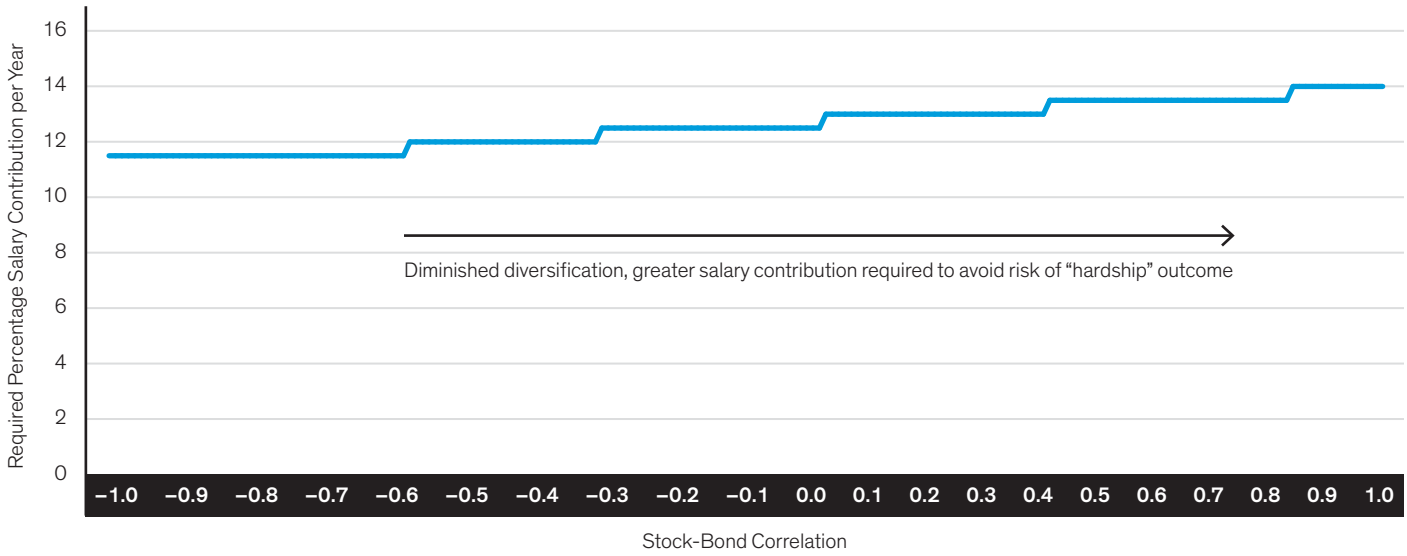
The main conclusions from this chapter relate to portfolio allocations, but we want to point out macro implications too. There could be something of a "feedback" effect of reduced equity-bond diversification on the macro economy. We've made the case elsewhere[73] that in economies like the US and UK, where individuals bear a lot of the risk for retirement saving, falling nominal investment returns and rising inflation require more saving.

The vast bulk of this saving is in public equities and debt. While a shift in correlations between these asset classes doesn't affect the mean expected return, it very much affects the return distribution. We think the most important aspect of this result is that a higher stock-bond correlation increases the risk of a hardship outcome, with benefits ending up materially below their expected levels.

In *Display 96, page 105*, we show the change in annual salary contribution required to reduce the risk of a hardship outcome—and how that required change varies with correlations. Given the assumptions in this analysis, an increase in the stock-bond correlation from –0.5 to 0.2 would require an additional annual contribution of 1% of salary to keep the probability of a hardship outcome from rising above 10%. This assumes that retirement savings are 100% invested in passive equity and bond positions.

73 See *A Cross-Asset View of Equities: A New Policy Environment and Changing Needs of Asset Owners Will Frame the Outlook of Capital Markets*, Bernstein Research, January 2021.

DISPLAY 96: REQUIRED ANNUAL PERCENTAGE OF SALARY CONTRIBUTION BASED ON ASSET-CLASS CORRELATION



Historical analysis and current forecasts do not guarantee future results.

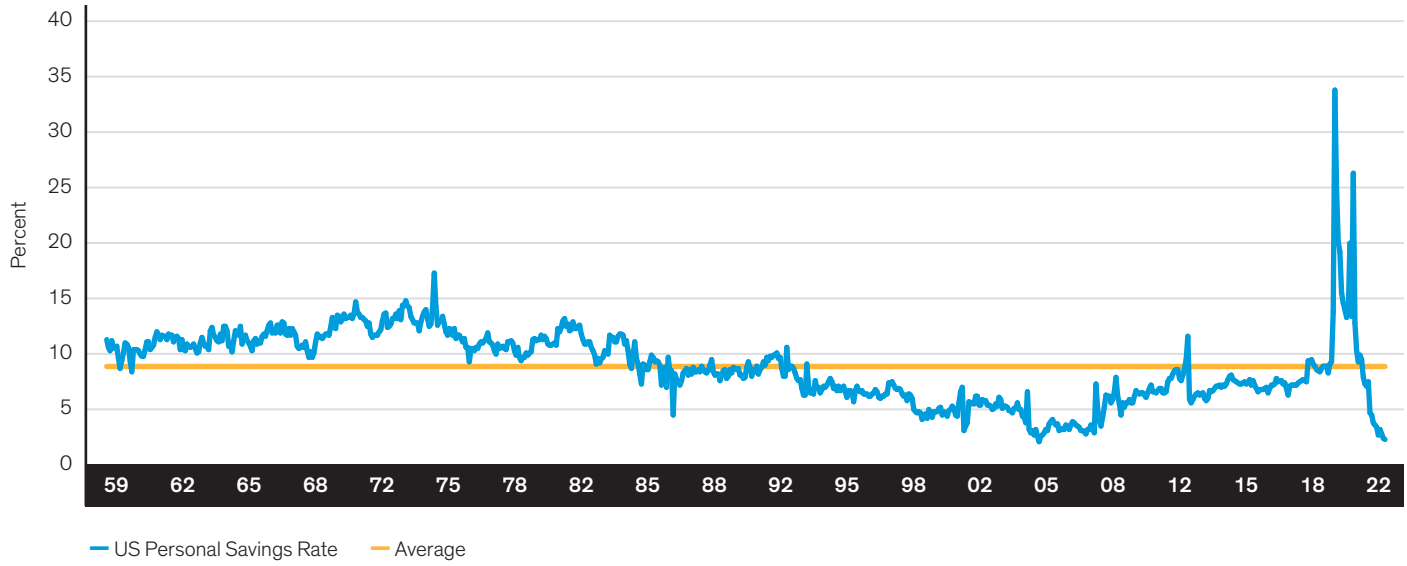
Display shows how the cost of immunizing against a pension outcome at or below the "hardship" level rises as equity-bond correlation rises. To quantify the impact of asset class returns, we construct a simple lifetime savings model. We assume someone starts work at age 20 earning $25K per annum and experiences salary growth of 2% per annum and retires at age 65. Upon retirement we assume they purchase an annuity that pays out $35K every year and that they die at age 90. We assume they pay into a savings product each year that has an expected return of 4% per annum. We set the standard deviation of stocks and bonds to be the same as their 100 trailing level, and we then vary the correlation between the asset classes from –1 to +1. We define the "hardship" level as a shortfall of $10K below the target annual pension entitlement of $35K. The chart shows the amount of saving needed to anchor the probability of the hardship level at 10%.

As of March 31, 2022 | **Source:** AB

A required savings-rate increase of this magnitude is significant, given the likelihood of higher interest rates ahead (*Display 97, page 106*); it would also add to any increase in savings rates due to lower expected real returns. Savings rates were very volatile during the pandemic, as consumers were unable to spend. If we ignore that discontinuity in the series, there was a long decline in savings rates over the entire period of strong capital market returns from 1980 until the GFC. The savings rate has risen slightly since, but we see pressure for it to increase further.

Such a change would likely happen slowly, but upward pressure on savings rates over the next decade would put downward pressure on the velocity of money, which we view as one of the long-term deflationary forces (along with automation) that's likely to keep strategic inflation expectations from becoming unanchored. This view implies lower interest rates for a given level of inflation—again, focused on a strategic horizon rather than the Fed's near-term preoccupations.

DISPLAY 97: SAVINGS RATES SHOULD INCREASE FROM CURRENT LEVELS



Historical analysis and current forecasts do not guarantee future results.

As of October 15, 2022 | **Source:** Thomson Reuters Datastream and AB

Conclusion

It would be hard to overstate the importance of negative stock-bond correlations in recent years as an underpinning of how people think about investing. Its influence goes beyond specific allocation decisions, such as the apparent attractiveness of the 60/40 portfolio and the (mistaken) belief that this construct represents a passive or default approach to asset allocation.

The ample diversification provided by negative stock-bond correlations has also shielded investors from a growing interest-rate sensitivity in portfolios driven by declining yields, and has been a significant, if latent and subtle, force driving the reallocation from active to passive. The changed post-pandemic outlook, particularly the different narrative on the likely inflation level and volatility, challenges this status quo. We argue that investors should expect the correlation of equity and high-grade bond returns to be closer to zero—perhaps even closer to the moderately positive multi-century historical average.

We expect equilibrium inflation to be definitively higher over the next decade than it was pre-pandemic. In the US, we would forecast inflation near 3%. This is above the Fed's target, but there's potential flexibility indicated in the central bank's discussion of "averaging" inflation over long periods. Regardless, we think this level is plausible, because governments might need higher inflation to deal with debt levels (see *Are We Human or Are We Dancer?*).

Moreover, we see higher inflation volatility ahead—as we move away from a technocratic and (semi) rules-driven approach to managing inflation, run by central bankers, to a world where fiscal policy inevitably plays a larger role. This evolution makes strategic inflation forecasts more prone to being affected by election cycles and the whims of politicians.

We never want to shy away from making normative statements in our research, so what should investors do about this issue? The first conclusion is that the risk of a rising stock-bond correlation means there's even less reason to own high-grade fixed income. Yes, starting bond yields have risen a lot in recent months, but the likelihood of a negative real return remains. If these assets are less effective at diversifying equity risk, it poses even more of a problem.

Recent years have seen many investors' hunt for returns move down the fixed-income quality curve and also into illiquid assets. We think the hunt for diversification will play an equally important role, raising profound methodological and governance questions as to how diversifying illiquid assets really are. These questions may only be answered if investors address their true time-horizon needs and ensure that their governance for internal or external management is consistent with that horizon.

An outlook of moderate inflation and low real yields implies that equities will have to do a significant part of the "heavy lifting" in portfolios over a strategic horizon. Diversifying portfolio risk will likely require a significant reallocation for portfolios that had been relying on the stock-bond dynamic as the key engine for diversification. The exact form of this reallocation will depend on investors' individual risk profiles, but at the margin it will increase the need for non-high-grade bonds and investments such as factor strategies across asset classes, illiquid assets and real estate. Gold could play a role: its 150-year real return is barely above zero, but its crucial attribute—a lack of correlation with equities—doesn't change with inflation levels.

We think this topic also encroaches on the active/passive debate. The rotation within public markets from active to passive has further to go, but even aside from considerations about the relative role of alpha and beta in a world where the return from beta is set to decline, the quest for diversification should increase interest in the role of idiosyncratic alpha in portfolios.

But what if this outlook hinging on higher stock-bond correlation is all wrong?

Determining the long-run forces driving this correlation is hard. What if correlation remains deeply negative even if inflation levels change? We could be overstating the likelihood of a change in the policy environment. Luckily, the call to action from our correlation forecast is directionally additive to our outlook based on a broader range of considerations; it's not a unique consideration. The need to make specific portfolio changes (less high-grade fixed income and more illiquid assets and factor risk) is a view we arrived at both from a return standpoint and from concerns about correlations.

PART II: Asset Classes, Factors and Allocation

CHAPTER 5

Private Assets and the Future of Asset Allocation

One of the most important strategic topics for chief investment officers and allocators right now is the role of private assets. The majority of senior investors we meet want to increase their private asset exposures, but the recent decline in public markets and a renewed debate about the need for liquidity make this topic more complicated.

There are good reasons to run high allocations to private assets, but we should expect more tension between that drive and the need for liquidity, given that the path of rates has turned. Moreover, expectations in some cases have likely gone too far—in private equity, for example. Asset owners must also deploy risk and fee budgets efficiently while considering time horizon as a way to level the playing field in assessing private and public assets.

Growing Allocations to Private Assets

The overall shift toward private assets, and the recognition of where it may disappoint, is in some ways a microcosm of investors' challenges. A lower return outlook and industry changes, especially in the distribution of fees paid for active management in public markets versus private markets, point to the need for investors to consider the most efficient uses of fees, risk and capital. And the categories used to segment these measures may need to be reassessed.

Private assets are the fastest-growing area of asset management—in both allocations and fees. We think the current macro environment favors further growth, for reasons we'll detail in this chapter, and there's clear evidence in the allocation of capital and fees. Indeed, we're moving rapidly toward a world where many asset owners are investing passively in public markets, with most of their active exposures in private markets. The current industry setup seems to suggest that this dynamic is inevitable, but we don't think it's the most efficient way to think about allocating risk. In fact, we think the active-passive, private-public split is mistaken.

Institutional investors' allocations to alternatives have been growing steadily for years (*Display 98, page 111*), with the combined exposures to real estate, private equity and infrastructure now standing at more than 26% of a typical portfolio. The majority of alternatives exposure is in private assets such as equity, real estate, infrastructure and private debt.

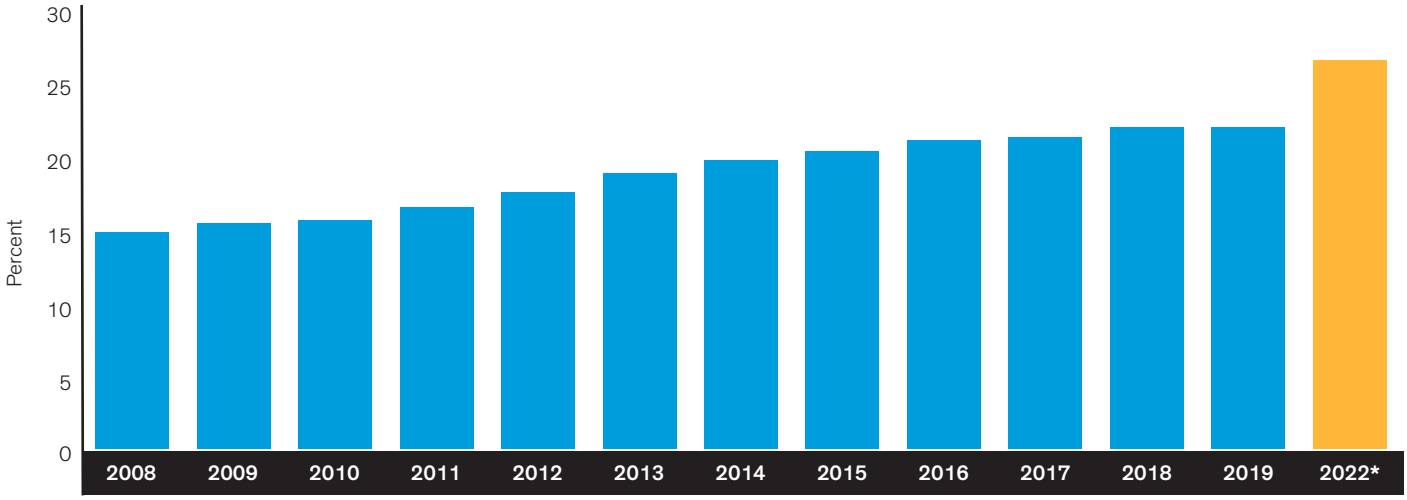
The greater presence of private assets is even more stark in terms of fees, driven by the growing allocations to higher-fee alternatives (private equity accounts for the lion's share) and a reallocation to ultralow-fee passive funds within public markets. As a result, the rising asset allocation to alternatives has driven a progressive increase in revenues for alternatives asset management (*Display 99, page 111*).

If private assets are the fastest-growing allocation component, ESG is the fastest-growing cross-asset theme, so the two must interact. So far, this interaction has led to explicit ESG pledges by managers of private assets. The next step is a more comprehensive assessment of engagement with underlying assets and how it's possible across both private and public assets. Ultimately, though, an even larger theme is the renewable-infrastructure aspect of private asset investing.

Allocations to private equity have been at the forefront of private asset inflows over the past decade, but we think the average investor in the average private equity fund will likely be disappointed. Private equity flows will remain sizable no matter what we say here—the momentum is just too strong, so several years of strong growth are likely in the near term. But the point of this chapter is to help asset owners think about where they *should* be steering their portfolios over strategic time horizons: we expect general disappointment in private equity returns, and the thrust of private asset investment to be elsewhere.

DISPLAY 98: GROWING EXPOSURE TO ALTERNATIVES

Institutional Investors' Portfolio Allocations to Alternatives

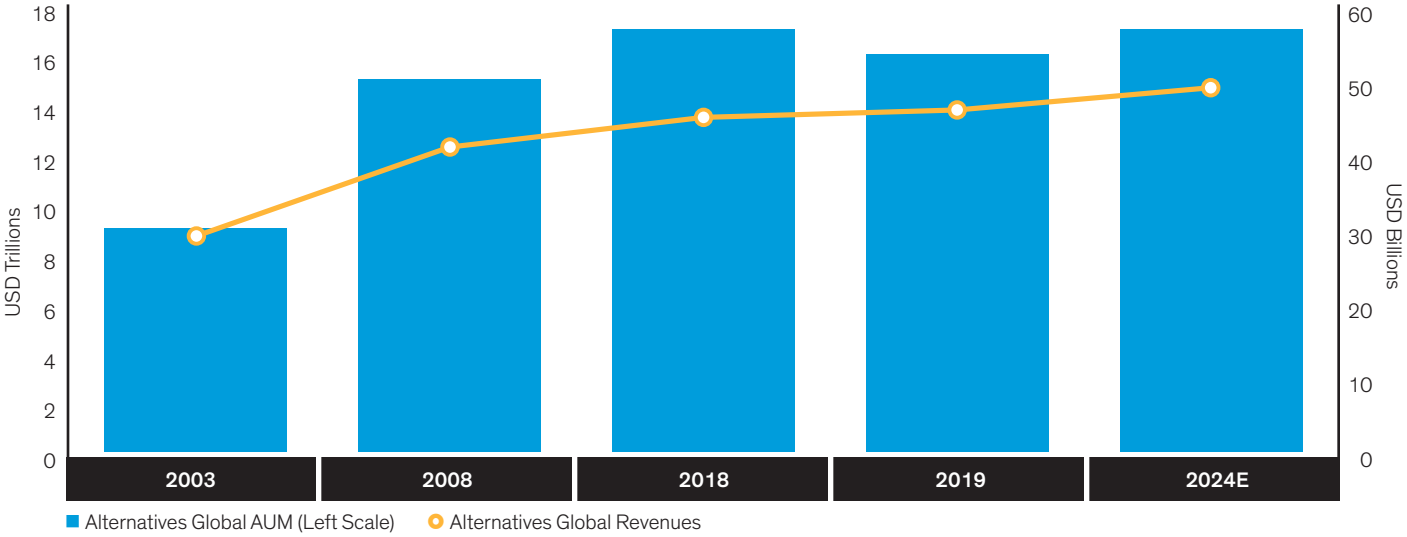


Historical analysis and current forecasts do not guarantee future results.

***2022 estimate prorates the 2019 stock and bond allocation with the year-to-date returns of the S&P 500 and US 10-year government bonds, respectively, and assumes no change in alternatives allocation.

As of October 11, 2022 | **Source:** CEM Benchmarking, McKinsey, Thomson Reuters Datastream and AB

DISPLAY 99: RISING REVENUES AND ASSET ALLOCATIONS TO ALTERNATIVES



Historical analysis and current forecasts do not guarantee future results.

AUM: assets under management

Alternatives includes hedge funds, private equity, real estate, infrastructure, commodities, private debt and liquid alternative mutual funds (e.g., absolute return, long and short, market-neutral, and trading-oriented). Private equity and hedge fund revenues do not include performance fees.

As of July 2020 | **Source:** Boston Consulting Group and AB

All this leads inevitably to broader questions of social fairness. The bedrock assumption in the postwar growth of modern finance and in investment principles has been that public equity and debt markets were the primary way to meet long-term retirement savings goals. But if larger allocations to private assets are needed to meet return-diversification objectives, how will individuals or small investors be able to meet those goals, given the obstacles of scale and regulation?

Governments are incentivized to ensure that individuals can still buy a set of assets that delivers positive real return at an acceptable risk level, and this will presumably be a massive force behind setting regulatory structures to enable greater access to private assets.

Moreover, in a scenario that goes straight to the question of inequality, if only very-high-net-worth individuals can access private assets, there will be a political and social reaction—a point we'll cover in later publications. We're often asked what ESG means at the macro level: we see the accessibility question as one example of an emerging issue for investing with a social outcome in mind. It won't be an issue for an individual asset or security, but it will be at the overall portfolio level. Currently, this is not considered within the bounds of ESG investing considerations, but it should be.

The Case for and Against Increasing Private Asset Exposure

In our view, the macro context for investing presents a broad case for increasing allocations to private assets:

1. Low expected returns across traditional public markets
2. Diversification becoming harder to come by
3. A strategic case for moderately higher inflation
4. The lack of listed "young" growth companies
5. More fragile liquidity in public markets

The price decline in public markets and the rise in yields in 2022 was large enough to raise long-run capital-market return assumptions.

Despite this shift, expected returns across public markets are still lower than their long-run average, especially in real terms. We've outlined the case for diversification being harder to achieve in Chapter 4, "What Happens When Diversification Disappears?," and in our black book *Are We Human or Are We Dancer?*, we analyzed the lack of "young" public growth companies in the chapter "What Is the Point of the Stock Market (in a Capital-Light World)?"

This work underlines a key point: an expected decline in real Sharpe ratios from investing in traditional asset classes (*Display 100, page 113*). Even if the expected return from private assets declines from past levels, a higher allocation would be one response to fewer opportunities elsewhere. Of course, there's a debate to be had about what the "risk" axis should be for assets that aren't marked to market—an attribute that makes some of the apparent low risk illusory.

An increase in the strategic outlook for equilibrium inflation strengthens this case even more. Specific private assets, such as real estate and infrastructure, may be effective inflation hedges. But higher inflation is also likely to further erode overall expected real returns on a cross-asset portfolio, and it makes high-grade bonds less effective diversifiers of equity risk. These trends intensify the need for real returns and diversifiers.

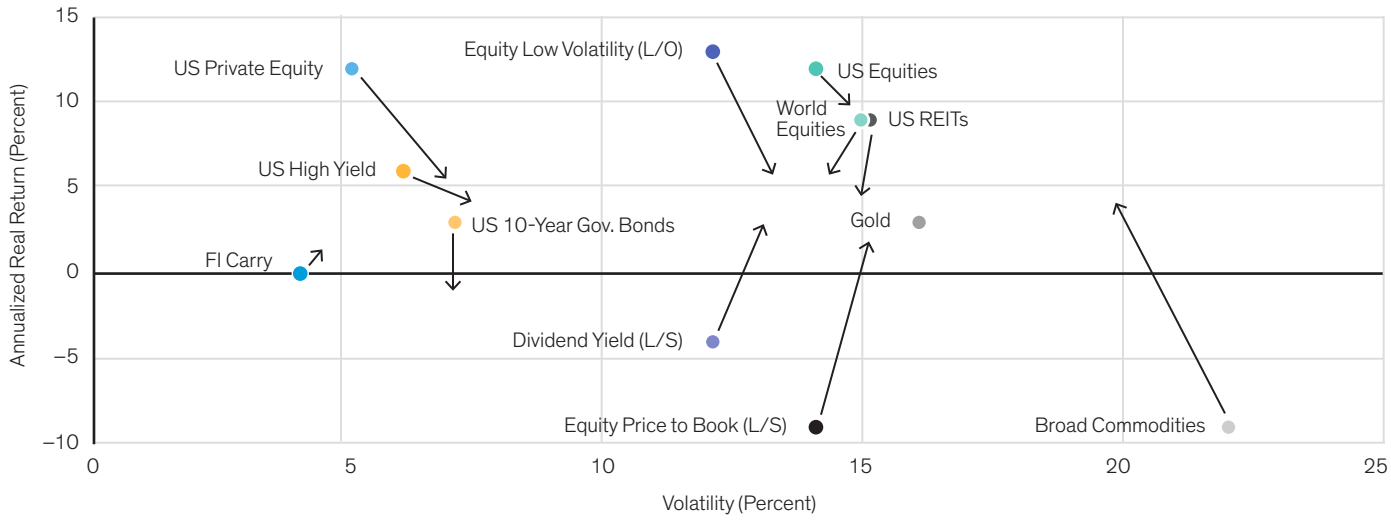
The liquidity question is set against the powerful forces driving higher allocations to private assets. We've seen a definitive shift in the path of interest rates, and expectations of interest-rate volatility have increased—we think they'll stay elevated. In such an environment, investors will have greater liquidity needs.

If anyone needed to be convinced of this point, look no further than the recent crisis with the LDI positions of UK DB plans in 4Q 2022.[74] Some of that episode was due to UK-specific issues, but we also think it should be taken as a warning about the need for liquidity when regimes change (*see* "A Closer Look at Liquidity (or Illiquidity)" *on page 114*).

74 Inigo Fraser Jenkins and David Hutchins, "Long-Run Global Implications of the UK's LDI Crisis," *Context: The AB Blog on Investing* (October 17, 2022), https://www.alliancebernstein.com/americas/en/institutions/insights/investment-insights/long-run-global-implications-of-the-uks-ldi-crisis.html.

DISPLAY 100: THE COMING DECLINE IN THE RISK/RETURN RATIO

Annualized Real Return and Volatility



Historical analysis and current forecasts do not guarantee future results.

The dots represent the last 10 years of real returns and volatility for the major return streams that investors can buy. The arrows represent the AB Institutional Solutions team's forecasts for the next 5–10 years. Note: US private equity data are compiled from 1,562 funds, including fully liquidated partnerships, formed between 1986 and 2019. All returns are net of fees, expenses and carried interest. Data are provided at no cost to managers.

As of September 22, 2021 | **Source:** Cambridge Associates, FactSet, FRED, Kenneth R. French Data Library, Thomson Reuters Datastream and AB

A Closer Look at Liquidity (or Illiquidity)

Liquidity is a critical topic, but people mean different things by that term at different times, making it hard to define. Liquidity is the key to any comparison of public and private markets: it is, after all, probably the preeminent differentiating variable. As we noted above, the greater liquidity of public markets can make them attractive when the need for liquidity is greater, but that greater liquidity might also be under pressure.

In normal trading periods, liquidity in public markets has generally improved over the past decade (with trading spreads narrowing), but it's more fragile today for the following reasons:

- A changing market structure, with the growth of high-frequency trading (HFT), the rise of exchange-traded funds (ETFs) and evolving regulations leading intermediaries to reduce risk
- A dearth of active value investors
- Growing corporate debt
- The transition from quantitative easing to quantitative tightening

There's evidence that HFT liquidity dries up when volatility is higher.[75] Moreover, the rise of ETFs has pushed more market volume into a shorter period around the market close, rather than having volume dispersed throughout the trading day.

The general improvement in liquidity at most times—at the expense of more fragile liquidity in times of crisis—could increase tail risks across portfolios. The prospect of a market structure where even the supposedly liquid portion of a portfolio faces more illiquidity during economic stress raises an important question: How much of a portfolio can be allocated to assets that may be unsellable at any price during crises? This risk must be built into governance structures for running portfolios. The possibility that public markets are more fragile can't be easily shown, but investment boards shouldn't ignore it.[76]

How much return should investors expect (or demand) for illiquidity risk? There have been a host of attempts to answer this question. For example, Yakov Amihud suggests that the illiquidity premium for illiquid versus liquid US equities is 1.3% annualized, using a model that compares long-horizon and short-horizon investors with long-horizon investors spreading trading costs over longer time frames.[77]

Andrew Ang, Dimitris Papanikolaou and Mark Westerfield link the illiquidity premium to the time horizon over which an asset can be priced and sold.[78] The return an investor demands on an asset should increase if the interval over which it can be priced is longer. Moreover, uncertainty about the length of the liquidity interval is a key determinant of the returns that should be demanded. So, for an asset that can be priced on a one-year horizon, investors should demand a relatively small excess return; for an asset that can be priced only on a 10-year time frame, the required return would be higher.

How does this illiquidity premium compare with other fundamental risk premiums? In a paper for the Government Pension Fund of Norway by Elroy Dimson et al., some of the most significant risk premiums over the very long run are estimated at 5.2% for the equity risk premium, 1% for the term premium, 0.4% for the credit premium and 6.1% for the foreign-exchange carry premium.[79] So, an illiquidity premium on the order of 1% isn't insignificant from a return perspective. What's more, most estimates of the illiquidity premium are derived from intra-asset-class returns, so they presumably underestimate a cross-asset-class illiquidity premium.

Ultimately, a discussion of liquidity needs to be tied to a time horizon, a topic that's too often regarded as an exogenous investing parameter. We think investors find it hard to change this view, because it's intertwined with questions of governance (often set up by a board or even public authorities through regulation) and career risk (that can't be hedged).

But change is critical. In a world where maintaining risk-adjusted returns is more challenging, investors can't afford to ignore any tools that improve their ability to meet liabilities. Therefore, we suggest that the time horizon of investment needs should be endogenous to the investment process—not regarded as written in stone and handed down by some higher authority.

At one level, this notion applies to all investment. There's plenty of evidence that the time horizon of alpha decay varies across different strategies, which is an even more critical consideration for a portfolio spanning public and private assets.[80] Most investors need some portion of their portfolios in liquid assets to meet near-term needs, but pension plans, endowments, family offices and individual retirement savers can have sizable illiquid allocations. Maybe this didn't matter over the past 30 years, when public markets were generating high returns and financial-asset returns far surpassed real assets, but if that dynamic is changing (and we think it is), the question of time horizon and liquidity matters very much.

75 Nataliya Bershova and Dmitry Rakhlin, "High-Frequency Trading and Long-Term Investors: A View from the Buy Side," *Journal of Investment Strategies* 2, no. 2 (Spring 2013).
76 Nicola Anderson, Lewis Webber, Joseph Noss, Daniel Beale and Liam Crowley-Reidy, "The Resilience of Financial Market Liquidity," *Bank of England Financial Stability Paper*, no. 34 (October 2015).
77 Yakov Amihud, "Illiquidity and Stock Returns: Cross-Section and Time-Series Effects," *Journal of Financial Markets* 5, no. 1 (2002): 31–56.
78 Andrew Ang, Dimitris Papanikolaou and Mark M. Westerfield, "Portfolio Choice with Illiquid Assets," *Management Science* 60, no. 11 (2014): 2737–2761.
79 Elroy Dimson, Antti Ilmanen, Eva Liljeblom and Øystein Stephansen, *Investment Strategy and the Government Pension Fund Global*, Strategy Council, November 26, 2010.
80 Inigo Fraser Jenkins et al., *Global Quantitative Strategy: Time Horizons in Finance—Bayesian Trees for Market Allocation*, Bernstein Research, February 16, 2016.

What's the Real Risk Exposure with Private Assets?

The forces driving flows into private assets are a microcosm of broader issues for the industry. At a deeper level, a critical aspect of the inflows is what they mean for the way investors consider risk. What's the best allocation to risk, and which parameters are most appropriate for apportioning it across different portfolio components?

Investors can seek exposure to certain fundamental risks for alternative or private assets that, ideally, are distinct and uncorrelated to traditional equity and bond market risks, such as equity beta and duration. These fundamental risks or sources of return include:

- Illiquidity
- Quality
- Leverage
- Risk premiums (factor risk)
- Idiosyncratic alpha

It's important that private assets genuinely carry risks along these dimensions—not just double down on risk exposures readily available via passive public investing. This is where innovation in the investment industry comes in. The price of buying factor risk has declined, and we think this will continue, so private assets must offer something over and above (and uncorrelated with) other risk premiums. Likewise, leverage might *in theory* be achievable in multiple ways, so merely being a vehicle for enabling leverage isn't a sufficient excuse for investments like private equity.

A question must be asked: Are asset owners using private equity and other alternative investments to overcome what's really a suboptimal governance arrangement? The prime example here would be any case for investing in illiquid assets that relies on the lack of marking-to-market to conclude that they reduce portfolio volatility. In addition, they can be used to add leverage where it may be harder to use directly.

If some portion of private equity inflows are producing levered exposure to equity beta (or perhaps a permutation of the small-cap value factor), we think this misuses fee budgets and is an inefficient way to set parameters for risk budgeting. Instead, we suggest an honest confrontation with the governance structure. Changing these structures and investment policy statements is a lot harder, as it should be, but we see it as a more honest approach that's likely to produce greater long-run benefits.

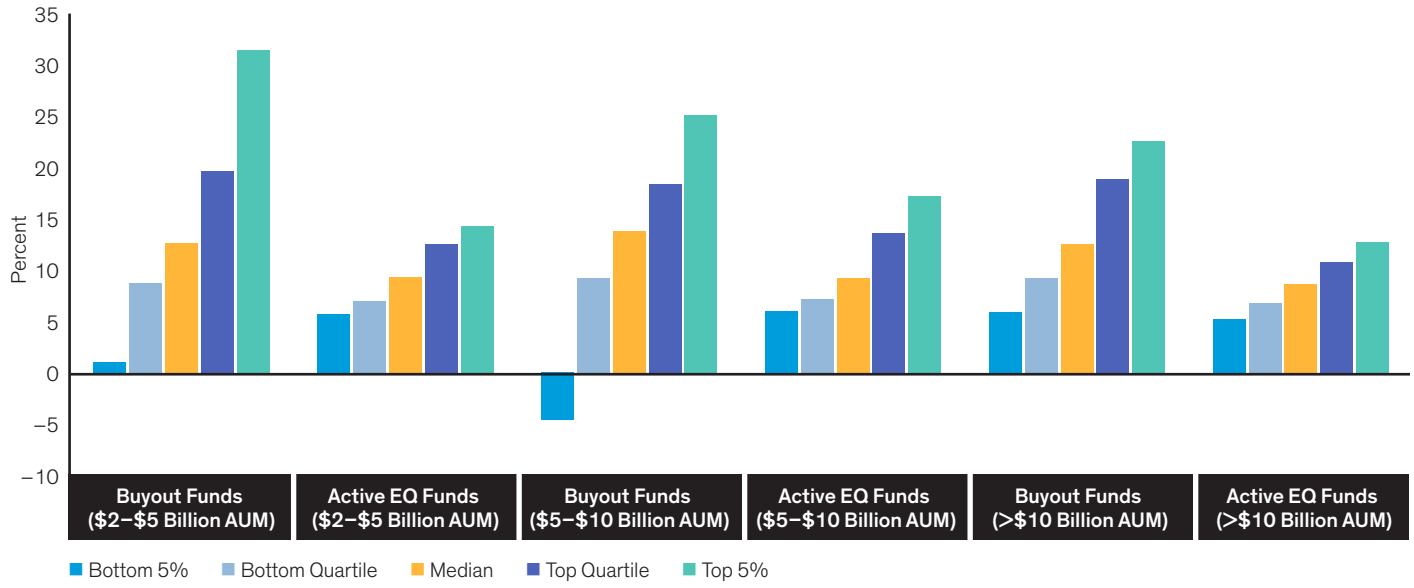
In recent years, we've developed an explicit framework for isolating the idiosyncratic alpha in active funds that invest in public equity and fixed-income markets (see Chapter 9, "The Role of Digital Assets in Portfolios"), return elements that aren't readily available from passive-factor strategies. Processes like this are important in correctly apportioning risk, and they've gained immediate commercial importance with the collapse of passive factor fees in recent years (falling to just 4 b.p. for US long-only equity factors in ETF format, for example).

These types of "passive" strategies for private investing return-stream components don't readily exist today. However, the fee spread between active public funds and active private funds is stark, and the share of total fees paid has migrated to private equity. As a result, we expect that developing such alternatives to high-fee private assets will be a high priority for the asset-management industry, especially for private equity.

A practical difference between public and private markets is the degree of selection alpha. To put it another way, the return dispersion among managers of private assets is much wider than that for managers of public assets (*Display 101, page 116*). This presents an extra source of alpha if a fund selector can demonstrate a superior track record.

DISPLAY 101: FUND SELECTION SKILL IS CRUCIAL FOR PRIVATE INVESTMENTS

Dispersion of Returns for Public and Private Equity Funds by Size

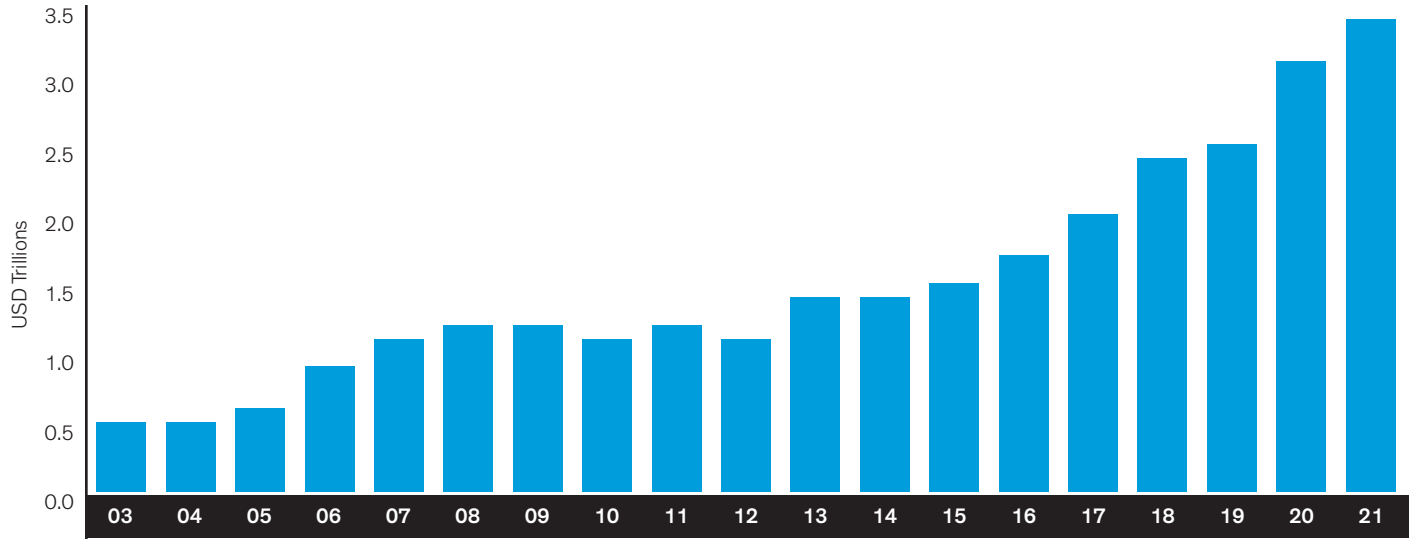


Historical analysis and current forecasts do not guarantee future results.

Note: Buyout (private equity) fund performance was assessed using an internal rate of return calculated by grouping the performance of 2000–2017 vintage buyout funds during 2000–2020. Active equity fund return data are from eVestment from 2000–2021.

As of October 31, 2021 | **Source:** Burgiss, eVestment, McKinsey and AB

DISPLAY 102: PRIVATE EQUITY "DRY POWDER" HAS REACHED RECORD LEVELS



Historical analysis and current forecasts do not guarantee future results.

As of July 2022 | **Source:** Bain & Co., Preqin and AB

Have Expectations for Some Private Assets Gone Too Far?

We've outlined a case for private assets stemming from an investment environment of lower real returns, less diversification and fewer young growth companies coming to market. But are some parts of the private world vulnerable? Private equity has been the main beneficiary of the shift to private assets, but we think this is one area of private investment that has been overplayed.

Let's be clear: nothing we say in this chapter will arrest the momentum of the assets flowing into private equity over the next year. We also think that private equity most definitely has a place in portfolios. But there's a question of whether expectations have moved too far and whether it's appropriate to make any further marginal increases in allocations. We think asset owners considering their strategic allocations should sit up and take notice of the case for lower returns on private equity in the future versus history:

- The buildup of dry powder (committed but uninvested capital) has led to higher buyout multiples, lowering future expected returns.
- The history of high private equity returns was fueled by an incredibly favorable backdrop of declining yields, which is unlikely to continue.
- An inability to rapidly deploy capital already allocated means that even the more modest returns implied by the first two points might not be within reach.

This chapter makes the case that given the macro setup, there's a case for increased private asset exposure compared with history. In previous research, we've made the point that the run rate of public equity issuance is significantly lower today than in the past (excluding special-purpose acquisition companies, at least); when companies do list, it's later in their lives. This deprives the public market of early-stage growth companies relative to earlier decades, meaning that, *ceteris paribus*, there's a case for private equity being a more important way to earn the equity risk premium. That said, we make the case here that other factors exist now that will likely curtail this exposure.

The buildup of dry powder has reached a record of nearly $3.5 trillion (*Display 102, page 116*), which means more capital competing for a given number of investments. This state prompts a question: How many bidders are needed for a private asset investment before it becomes a public market investment in all but name?

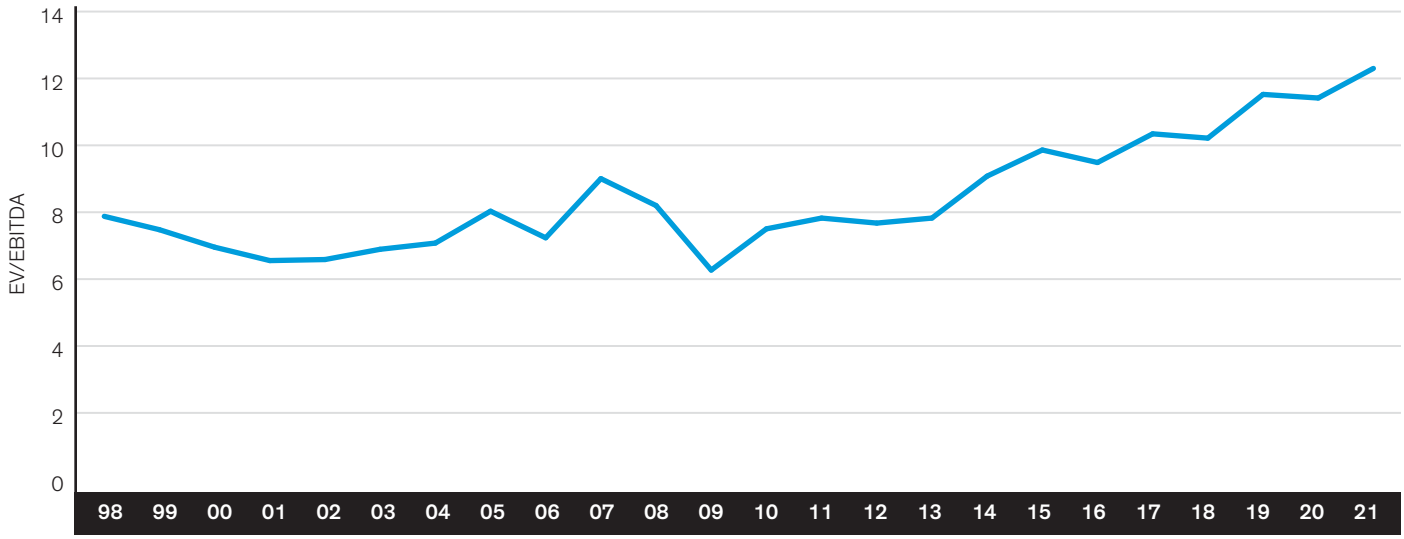
The massive growth in dry powder (along with a decline in yields) has led directly to higher buyout multiples (*Display 103, page 118*). One can certainly be wary of valuation's role as an investment signal in recent years, but—all else being equal—a higher starting multiple does imply lower future returns over a strategic horizon.

Deploying allocated capital quickly has been an issue too—the growing stockpile of dry powder illustrates the difficulty in finding suitable investments—so the attainable returns may be even more modest. Actively investing the capital some other way before deploying it could mitigate this challenge, but if the investment can't be closely matched to private equity returns, it implies a different risk profile.

This issue might be glossed over at the moment in the rush to buy private equity exposure, but concern will grow, and is likely to fuel disenchantment with the asset class. This is an urgent development, given that private equity has grown to the point where it accounts for the lion's share of alternatives fees (*Display 104, page 118*).

DISPLAY 103: DRY POWDER GROWTH HAS PUSHED UP BUYOUT MULTIPLES

US Private Equity: Median EV/EBITDA Multiples



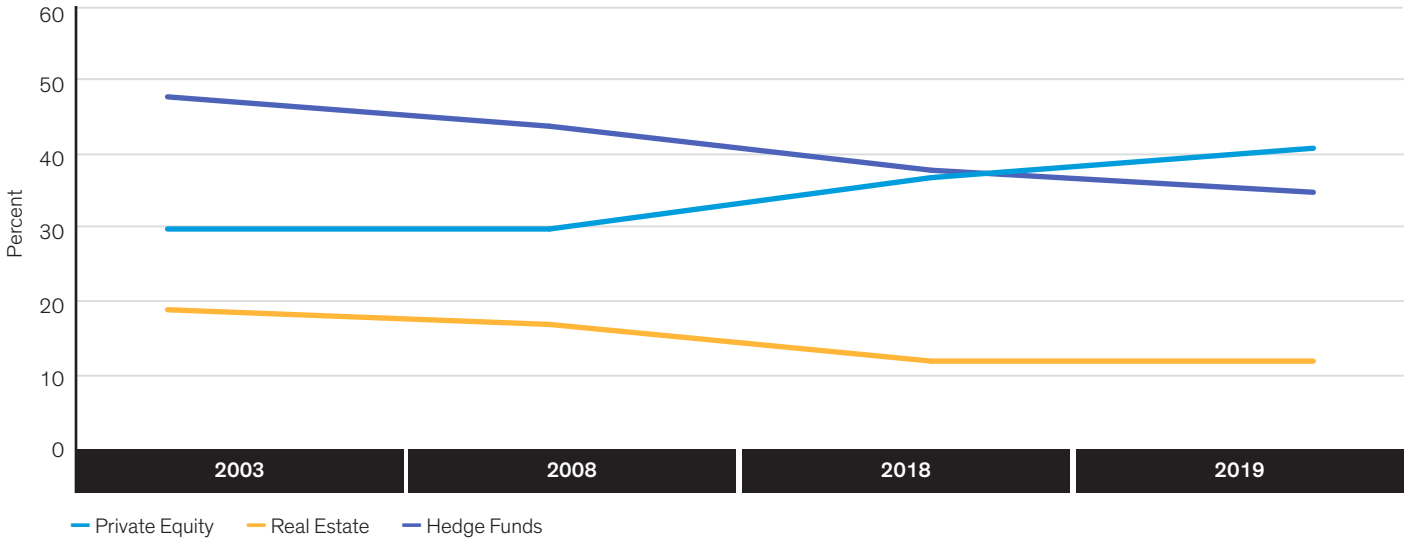
Historical analysis and current forecasts do not guarantee future results.

EV: enterprise value; EBITDA: earnings before interest, taxes, depreciation and amortization

EV/EBITDA data for 1998–2006 comes from Verdad, and from Bain & Co. afterward.

Through April 2022 | **Source:** Bain & Co., S&P, Verdad and AB

DISPLAY 104: PRIVATE EQUITY HAS TAKEN FEE SHARE FROM HEDGE FUNDS AND REAL ESTATE



Historical analysis and current forecasts do not guarantee future results.

Alternatives revenue split by product. Real estate includes REITs.

Through July 2020 | **Source:** Boston Consulting Group and AB

We can use this data on the dynamics of private equity markets to scale the long-run return outlook based on key determinants: the starting multiple of private equity target companies and the path of yields (given the levered nature of the approach). The scale of dry powder is important, but only in the sense that it tends to raise the entry multiple for deals and impede the ability to deploy capital.

Any such model is necessarily constrained by a relatively small number of observations for aggregate returns—annual data over two decades, with each investment taking place over a multiyear horizon. Moreover, such a model doesn't try to account for the difficulty of deploying capital, so these returns can't necessarily always be met. Such a model implies a downward adjustment for private equity returns compared with the levels achieved in recent decades.

The other possible approach is to apply a more "fundamental" model along the same lines as our forecast for public equity returns. We can write an expression for the expected return from the average private equity investment as

private equity return = (unlevered return)+ financial leverage*(unlevered return – cost of debt)+multiple expansion – fees

where

unlevered return = (income yield+real growth)

We assume a 2% income yield, which is slightly higher than the current dividend yield for US small-cap public equities at 1.4%, as private equity firms tend to target cheaper companies. We model real growth the same way as for public equities—consisting of 1.5% real GDP growth per capita and 0.5% population growth per year, based on UN estimates. To this we also add a 2% growth premium, as private equity tends to have a sector skew in favor of faster-growing sectors compared with public markets.

Financial leverage is calculated using a 1.2× debt/equity ratio and the real cost of debt is modeled as the LIBOR base rate at 3% with a 3.5% spread, adjusted by a 3% inflation rate.

We assume no multiple expansion, as in recent years private equity has been acquiring targets at very elevated EV/EBITDA multiples compared with history, which we believe leaves very limited room for further multiple expansion. We also stress that we are forecasting the return for private equity in aggregate. While a successful turnaround may likely lead to multiple expansion, this cannot be assumed for the industry writ large.

Bringing it all together gives a gross real return forecast of 9%, as illustrated in *Display 105*.

However, this estimate needs to be adjusted for the substantial fees that private equity funds charge. In a report for the Norwegian Ministry of Finance, academics Trond Døskeland and Per Strömberg[81] cite a study by CEM Benchmarking estimating private equity total fees at 5.7%. As we expect lower private equity returns compared with history, the performance element in the total fees should be lower going forward; therefore, we think these fees will be closer to 5.5% per year, resulting in a net real return of 3.5%. Assuming a 3% inflation rate 10 years forward, this translates into a 6.5% net nominal return.

We would also note that borrowing costs are a big source of uncertainty for future private equity returns. Over the last 10 years they have substantially benefited from a structural decline in interest rates and the real cost of debt. We believe this is now going into reverse and could turn into a significant headwind for returns in the future. Therefore, we model two scenarios, with 1% higher and 1% lower borrowing costs compared with our base case. In a higher borrowing cost scenario, net real return falls to 2.3%, while lower-than-expected borrowing costs would increase the net real return to 4.7%.

So our conclusion is to expect net-of-fee returns from private equity to be in line with those of public equity.

DISPLAY 105: PRIVATE EQUITY RETURN FORECAST

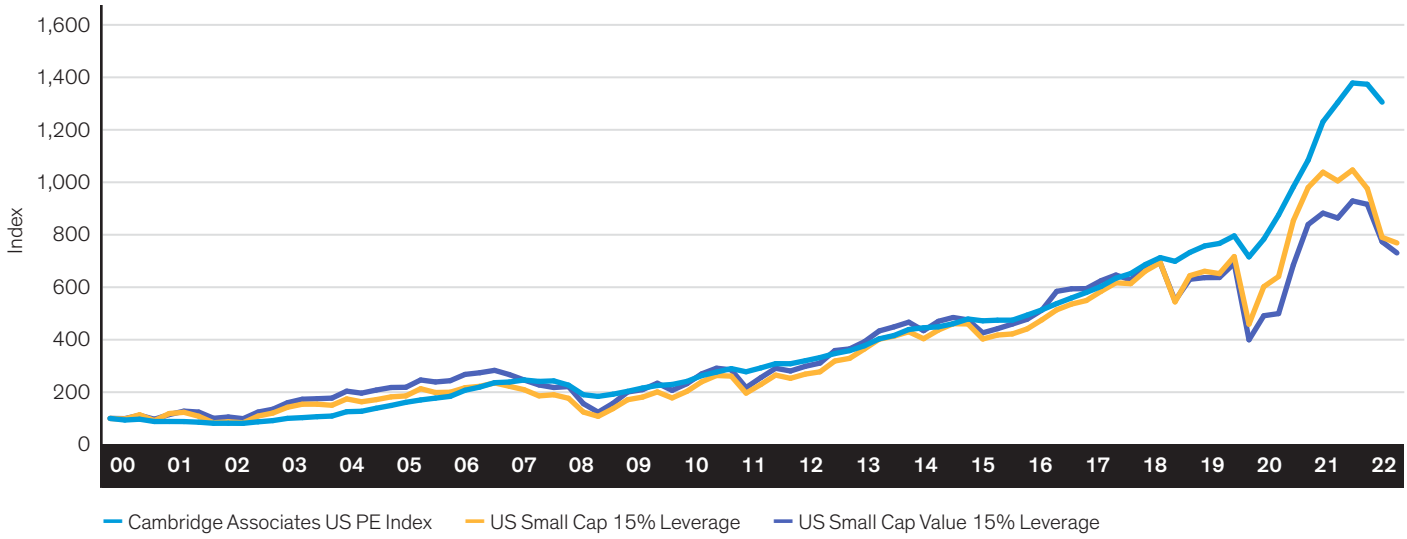
Income Yield	Real Growth	Debt/Equity	Real Cost of Debt	Levered Return	Multiple Expansion	Gross Real Return
2%	4%	1.2×	3.50%	9%	0%	9.00%

Historical analysis and current forecasts do not guarantee future results.

As of December 31, 2022 | **Source:** Bloomberg, FactSet, FRED and AB

81 Trond M. Døskeland and Per Strömberg, *Evaluating Investments in Unlisted Equity for the Norwegian Government Pension Fund Global (GPFG)*, Norwegian Ministry of Finance, January 10, 2018.

DISPLAY 106: REPLICATING PRIVATE EQUITY RETURNS IN PUBLIC MARKETS



Historical analysis and current forecasts do not guarantee future results.

Private equity data are from Cambridge Associates private investment benchmarks. Data are provided at no cost to managers.

Through October 17, 2022 | **Source:** Cambridge Associates, MSCI, Thomson Reuters Datastream and AB

Another way to approach this question is to determine the extent to which private equity returns, in aggregate, can be replicated in public equity markets. Comparing the performance of the Cambridge Associates US Private Equity Index with the MSCI USA Small Cap and MSCI USA Small Cap Value indices, with an added 15% leverage (*Display 106*), suggests a potential route to generate private equity returns through public market investments. There are divergences over the cycle, but the close long-run link implies that a forecast calling for the average private equity return to be in line with that of small-cap equities seems like a good assumption.

A final point about future returns: buying a private equity fund isn't exactly the same as investing in an active public equity fund with leverage, because the dispersion of outcomes is far wider than that for active public equity managers—there's a high degree of "selection alpha" offered. Asset owners in a position to benefit from this alpha and who may have first call on better funds can still benefit from such an allocation. However, this implies that for many investors in private equity there's scope for a disappointing outcome below this expected average performance.

What are the key takeaways from this section on private equity?

- There are good reasons to expect that *average* future returns from private equity will be below historical levels—and are more likely to be in line with those of public equities.
- The buildup of dry powder indicates the difficulty of deploying capital. Even if some investors think they have access to top-quartile funds, there could be a significant delay in buying access to such returns.
- Private equity now accounts for the lion's share of the fees paid for alternative investments, leaving an odd juxtaposition between expected average return and fee.
- Investors should question their motivation to boost their private equity exposure. To the extent that it's viewed as helping with the overall return-diversification problem, they should consider what kinds of risks they really want exposure to—and the most efficient way to gain those exposures.
- The private equity outlook is a microcosm of a broader point: there's a benefit to asset owners from decomposing their asset allocations into more cheap, accessible betas and idiosyncratic alpha that warrants an active fee—and ensuring those allocations are as efficient as possible. This is a move away from explicit delineations among equities, fixed income, alternatives and other asset classes.

What's the Future of Private Markets?

If demand for private assets is set to increase but average investments in private equities might result in disappointment, where should investors look? We see several places they can already allocate to as well as emerging areas that will be more readily available in coming years.

Private debt stands out as an area likely to see interest. Aside from the empirical attraction of past return evidence, the industry's typical approach to segmenting assets presents another motivation. For those who see investment through the lens of separately delineated asset classes, private debt seems likely to attract more flows from high-grade fixed income. The abrupt rise in yields for sovereign bonds in 2022 makes them less unattractive than they were, but we suspect that the demand for returns implies a flow into private debt.

Private debt benefits from its smaller market size compared with private equity and a smaller influx of capital in recent years, although the growth rate has surged. Total private equity (including buyout, venture capital and other categories) amounts to $4.5 billion (*Display 107, page 122*), with private market closed-end real estate funds at $1.1 trillion. Private debt amounts to $883 billion, though it's recently been growing faster than the other categories.

Since September 2004, US middle market loans have generated strong performance (*Display 108, page 122*), translating into gross-of-fee nominal annualized returns of 9.5% with annualized volatility of 3.7%. The resulting headline return/risk ratio is high, but we think this is more a question of how to compare public asset volatility with private asset volatility. There are also drawdown periods such as 2008, 2015 and 2020, which coincide with declines in other risk assets.

For any investor with a short-term liquidity need, these could be the very worst times for diversification to fail. The attraction of the asset class is intimately linked to investors' time horizons, but time horizon must be a core part of the investment rationale for private assets, anyway, so this shouldn't be a surprise.

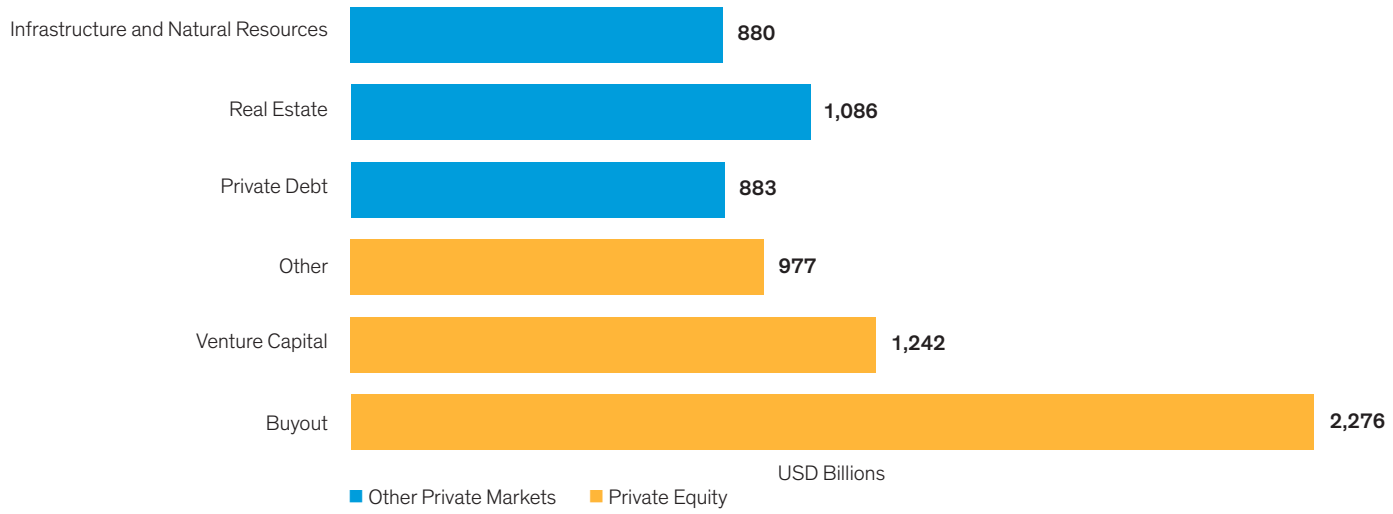
Middle market lending also offers exposure to floating-rate loans—in fact, the vast majority of middle market loans are floating rate—so they can form part of a portfolio's inflation-protection exposure. One caveat is an overall decline in loan quality—a pervasive feature across the economy and, in our view, a direct consequence of the yield decline of the past decade and investors' ensuing desperation.

Other contributing factors are an environment that has strongly rewarded equity buybacks (with an associated increase in credit issuance) and a somewhat siloed approach to asset allocation. This approach has seen high-grade fixed income replaced with lower-quality assets that still qualify in the same asset class from a governance perspective.

Continued on page 124

DISPLAY 107: COMPARING THE SIZE OF PRIVATE EQUITY WITH OTHER PRIVATE MARKETS

Private Market AUM (1H 2020)

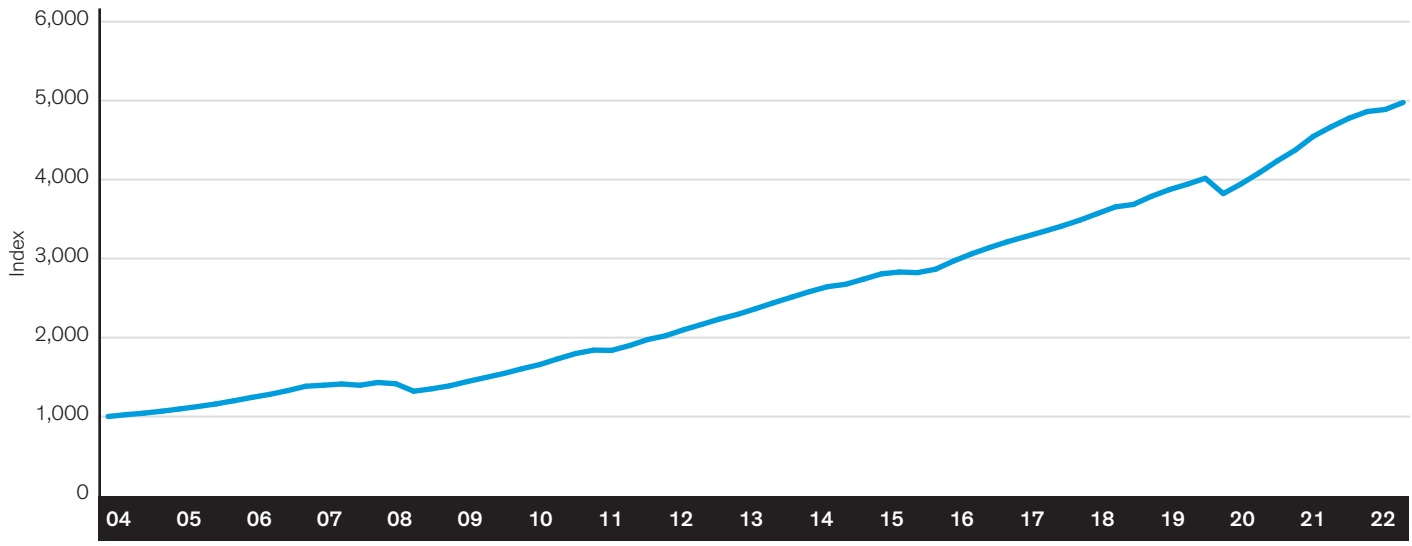


Historical analysis and current forecasts do not guarantee future results.

As of July 2021 | **Source:** McKinsey and Preqin

DISPLAY 108: US MIDDLE MARKET LOAN PERFORMANCE OVER TIME

Cliffwater Direct Lending Index (CDLI)



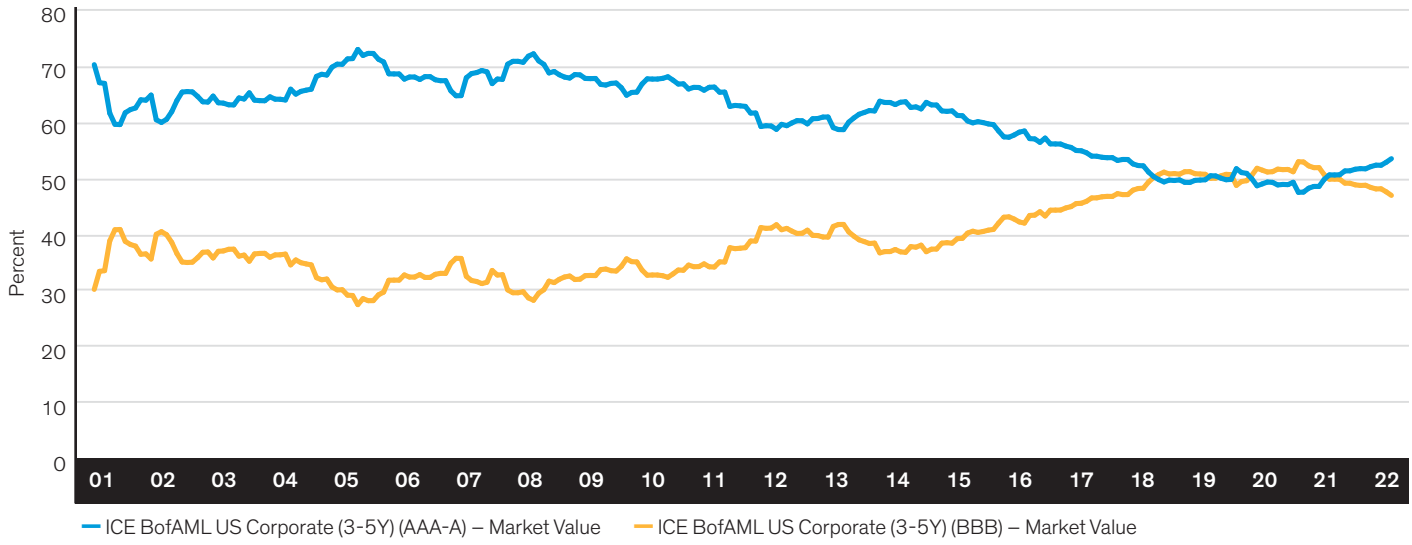
Historical analysis and current forecasts do not guarantee future results.

The CDLI measures the unlevered, gross-of-fee performance of US middle market corporate loans. It is shown as the asset-weighted performance of the underlying assets. The CDLI Total Return Index includes income return, realized gain/loss and unrealized gain/loss.

Through September 30, 2022 | **Source:** Bloomberg, Cliffwater and AB

DISPLAY 109: CORPORATE BOND QUALITY HAS GENERALLY DECLINED

ICE BofAML US Corporate Bond Index (3-5 Year)—Quality Based on Percent of Market Cap AAA-A and BBB

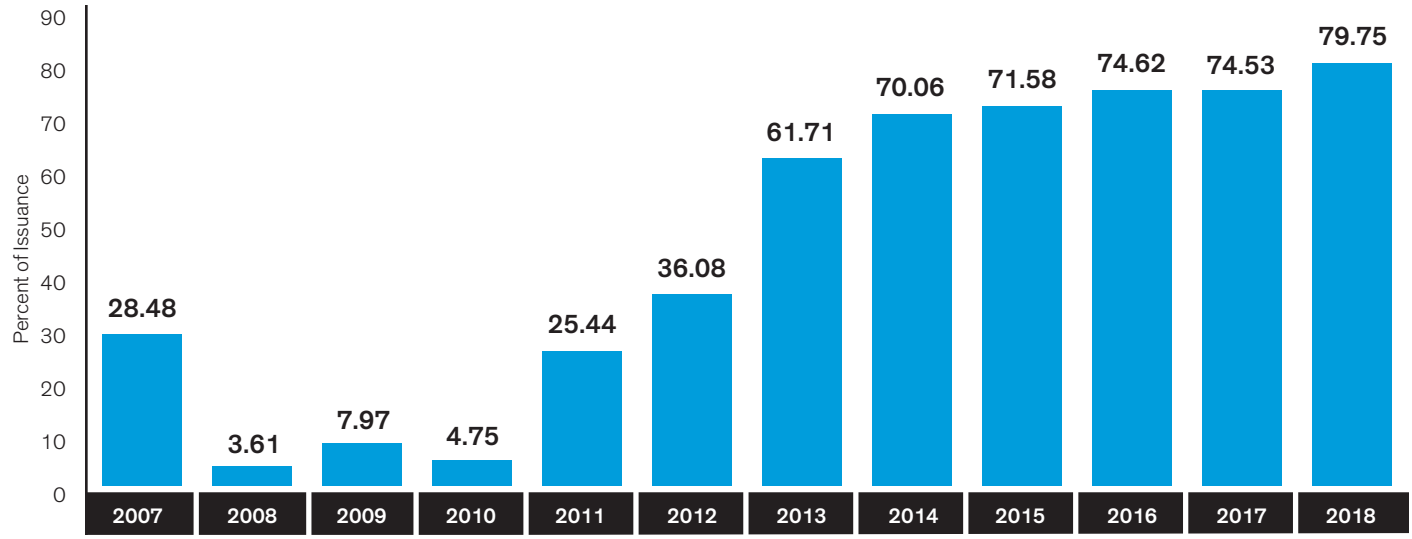


Historical analysis and current forecasts do not guarantee future results.

Through September 30, 2022 | **Source:** FactSet, ICE Data Indices and AB

DISPLAY 110: LOAN QUALITY IS DECLINING

Covenant Loan Share of Total Issuance



Historical analysis and current forecasts do not guarantee future results.

As of December 31, 2018 | **Source:** IMF and AB

Continued from page 121

One can see this shift in publicly listed investment-grade credit, which now has the lowest average rating at any point in the last 20 years. Currently, half of investment-grade debt is in the lowest possible rating tier; in the past, the majority of debt had a higher rating (*Display 109, page 123*). Likewise, the proportion of so-called covenant-lite loans has been increasing (*Display 110, page 123*).

As we enter a period of lower growth, it's very likely that default rates will increase. There are mitigating factors in the terming-out of debt and healthy corporate balance sheets going into this period. Nevertheless, at a recent conference we asked a panel on private debt about the management of defaults—the view was that there wasn't enough experience in the industry for a proper default cycle. We again come back to time horizon as being critical in this regard.

Real Estate Has Been Effective in Moderate Inflation

Real estate is a staple of most private asset strategies and a key overlap with the necessary allocation to real assets given higher inflation. In this chapter, we focus on just one key portfolio aspect of this allocation: the ability to contribute positive real returns during higher inflation.

In Chapter 1, "Assessing the Inflation Trajectory and Portfolio Responses," we distinguished between moderate inflation rates in the 2%–4% range and inflation rates higher than that range. Real estate accessed through various investment channels has tended to deliver positive real returns in these environments (*Display 111*).

One potential challenge is that real estate's correlation with equity beta can increase at high levels of inflation—specifically in the case of real estate investment trusts (REITs). However, this correlation really only kicks in at inflation readings above 4%, which we think is less likely over strategic time scales (*Display 112, page 125*). Real estate debt is also an important channel, offering a persistent spread premium versus investment-grade debt (*Display 113, page 125*). Real estate debt also improves diversification relative to an equity-only real estate position.

DISPLAY 111: REAL ESTATE HAS FARED WELL IN MODERATE INFLATION

Average Return of Real Estate by Inflation Band

	Average Real Return, YoY (Monthly Frequency)					
Real Assets	**<1%**	**1%–2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
US REITs	–25.9	5.7	15.9	23.1	16.6	8.5
World REITs	–32.4	4.1	16.0	30.0	20.7	10.1
S&P/Case-Shiller Home Price Index	–3.3	2.7	2.2	–0.4	1.1	0.0

Historical analysis and current forecasts do not guarantee future results.

As of January 1, 1970, through May 31, 2021 | **Source:** S&P, Thomson Reuters Datastream and AB

DISPLAY 112: AVERAGE CORRELATION OF REAL ESTATE WITH US EQUITIES BY INFLATION RATE

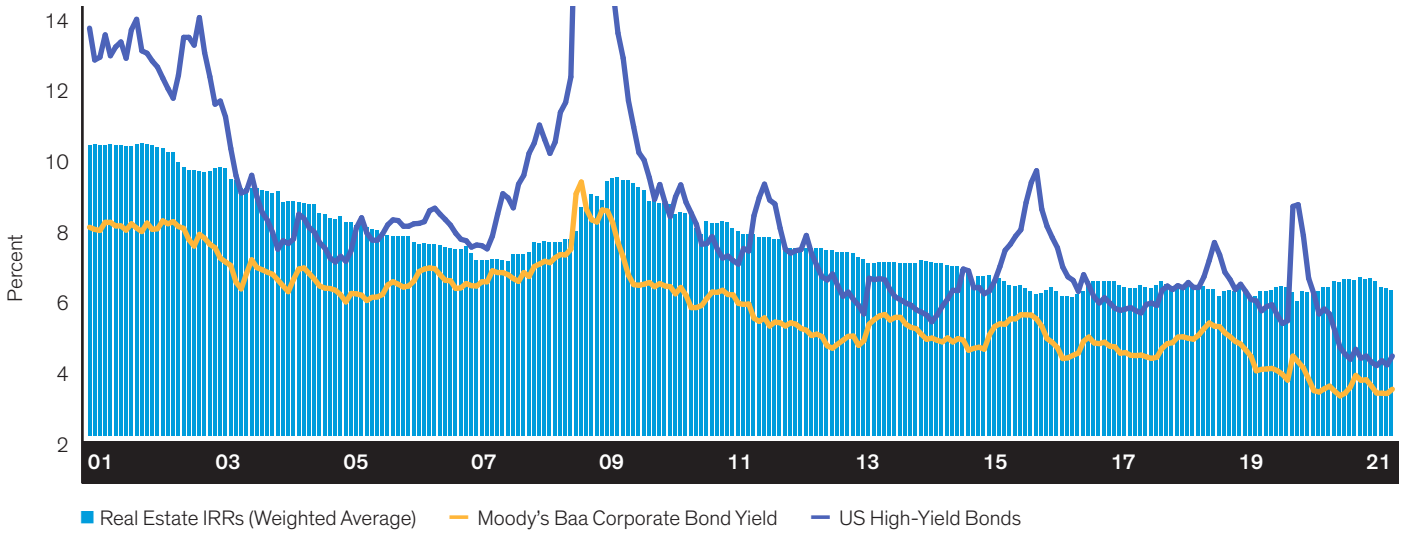
	Average Correlation with US Equities (Annual)				
Real Assets	**<2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
US REITs	0.51	0.54	0.47	0.64	0.72
World REITs	0.56	0.61	0.57	0.69	0.70
S&P/Case-Shiller Home Price Index	0.07	–0.14	–0.09	–0.07	0.02

Historical analysis and current forecasts do not guarantee future results.

The table shows average 12-month rolling correlation with US equities for different asset classes in different inflation regimes. The data history is from 1970 or longest available history. Inflation regimes are proxied by the US 10-year TIPS implied break-even inflation rate. The pre-1997 10-year break-even rate is a backcast of implied inflation calculated by Jan J. J. Groen and Menno Middeldorp from the Federal Reserve Bank of New York. For more details, please see: https://libertystreeteconomics.newyorkfed.org/2013/08/creating-a-history-of-us-inflation-expectations/.

January 1, 1970, through May 31, 2021 | **Source:** S&P, Thomson Reuters Datastream and AB

DISPLAY 113: REAL ESTATE OFFERS A PERSISTENT SPREAD VS. CORPORATE BONDS



Historical analysis and current forecasts do not guarantee future results.

IRR: internal rate of return

Through October 1, 2021 | **Source:** Federal Reserve Bank of St. Louis, Green Street Advisors, Moody's and AB

Green Infrastructure: Filling a Number of Roles

Green infrastructure is a private asset that helps fulfill ESG pledges, but it's worth considering for more reasons than that. Fundamentally, capital in this area must be raised in order to meet developers' up-front capital-expenditure needs. Compared with a public equity market increasingly dominated by capital-light firms with lower up-front capital needs, this asset opens up the possibility of more natural demand balancing between issuers and capital providers, and could be a fundamental driver of investor returns over the cycle.

The emergence of different pricing structures could make green infrastructure even more attractive. Our outlook is for moderately higher inflation, so hedging inflation risks will become even more important. At the same time, more infrastructure is being built that exposes owners to market-based power prices, which could make it attractive as part of a broader inflation-hedging portfolio. Rather than owning an ESG-blacklisted commodity as an inflation hedge, delivering green power is a compelling alternative, so this kind of return stream could be in an ESG/inflation sweet spot.

As renewables mature, they're being pushed toward embracing wholesale power price risks, because as renewable technologies also matured, policymakers migrated from administratively determined prices to competitive auctions. These auctions have further reduced prices, although revenue streams remain fixed.

The latest step in the progression is the move toward "subsidy free" renewables. As a result of either intense competitive bidding (such as offshore wind auctions in Germany) or auction design (such as subsidy-free offshore wind auctions in the Netherlands), the winning renewable project no longer has the visibility of a fixed revenue stream.[82] This means that the owner of the asset is exposed to market prices.

Renewable energy has a different type of cost than coal or gas. It tends to have little or no variable costs at the point of production; instead, up-front capex accounts for 70%–80% of the cost of renewable generation. Therefore, renewable developers need to raise capital, but likely would prefer not to take on the risk of the volatile revenue stream from delivering power. This leaves a real need for investors who are willing to assume the risk of changing power prices.

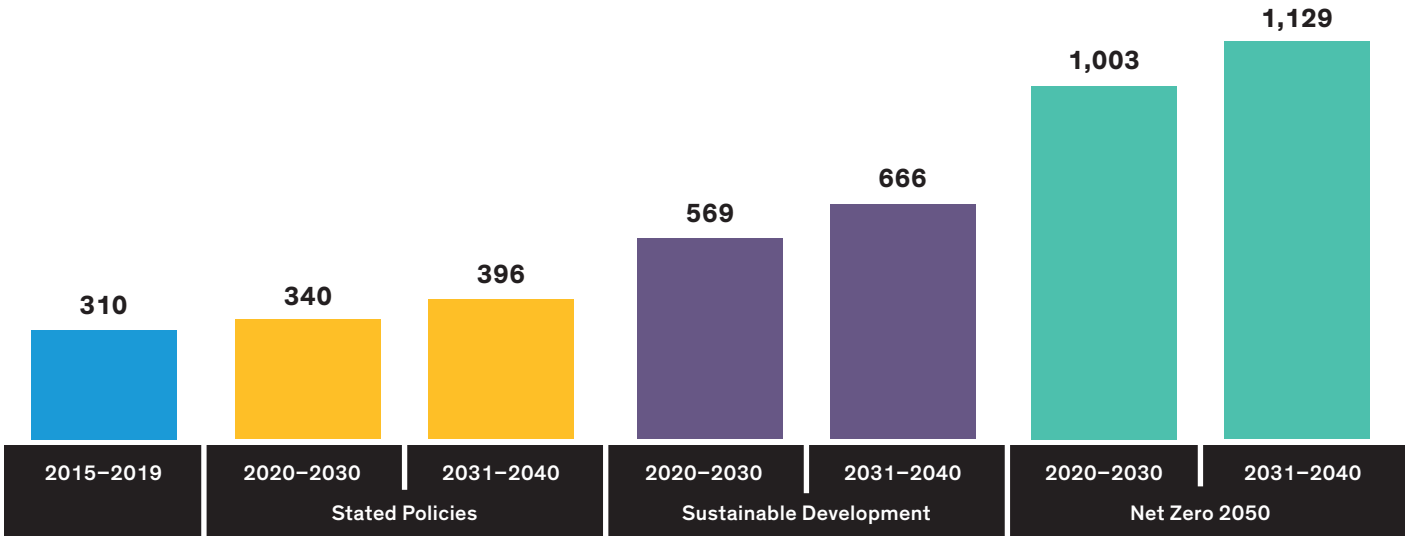
Today, a sizable chunk of projects is still financed under fixed-price subsidy schemes, but we expect a larger proportion (in developed countries) to move to market-based (or "merchant") pricing over time. *Display 114, page 127*, shows the prognosis for renewable power investment under several different scenarios considered by the International Energy Agency (IEA):

1. **Stated Policies Scenario:** This scenario is a conservative benchmark for the future, because it doesn't take for granted that governments will reach all of their announced goals. Instead, it takes a more granular, sector-by-sector look at what has actually been put in place to reach these and other energy-related objectives.
2. **Sustainable Development Scenario (SDS):** As a "well below 2°C" pathway, this scenario represents a course to the outcomes targeted by the Paris Agreement. In this scenario, all current net zero pledges are fully achieved, and there are extensive efforts to realize near-term emissions reductions. The SDS assumes that developed economies reach net zero emissions by 2050, China by around 2060 and all other countries by 2070 at the latest.
3. **Net Zero Emissions by 2050 Scenario (NZE):** This IEA scenario shows a somewhat less likely—but more aggressive—path for the global energy sector to achieve net zero emissions. It doesn't rely on emissions reductions from outside the energy sector to achieve its goals, but it does assume that nonenergy emissions will be reduced in the same proportion as energy emissions. The NZE is consistent with limiting the global temperature rise to 1.5°C.

82 Inigo Fraser Jenkins et al., *Global Quantitative Strategy: Alternative Risk Premia and Power Prices*, Bernstein Research, April 3, 2019.

DISPLAY 114: ANNUAL GLOBAL RENEWABLES INVESTMENT UNDER INCREASINGLY AMBITIOUS POLICIES

USD Billions



Historical analysis and current forecasts do not guarantee future results.

Stated Policies Scenario: Reflects existing stated climate policies. Sustainable Development Scenario: Represents spending required as a path to implementing the Paris Agreement, with countries reaching net zero between 2050 and 2070. Net Zero Emissions by 2050: A more aggressive path to net zero. It is consistent with limiting the global temperature to 1.5°C without a temperature overshoot (with a 50% probability).

As of October 2020 | **Source:** Bernstein Research and IEA

What does this mean for portfolios? Exposure to renewables could be attractive for several reasons: (1) It provides exposure to an asset class likely to see significant and sustained inflows in coming years; (2) return streams from power delivery could be an attractive inflation hedge; (3) this segment helps meet many ESG goals; and (4) there could be a greater equilibrium between the needs of investors and project developers.

How do these assets fit into a portfolio allocation? We can examine their diversification properties in several ways. In *Display 115*, we show that the average correlation of German power prices with major asset classes and factors has generally been low over the past 15 years.

There are periods when the correlation between equities and power prices jumps, inevitably when their diversifying properties would be most valued—including during periods of market stress. The correlation of German power prices with overall equity and bond returns has varied substantially over time (*Display 116, page 129*), with the overall low correlation masking periods when it strays from zero. Thus, the diversifying properties depend on the window for measuring investments, but it wouldn't be realistic to expect correlations of an asset class to be static and unaffected by the macro environment. The evidence implies that the forces acting on this return stream are imperfectly correlated with other key return sources, even in times of stress, and that's valuable.

Green infrastructure is still in its infancy as an investment category, but we've seen the start of tangible developments in this field. One example is Norges Bank, which has acquired unlisted assets in renewable energy. According to Nicolai Tangen, CEO of Norges Bank Investment Management, "Unlisted renewable energy infrastructure is a new asset class for the fund, which we invest in to improve the overall diversification of the fund. We look forward to continuing to execute on our investment strategy for unlisted renewable energy infrastructure."[83]

DISPLAY 115: GENERALLY LOW CORRELATIONS FOR POWER PRICES

Correlation of Power Price Returns with Different Return Streams

Variable	German Power Prices (Spot)	German Power Prices (Two-Year Forward)
MSCI World	–0.13	0.27
MSCI Germany	–0.07	0.29
US 10-Yr. Government Bonds	0.05	–0.14
Germany 10-Yr. Government Bonds	–0.05	–0.19
Equity: Price to Earnings	–0.01	–0.05
Equity: Price to Book	–0.03	0.10
Equity: Return on Equity (ROE)	0.02	–0.21
Equity: Momentum	0.00	–0.12
Fixed Income: Value	0.06	–0.18
Fixed Income: Momentum	–0.02	–0.05
Fixed Income: Carry	–0.03	0.01

Historical analysis and current forecasts do not guarantee future results.

The correlation matrix shows the monthly return correlation from September 2007 to August 2021 of German power prices and various return streams, including equity indices, government bonds and equity and fixed-income factors.

As of August 31, 2021 | **Source:** AQR Capital Management, Bloomberg, FactSet, MSCI, Thomson Reuters Datastream and AB

83 Norges Bank, "First Investment in Renewable Energy Infrastructure," news release, April 7, 2021, https://www.nbim.no/en/the-fund/news-list/2021/first-investment-in-renewable-energy-infrastructure/.

DISPLAY 116: POWER PRICE CORRELATION WITH EQUITIES AND BONDS HAS VARIED SUBSTANTIALLY

German Power Prices (Two-Year Forward, 24-Month Rolling)

Historical analysis and current forecasts do not guarantee future results.

Through October 17, 2022 | **Source:** Bloomberg, Thomson Reuters Datastream and AB

How Big Should Private Asset Allocations Be?

This wide-ranging discussion of private assets leads to a key question: How much should investors allocate to private assets? Clearly, the percentage depends greatly on an investor's desired risk level, liquidity needs and other governance concerns. But with those caveats in mind, we can at least lay out a provisional way to analyze what a private asset allocation might need to look like in the future—and how it differs from the past.

With hindsight (an oversimplifying viewpoint, as always), high returns from public equities and public debt combined with their negative correlation already made high Sharpe ratios achievable, but integrating a small allocation to private equity (especially if one is permitted to perpetuate the myth that stale prices are synonymous with diversification) boosted Sharpe ratios even more.

In *Display 117, page 131*, we show how this historical setup made it relatively easy to achieve the 7% return on plan assets targeted by US pension plans, on average. At the top right, we show the past 10-year return/risk for a 60/40 portfolio of global equities and US bonds, a ratio that had already been abnormally high since 1980 compared with the prior century. We also show that the ratio can be raised even more by introducing alternative exposures, in this case represented by a 10% allocation to private equity and real estate.

How would these allocations evolve if one were to substitute expectations for future returns, variance and covariance? We mark what we think is the likely path of such a portfolio in the display. Our world view implies that a portfolio of 42% equities, 28% government bonds, 10% credit, 10% REITs and 10% private equity would see its Sharpe ratio decline from 1.45 over the past decade to 0.92 now.

An unconstrained optimizer, given our forecasts for lower returns on other assets and the need to maximize diversification, would naturally imply a very large weight to private assets. But that would be unrealistic, and as we've said, we don't think all that diversification is real, anyway. More fragile public market liquidity coupled with a high allocation to private assets has clear dangers, especially when macro "tail events" that reduce public liquidity would likely also affect the ability to sell private assets.

The usual response to this result would be to simply limit the private asset weight and optimize on the remaining assets. Such an approach isn't very useful for our purposes here; ideally, one would like to make a normative statement about weights rather than impose them a priori.

One conclusion from this work is that there's scope for private debt allocations to grow. Adding a 10% private debt allocation improves the return/risk characteristics of a portfolio. The exact size of these allocations for a given investor will depend on investment policy constraints, but the allocations we show here should be seen as a guide for the scale of allocations needed and their impact on overall portfolio return/risk.

Display 117 also shows the interaction of our predictions for return streams and various big-picture assumptions for potential allocations to types of private assets. In this case, we choose to maintain the "fiction" that private asset volatility is low because they're not marked to market, which fits the way most investors approach assessing return and risk. A more appropriate risk measure is probably the risk of a shortfall in a combined drawdown tail event. Adding other forms of private assets can help the overall portfolio, so we think this will remain the direction of travel for the industry. Even then, however, the return/risk trade-off is set to be lower than it's been historically.

This analysis can be thought of as a provisional sketch for the shape of portfolios in a world of higher allocations to private assets. The radical work really needs to be done not in forecasting asset returns, but in determining the governance structure, need for liquidity and appropriate time horizon for portfolios that span public and private assets.

DISPLAY 117: HOW A PRIVATE ASSET ALLOCATION AFFECTS PORTFOLIO RETURN AND RISK

Historical analysis and current forecasts do not guarantee future results.

Display shows four different portfolio "snapshots." The blue point on the top right shows the return/risk of a 60/40 portfolio over the last decade. The purple point shows how adding a small exposure to alternative assets has boosted the return/risk ratio of a 60/40 portfolio over the last decade. The lower two points are projections. The orange point shows the prospect of the 60/40 plus a real estate and private equity portfolio applying our current projections. The green point shows how there can be a slight improvement in return/risk given current projections by adding exposure to private debt.

Private equity data is from Cambridge Associates private investment benchmarks. Data are provided at no cost to managers.

As of October 17, 2022 | **Source:** Cambridge Associates, Cliffwater, Thomson Reuters Datastream and AB

Conclusion

The macro environment implies that many investors are likely to increase their allocation to private assets. Lower returns in public markets, less diversification and a risk of higher inflation all point in this direction. There will, however, be an increasing clash with increased liquidity needs, given an environment where the direction of interest rates has turned and rate volatility seems set to be higher ahead.

On one level, the action point is to increase private asset exposure but also look beyond private equity. This chapter provides explicit pointers in this regard, both in the range of alternatives and how large allocations should be. Specific potential allocations include private debt, real estate and green infrastructure. In the chapter on digital assets we suggest that the use of tokenization will offer a way for private asset investing to evolve.

But the key action point is really at a deeper level: governance, risk measurement, liquidity and time horizon. These aspects involve an explicit view of the types of risk investors want exposure to—simply buying private assets for leverage or asset betas is probably not advisable. Likewise, the inflation-hedging aspect should be seen as part of a package that also includes listed asset-class and factor investments.

Is the risk of private assets measured correctly? The standard deviation of returns seems woefully inadequate; joint tail risks, given stressed macro outcomes, seem more appropriate, especially if they raise the risk of a hardship outcome for end beneficiaries. If some investors are attracted to private assets by the lack of mark to market, that's fine, but they should be consistent and not mark the liquid holdings in a portfolio to market, either.

Private asset exposure is also another example of the growing prominence of alpha sources, as opposed to returns from beta. We've made the point more generally that if one has produced evidence of persistent skill at alpha generation, then as expected beta returns fall, alpha sources mechanically play a larger portfolio role. While it might take longer for the ability to identify idiosyncratic alpha for private asset managers to be accepted than it does for active managers in public markets, the very wide return dispersion shows that the value from any skill at manager selection becomes a large part of overall return.

From a policy perspective, the first response to this landscape will likely be to ensure that regulated investors have appropriate liquidity. As private assets expand into new areas, especially digital, appropriate levels of transparency and protection are necessary too. But there's a bigger-picture policy question: If private assets are needed to achieve a given level of return per unit of risk, what happens to smaller investors and individuals who may find it hard to access them? Digital tokens may enable more fractionalized ownership, but the need to protect individual investors and the desire to avoid unduly high fees for small investors means that, even with fractional ownership, small investors face hurdles in making large allocations to private assets.

The model of the past 30 years in countries such as the US and the UK has been to progressively pass more retirement-saving risk onto individuals, which might arguably work when public markets could supply the requisite returns. This model was helped by the rise of passive investing, and indeed the two trends were mutually reinforcing. But if the next-generation portfolio design to achieve the requisite high real returns requires a significant private asset allocation, it could challenge the model of pushing retirement risk onto individuals.

This topic also raises questions of fairness and inequality. When mass-market savers could buy cheap passive exposure that was expected to generate high returns, the system might have worked (of course, many people couldn't even afford to buy that). However, if only high-net-worth individuals can buy the relevant exposure, it seems to cut against the political zeitgeist, to say the least.

At the end of the day, we suspect that the hard division between public and private assets, in the way investments are partitioned, may fade, just as we think the hard asset-class silos of the industry are starting to fade. However, this evolution will take time. In the meantime, the flow from public to private markets is likely to continue for the foreseeable future.

CHAPTER 6

An Equity Outlook: Are Stocks the Biggest Real Asset Out There?

It may be easy to take a bearish stance on equities today, but there's a case to be made for stocks to generate positive real returns on a strategic basis going forward—high household equity allocations may actually be warranted. There are near-term tactical risks and significant macro pressures on the strategic outlook for margins, but there's also a case to be made that equities behave like a real asset at moderately higher inflation levels. That makes equities a critical element of strategic asset allocation for most investors.

It would be all too easy to write a bearish chapter on today's *strategic* equity outlook:

- No sustained outflow from the asset class globally, despite evidence of slowing growth
- Rapid hardening of central bank resolve on inflation
- A case for a structural decline in corporate margins that will likely prove that today's levels are historical highs
- Rising risk premia due to geopolitics and the higher macro volatility inherent in regime change, as well as the progression from an economy whose cushion was monetary policy (decided by technocrats) to one where fiscal policy (determined by politicians) is the primary cushion
- Greater risk of stagflation, given evidence of sustained inflation and the risk of lower growth

One could use the historical record for each of these observations to conclude that forward returns on global and US equities should be negative, but this chapter doesn't take such a path. Those observations may sound gently devastating, but only when viewed in a somewhat myopic light of mean reversion to past equilibria. In this chapter, we'll outline a case for a positive real strategic return from equities, though one that may be less exciting versus historical terms.

Adjusting to a strategic outlook of moderately higher inflation ahead (such as over a 10-year-forward horizon) will force a rethinking of portfolios. Given this backdrop, the prospect of a positive real return (though one lower than history) makes equities a core portfolio anchor for any investor seeking to beat inflation, whether a DC pension, endowment, sovereign wealth fund or family office. The only exceptions are investors with tighter regulatory constraints or benchmarks not tied to inflation—such as insurance companies.

Investors have several choices in the face of lower real returns, which we set out in this black book. They can move further into illiquid assets, take on more factor risk, boost leverage or increase alpha exposure. Many investors will find the need to take several of these routes. But for all investors who need positive real returns, it would be hard to avoid making equities a core allocation, given their scale and liquidity. No other asset with a reasonable prospect of delivering positive real returns can do this.

Inflation is a key consideration, as it is in nearly any macro discussion these days. There's a good case to be made that exposure to public equities should form a core part of protecting portfolios against moderate levels of inflation. However, this very much depends on the level of inflation and what investors really mean when they say they want to "protect" a portfolio against inflation.

There tends to be an inverse U-shaped relationship between equity valuations and inflation. Outright deflation and high inflation are horrible for equities, implying high risk premia and de-rating. But for the higher but moderate inflation we think is most likely over the medium term, equities can likely maintain high multiples. And for investors focused on long-run generation of positive real returns (versus short-term inflation hedging), equities are highly effective.

There are strategic risks, of course. We'll show that despite the sell-off in 2022, valuations are still far from being "cheap" based on metrics that have mattered in the past. The market is also more concentrated, and hence more dependent on a few very large companies. In addition, investors should prepare for a

higher-amplitude business cycle, in contrast to the very extended business cycles of recent decades, which implies higher risk premia.

That said, there's a case to be made for real yields remaining low across the forecasting horizon. It might not feel that way at the moment, given the bruising upward shift of real yields in 2022, but there are two reasons to expect real yields to remain low in a historical context. First, if one takes real yields as reflecting expectations of future growth, then we think deglobalization and demographics both point to a lower-growth future. Second, we suspect that governments will be content to let inflation run above target to deal with public-debt levels. We note in passing that lower real yields would also helpfully keep pension assets supported, which over the long horizon is a consideration that can't be divorced from policy formation. Ultimately, low real yields and moderately higher inflation can support equity multiples.

This chapter is strategic—focused on the next five to 10 years—but the near-term outlook can never be ignored. There has, at the time of this writing, been no sign of capitulation by equity investors. We will examine the forces at work on the equity market in upcoming sections, but *Display 118* summarizes the main points.

Valuations have fallen sharply but are still not at levels that would count as "cheap." This headwind is somewhat mitigated by our view that there are constraints on the equilibrium level of real yields. Corporate fundamentals have never seen better profitability: is that a sign of permanently better conditions, given decades of pro-business policies and market composition (efficient mega-caps), or does it signal a pending retrenchment? Finally, equities are a claim on real economic growth, which faces strategic downward pressure from demographics. To what extent can investment in the energy transition compensate for this?

At the end of this chapter we'll bring these topics together to enumerate the return drivers for equities and show how all of this leads to a positive real-return outlook.

DISPLAY 118: HEADWINDS AND TAILWINDS FOR GLOBAL EQUITIES

	Headwinds	Neutral	Tailwinds
Valuation		Shiller P/E, Tobin's Q, market cap/GDP	Real yields below historical average
Sentiment	Lack of capitulation		TINA (There Is No other Alternative)
Fundamentals and Cash Flow	"Populist" pressure on margins, taxes, buybacks		High profitability, investment in automation
Growth	Demographics		Investment in the energy transition

Historical analysis and current forecasts do not guarantee future results.

Source: AB

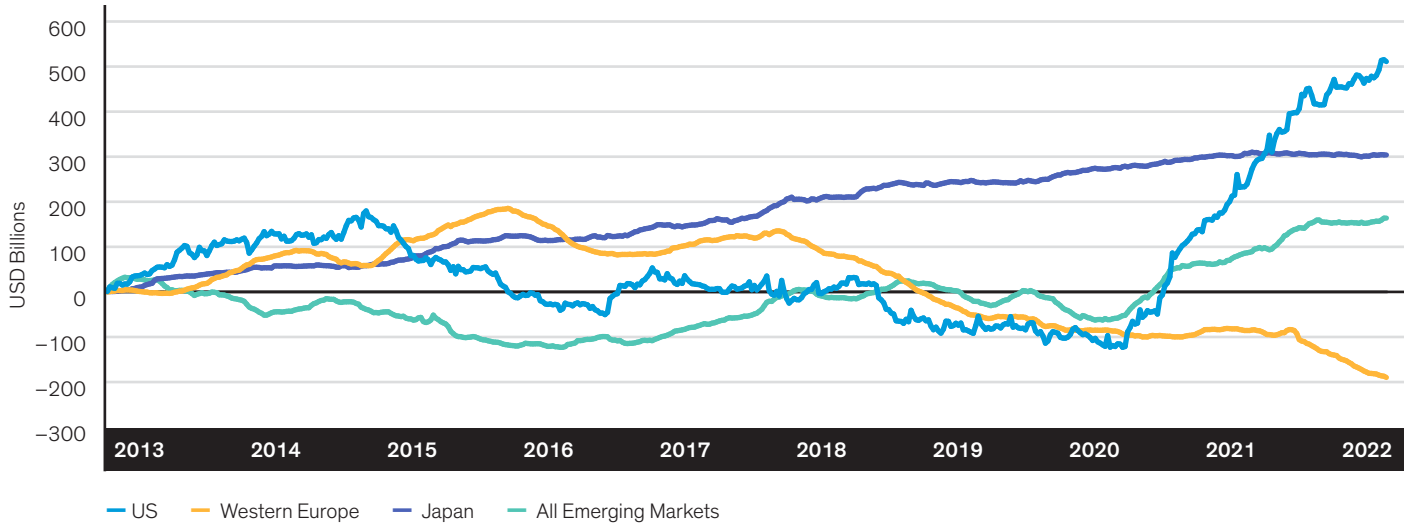
Buoyant Sentiment: Bear or Bull Argument?

Sentiment is one of several challenges to forming a positive view on equities right now. Despite strong signs of slowing global growth, at the time of this writing there has not been a capitulation by investors (*Display 119*).

However, sentiment metrics that have historically been useful for determining equity returns over horizons longer than a year are somewhat more encouraging. There has been a marked pullback in investors' willingness to invest in overseas equities. This level of retrenchment (*Display 120, page 136*) has historically indicated positive returns.

DISPLAY 119: A RECENT—AND STARK—DISCONNECT IN FLOWS BETWEEN THE US AND EUROPE

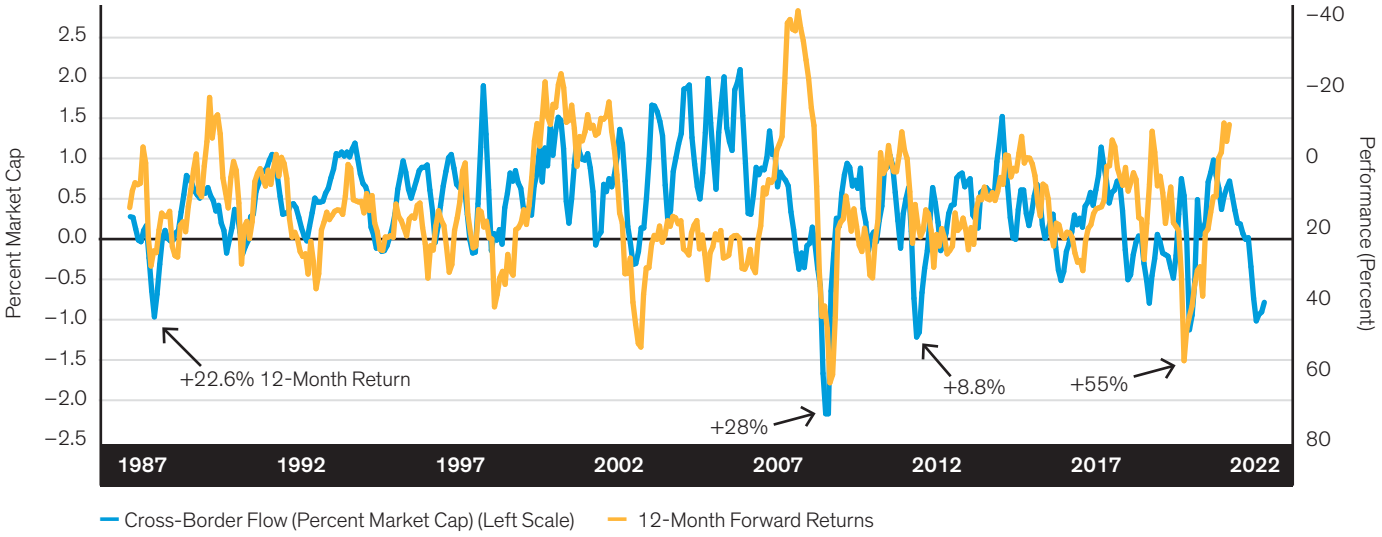
Cumulative Regional Equity Fund Flows



Historical analysis and current forecasts do not guarantee future results.

Through November 9, 2022 | **Source:** Emerging Portfolio Fund Research Global and AB

DISPLAY 120: RETRENCHMENT IN OVERSEAS EQUITIES POSITIONS SUPPORTS LONGER-TERM RETURNS



Historical analysis and current forecasts do not guarantee future results.

Display shows the combined net purchases of overseas equities for the US, UK, euro area (post 1997), Germany (1987–1997), France (1993–1997) and Japan (post 1997). Data derived from external sector portfolio investment data published in the financial accounts of central banks. The series is monthly flows smoothed over three months, annualized and normalized by the market cap of the Datastream World Index.

Through July 31, 2022 | **Source:** Banque de France, Deutsche Bundesbank, ECB, Ministry of Finance Japan, Office for National Statistics, Thomson Reuters Datastream, US Federal Reserve and AB

The environment described in the two previous displays, combined with strong returns, pushed US households' equity allocation past the top of its 70-year range over the last year (*Display 121*). The allocation also topped 50% for the first time. The fall in prices has recently pushed the allocation down (there's been effectively little outflow).

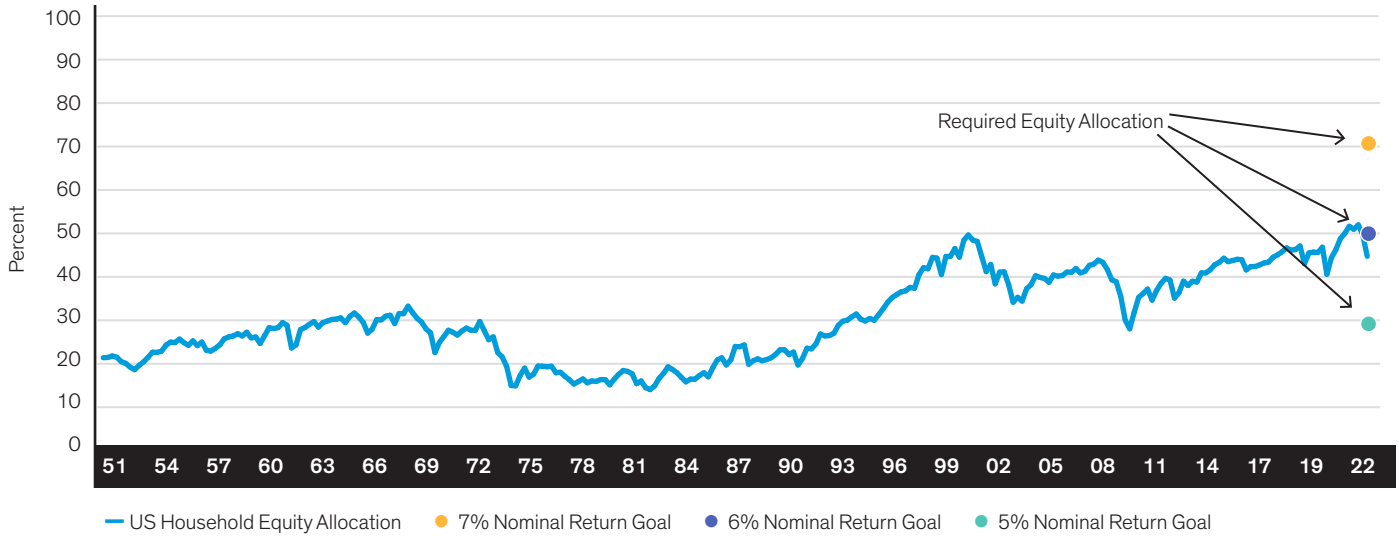
One could use the historical relationship between this metric and forward returns to build a bearish case for equities. However, we think this is a good example of where history might not be a guide. In a world of moderately higher inflation, low real yields and the prospect of negative real bond returns, we would argue that the allocation *should* be above its 70-year range. There aren't enough private assets for households to buy to make them a realistic alternative.

To put the current equity allocation in a macroeconomic context, we modeled the returns of a portfolio of public equity, private equity, US 10-year Treasuries and global investment-grade bonds using our medium-term return forecasts. The current US household 44% allocation to public equities, if augmented with another 10% in private equity (a generous assumption), 10% in corporate bonds and the rest in US Treasuries, implies a nominal return below 6%. To achieve a 6% nominal return while keeping the private equity and global bond allocation constant, the equity allocation would have to rise to 50%. A 7% nominal return target, currently embedded in US pension fund assumptions, would require a public equity allocation of 70%.

Is Growth Stock Exposure Simply a Rates Trade?

Surely no one can still doubt that exposure to growth stocks is a macro bet. Will the shift in yields we've seen doom the growth trade? And if it does, how can one justify a positive view on US equities when 26% of the market consists of technology companies alone? It's important to bear in mind that long-duration equities aren't the same

DISPLAY 121: HIGHER RETURN TARGETS NECESSITATE HIGHER PUBLIC EQUITY EXPOSURES



Historical analysis and current forecasts do not guarantee future results.

Note: The required equity allocation data points are for a model portfolio consisting of US public equities, 10% private equity, 10% global investment-grade bonds and US 10-year government bonds and uses our own medium-term return forecasts for these asset classes.

Through June 30, 2022 | **Source:** FRED and AB

as long-duration bonds. They're able to grow, potentially in positive real terms, because they represent claims on cash flows in the real economy. Moreover, we've made the case that, despite the rise in real yields in 2022, we shouldn't expect a reversion to long-term mean real yields.

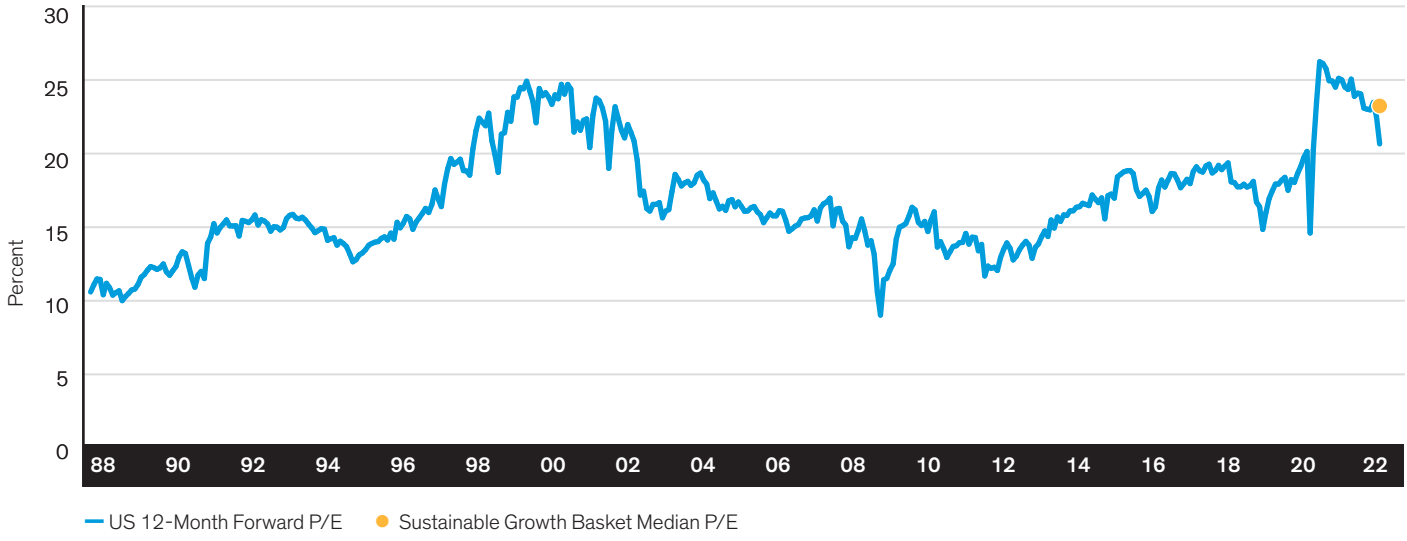
The corollary of low real yields is that a disproportionally large part of the net present value of many companies will still be far off into the future. Thus, the key point for the average growth stock is not to try to justify its valuation, but to focus analysis on whether one can believe in that growth being sustained. The recent abrupt divergence in returns between Amazon and Meta Platforms, both registering as record daily shifts in market cap, is a case in point.

In *Display 122*, we show the valuation of our sustainable growth screen—a broad selection of US growth stocks that attempts to test for growth sustainability and justify valuation. We remove stocks with price/earnings-to-long-term-growth (PEG) ratios above 3×, as well as those with earnings-growth forecasts that seem disproportionate versus history. Specifically, we omit firms whose consensus three-year forward earnings per share (EPS) growth is more than 10 percentage points above their 10-year trailing growth.

Currently, the sustainable-growth factor trades at an 12% premium to the overall market (Display 122), with a consensus long-term earnings growth forecast of 13.7% versus the overall market's 11%; this doesn't seem like a challenging level. So, if these companies can sustain their growth rates, they should be an important strategic part of an equity allocation in a world where real yields remain low.

We discuss the factor outlook in more detail in Chapter 7, but the analysis presented here shows that the growth composition of the US market doesn't prevent positive returns.

DISPLAY 122: VALUATION OF SUSTAINABLE GROWTH COMPANIES VS. THE US MARKET



Historical analysis and current forecasts do not guarantee future results.

The above screen takes the companies in the two highest quintiles of the US Composite Growth screen and removes stocks that have a PEG ratio >3× and more than a 10% premium to the average of the current FY0FY3 EPS estimated growth and long-term forecast growth over 10-year I/B/E/S consensus 12-month forward net income growth. The PEG ratio that we use is 12-month forward PE/LTG. It also excludes companies that are rated as Underperform by Bernstein Research. Rebalanced on September 30, 2022.

Through November 30, 2022 | **Source:** Bernstein Research, FactSet, Thomson Reuters Datastream, Thomson Reuters I/B/E/S and AB

Valuation… and Its Discontents

Any positive view on equities must overcome the valuation hurdle. There will inevitably be skepticism about the ability of valuation metrics to give a signal: using these measures in isolation would have called for reducing equity allocations ahead of the large market run-up both before and after the pandemic's onset. However, there's evidence over long periods of history that these metrics have a role to play. In this section, we analyze the effectiveness of valuation metrics and review their current signals.

In *Display 123*, we show the effectiveness of a range of valuation metrics in predicting forward returns. All of them become more effective as the forecasting horizon is extended out, which is normal for any kind of valuation metric. In terms of effectiveness, price/national-accounts book value is the most reliable, but it's only available quarterly, doesn't go back farther than the 1950s, and has no comparable equivalent across regions and market segments. The Shiller P/E ratio described earlier ranks second in effectiveness, but is available monthly with a much longer history and easier comparability across regions.

The Shiller P/E (price divided by inflation-adjusted 10-year average earnings) has often been our starting point for long-horizon equity-return forecasting. Over short horizons, it doesn't tell us much about returns, but it's one of the most effective measures over 10-year horizons—especially given the ease of getting the data to make comparisons internationally and across market segments. The 140-year relationship between the Shiller P/E and 10-year forward returns (*Display 124, page 140*), taken at face value, implies an annualized total return of 4.4% for US equities over the next decade.

DISPLAY 123: HISTORICAL EFFECTIVENESS OF SELECT VALUATION MEASURES

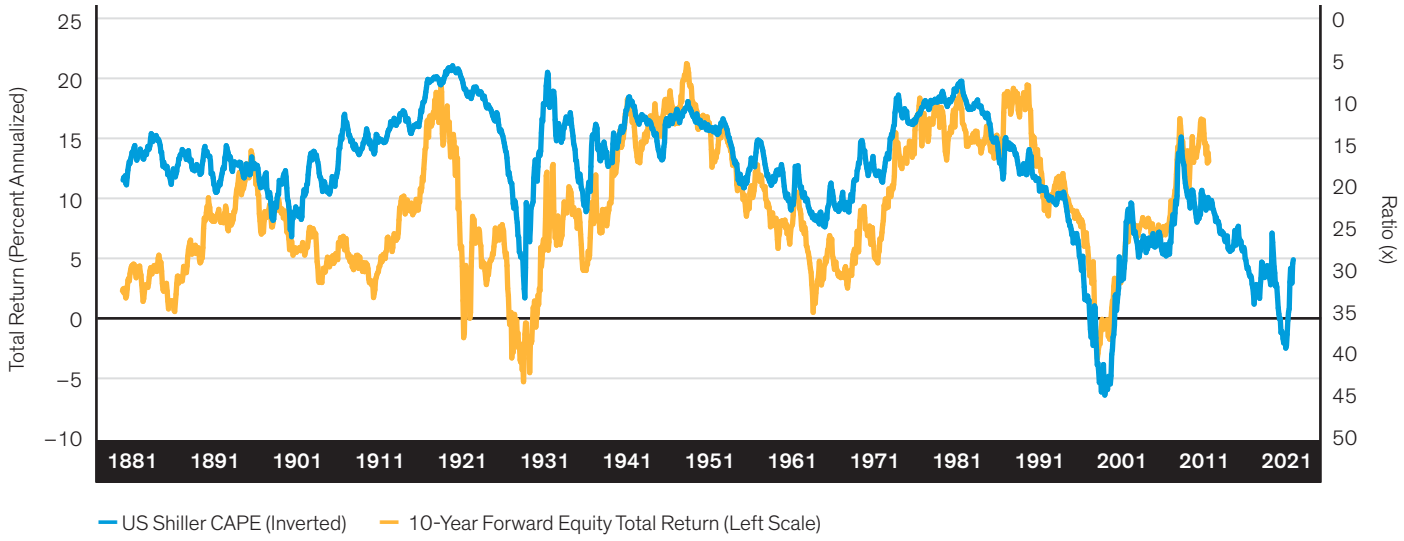
	Adjusted R-Squared			
Valuation Metric	One-Year Forward	Three-Year Forward	Five-Year Forward	10-Year Forward
Price to Book (National Accounts)	8.0%	23.3%	38.6%	81.3%
Shiller CAPE	5.0%	18.7%	31.8%	63.0%
CAPE Five-Year	3.4%	16.9%	28.7%	57.1%
Shiller ERP	8.8%	18.9%	29.2%	53.9%
Tobin's Q	2.0%	8.1%	14.8%	51.3%
Market Cap/GDP	1.8%	11.2%	21.2%	46.8%
Dividend Yield	7.7%	19.0%	27.3%	43.0%
12-Month Trailing ERP	0.8%	1.5%	1.6%	14.0%
Profit/GDP	–0.2%	0.2%	4.8%	8.2%
12-Month Trailing P/E	0.2%	1.8%	0.8%	7.2%

Historical analysis and current forecasts do not guarantee future results.

The table shows the adjusted R-squared statistic from a regression of US equity forward total returns versus their respective valuation metrics. The regression was run on a quarterly frequency from 4Q:1951 to 3Q:2021. The data for market cap/GDP are from 1Q:1965.

As of September 31, 2021 | **Source:** Federal Reserve, Global Financial Data, Robert Shiller's database, Thomson Reuters Datastream and AB

DISPLAY 124: COMPARING THE SHILLER P/E RATIO AND 10-YEAR FORWARD EQUITY RETURNS



Historical analysis and current forecasts do not guarantee future results.

Shiller P/E is defined as price divided by 10-year average inflation-adjusted earnings.

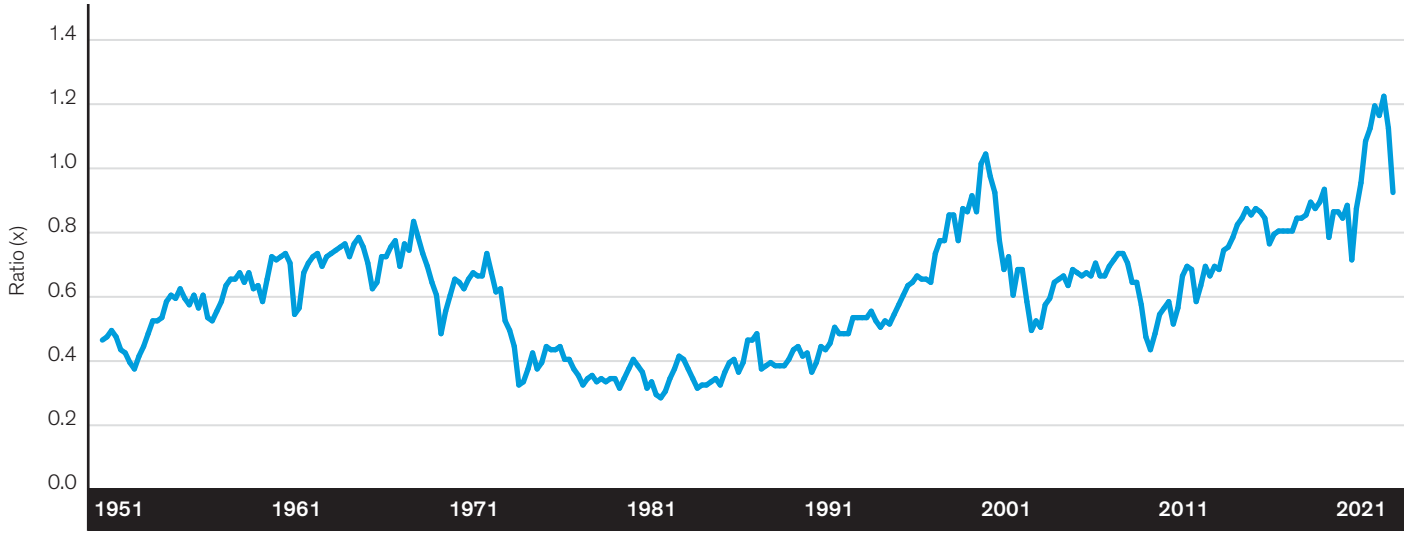
Through September 2022 | **Source:** Robert Shiller's database, Thomson Reuters Datastream and AB

Price to (national accounts) book value tends to be used less often, but it has actually been effective historically—it's currently in the top quintile within the historical valuation range (*Display 125*).

The other two popular valuation metrics are the so-called Buffet indicator (market capitalization divided by GDP) and Tobin's Q, a company's market value divided by its assets' replacement cost. As we show in *Displays 126 and 127, page 142*, both are still significantly above their historical averages. The elevated market-cap/GDP ratio illustrates a broader macro point: financial assets have strongly outpaced real assets in recent decades, but there's a question as to whether this can continue.[84]

When we overlay Tobin's Q with the Shiller P/E, the two metrics come to similar conclusions—even though one shows equity multiples relative to a stock's replacement value and the other shows them relative to a "flow" of earnings. So they arrive at this similar conclusion via very different routes.

DISPLAY 125: US PRICE TO (NATIONAL ACCOUNTS) BOOK VALUE IS HIGH VS. ITS HISTORICAL RANGE



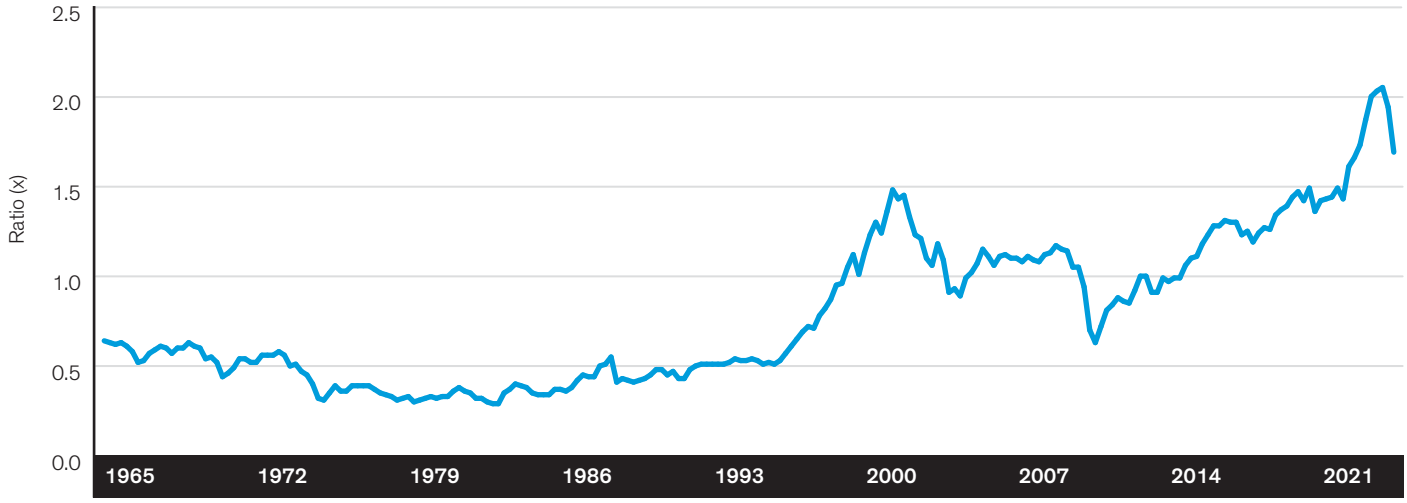
Historical analysis and current forecasts do not guarantee future results.

The indicator is calculated from the national financial accounts of the United States (Z1) by dividing the value of corporate equities by total asset value based on historical cost.

Through June 30, 2022 | **Source:** Federal Reserve and AB

84 See Inigo Fraser Jenkins et al., *Portfolio Strategy: Oops—I Hit My 10-Year Price Target with 8½ Years to Go…What Do I Do Now?*, Bernstein Research, March 20, 2021.

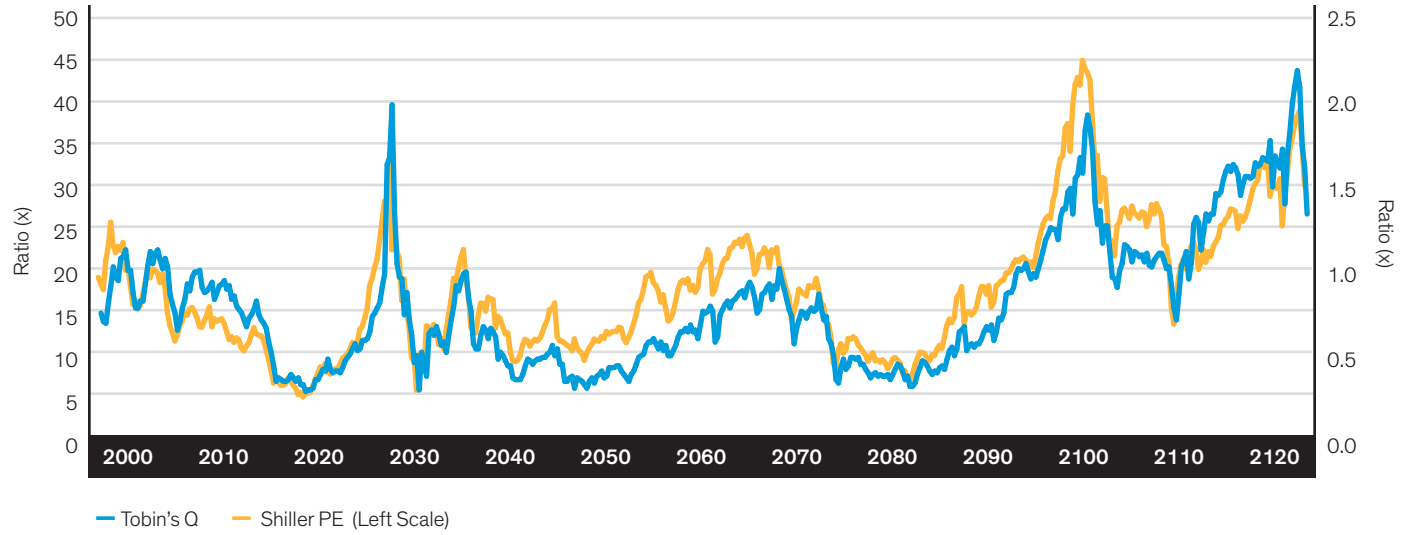
DISPLAY 126: US EQUITY-MARKET CAPITALIZATION VS. GDP IS ELEVATED



Historical analysis and current forecasts do not guarantee future results.

Through June 30, 2022 | **Source:** FactSet, Thomson Reuters Datastream and AB

DISPLAY 127: SHILLER P/E AND TOBIN'S Q REACH SIMILAR CONCLUSIONS



Historical analysis and current forecasts do not guarantee future results.

Through June 30, 2022 | **Source:** Federal Reserve, Robert Shiller's database and AB

These readings don't necessarily doom equities to negative returns for several reasons: the inflation prognosis, real yields and investors' possible need to buy more equities as a result—a point we make elsewhere in this chapter.

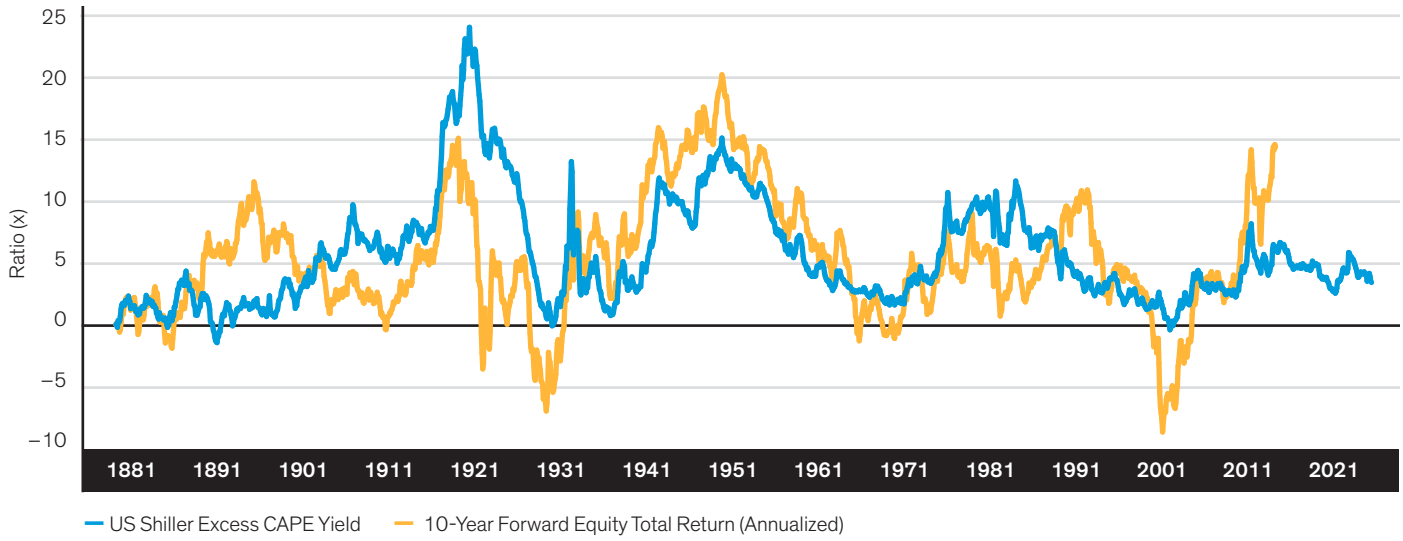
The Shiller equity risk premium (ERP) valuation metric is one metric that's not extreme. It compares the earnings yield from the Shiller P/E to the inflation-adjusted US 10-year government bond yield, and currently forecasts a 2.4% premium over bonds. This would bring the overall real return for US equities to around 3.4%, or 6.4% in nominal terms, assuming 3% annualized inflation (*Display 128*).

A Cocktail of Macro Forces Implies Lower Corporate Margins and Profit Shares of GDP

Corporate fundamentals have never been stronger, even leaving aside the shifting market composition, with the presence of efficient mega-caps boosting aggregate profitability. Pretax margins have been high, with a generous tax environment making post-tax margins even higher historically. We don't think this can be maintained.

Displays 129 and 130, page 144, show the pre- and post-tax margins for US corporations. The cap-weighted margin is skewed upward by mega-cap profitability, but both the cap-weighted and median margin are well above historical norms.

DISPLAY 128: SHILLER ERP IMPLIES POSITIVE REAL 10-YEAR FORWARD EQUITY RETURNS

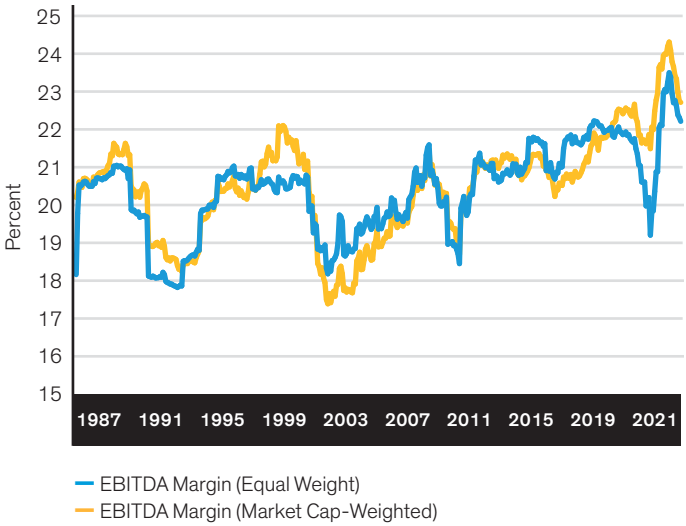


Historical analysis and current forecasts do not guarantee future results.

The Shiller excess CAPE yield is calculated by comparing the earnings yield from the US Shiller P/E Ratio against the inflation-adjusted US 10-year government bond yield.

Through September 30, 2022 | **Source:** Global Financial Data, Robert Shiller's database, Thomson Reuters Datastream and AB

DISPLAY 129: EQUAL-WEIGHTED AND MARKET-CAP-WEIGHTED US EBITDA MARGINS ARE ELEVATED

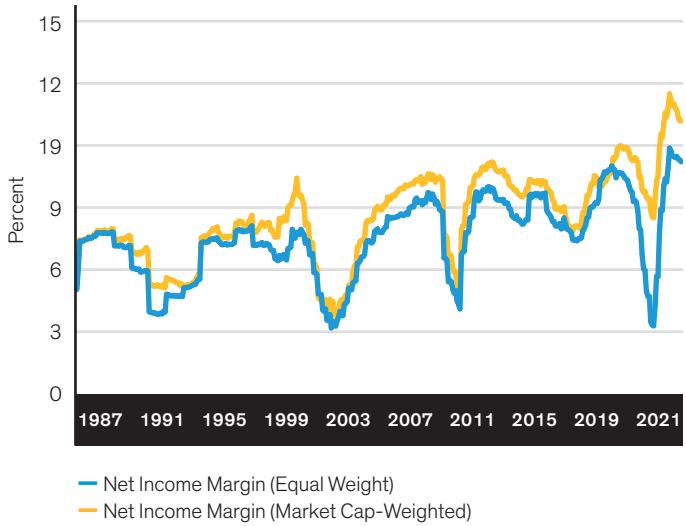


Historical analysis and current forecasts do not guarantee future results.

Time series constructed from equal-weighted and market-cap-weighted sector margins

Through September 30, 2022 | **Source:** Thomson Reuters Datastream and AB

DISPLAY 130: ELEVATED US EQUAL-WEIGHTED AND MARKET-CAP-WEIGHTED NET INCOME MARGIN



Historical analysis and current forecasts do not guarantee future results.

Time series constructed from equal-weighted and market-cap-weighted sector margins

Through September 30, 2022 | **Source:** Thomson Reuters Datastream and AB

We see downward pressures on margins, probably driven in the near term by recession dynamics likely to squeeze margins. But over the strategic horizon covered in this black book, more important forces are at work. We see deglobalization impeding the ability of corporations to engage in labor-cost and tax arbitrage while also pushing up effective tax rates (see Chapter 3, "Investing in a Post-Global World").

Meanwhile, demographic changes and a shrinking labor force likely also point to more labor bargaining power. If one adds the "S" in ESG into the equation, implying a higher path of wages; our view that consumers won't accept bearing the cost of the energy transition; and populist pressures against perceived corporate excess, that creates a powerful cocktail.

The shift in the balance of labor-capital bargaining power in recent decades also means that the profit share of GDP is at a peak and set to fall (*Display 131*).

However, a peak in the profit share of GDP hasn't been a negative signal for US stocks historically. In similar episodes since 1950, US equity returns (on average) have been positive across horizons from three months to two years. The only time US stocks were negative in the following 12 months was 1973 (*Display 132, page 146*), but the average Shiller P/E ratio during previous profit peaks was 18.6×, considerably lower than today's 39.6×. A profitability peak in the face of high multiples could prove more problematic this time. The bottom line is that this setup could put downward pressure on earnings growth, but not enough to make investors bearish.

In addition to the pressures on margins, buybacks have been key contributors to shareholders' cash return, but are their days numbered? In the decade before the pandemic, corporations emerged as by far the strongest source of demand for equity buying in the US, and in Europe and Japan as well. But there's a case to be made that buybacks disproportionately benefit the richer owners of equities, contributing to inequality. This could put them under pressure from populism in the years ahead.

Continued on page 148

DISPLAY 131: STRONG CORPORATE SHARE OF GDP COULD COME UNDER PRESSURE

US Profit Share of GDP

Historical analysis and current forecasts do not guarantee future results.

March 31, 1950, through June 30, 2022 | **Source:** FRED, Thomson Reuters Datastream and AB

DISPLAY 132: US EQUITY RETURNS: TYPICALLY POSITIVE AFTER PEAK PROFIT SHARES

	Forward Total Return				
Profit Margin Peak Date	Shiller P/E	Three Months	Six Months	12 Months	24 Months
December 31, 1950	11.31	6.70	6.41	24.55	47.60
June 30, 1955	17.37	7.46	12.91	18.88	24.54
June 30, 1959	18.45	–1.97	4.03	0.61	18.05
March 31, 1966	22.61	–4.26	–12.71	4.63	7.97
March 31, 1973	17.41	–5.79	–1.27	–12.93	–19.08
December 30, 1978	8.93	3.02	7.41	18.14	64.54
March 31, 1984	9.33	–2.63	6.80	18.74	63.34
September 30, 1997	32.67	2.87	17.22	9.05	39.37
September 30, 2006	25.64	6.70	7.38	16.44	–9.15
March 31, 2012	22.05	–2.75	3.43	13.96	38.87
Average	**18.58**	**0.94**	**5.16**	**11.21**	**27.60**

Historical analysis and current forecasts do not guarantee future results.

December 31, 1950, through March 31, 2014 | **Source:** FRED, Robert Shiller's database, Thomson Reuters Datastream and AB

DISPLAY 133: ASSESSING RETURN STREAMS IN DIFFERENT INFLATION REGIMES

Average Real Returns by Inflation Band, Annualized (Percent)

Equities	<1%	1%–2%	2%–3%	3%–4%	4%–5%	>5%
US Equities	–6.8	2.6	14.6	15.6	10.6	4.5
EM Equities	–40.1	–3.4	21.3	13.7	21.5	9.8
World Equities	–1.6	–0.5	14.5	14.5	11.2	4.6
Japan Equities	–21.8	–4.2	10.2	27.2	24.4	8.0
Factors (Long/Short)	**<1%**	**1%–2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
Equity Price to Book	–16.3	–4.2	1.3	0.3	5.1	–0.1
Equity PE	–8.7	1.0	0.1	–2.0	4.9	–1.3
Equity Quality	18.2	6.8	–2.8	2.0	–1.4	–3.8
Equity Dividend Yield	–6.6	1.2	–3.1	–7.8	4.1	–5.5
Equity FCF Yield	–7.8	–5.0	–0.2	–3.3	5.0	–0.5
Equity Low Vol	25.5	5.6	–8.7	0.3	4.0	–1.1
Equity Momentum	18.4	2.3	1.5	11.5	7.0	3.0
Factors (Long Only)	**<1%**	**1%–2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
Equity Price to Book	–16.6	0.5	19.5	19.3	17.9	9.6
Equity PE	–15.6	4.2	18.6	17.5	17.3	7.3
Equity Quality	–1.1	4.6	15.4	18.4	11.3	5.6
Equity Dividend Yield	–8.4	4.4	13.5	12.2	16.1	5.5
Equity FCF Yield	–12.3	–0.1	18.1	16.5	17.6	8.2
Equity Low Vol	–7.0	5.2	13.1	16.3	11.7	4.8
US Relative Sectors	**<1%**	**1%–2%**	**2%–3%**	**3%–4%**	**4%–5%**	**>5%**
Industrials	–8.0	–0.1	3.5	5.9	–1.0	–0.1
Materials	–19.3	–2.1	3.8	–4.7	–0.8	0.4
Metals & Mining	–31.2	–7.9	10.1	–8.3	–0.3	1.4
Consumer Cyclicals	5.9	4.6	0.1	–3.6	0.5	–1.3
Consumer Staples	6.6	2.0	–3.3	–2.2	2.9	2.8
Energy	–14.1	–9.1	5.4	–0.9	–3.3	1.5
Banks	–14.2	–0.8	–2.3	6.3	2.6	0.7
Insurance	–9.5	0.9	–2.6	5.8	3.6	1.1
Healthcare	9.1	3.4	–2.0	–1.7	0.1	2.6
Real Estate	–22.1	2.7	1.1	9.3	2.2	2.7
Technology	14.9	4.4	4.0	11.8	–3.2	–2.2
Telecoms	12.0	–3.7	–2.8	–2.0	4.2	0.1
Utilities	1.8	–0.2	–2.0	–4.8	1.5	–1.3

Historical analysis and current forecasts do not guarantee future results.

The table shows the average year-over-year return for different assets in different inflation regimes. The data history is from 1970 or the longest available history. Inflation regimes are proxied by the US 10-year TIPS implied break-even inflation rate. Prior to 1997, the 10-year break-even rate is a backcast of implied inflation calculated by Jan Groen and Menno Middeldorp from the Federal Reserve Bank of New York. For more details, please see: https://libertystreeteconomics.newyorkfed.org/2013/08/creating-a-history-of-us-inflation-expectations/. Equity long-only factors show the market-cap-weighted absolute return of a portfolio of top-quintile-ranked stocks based on the factor characteristic. Equity long/short factors show the market-cap-weighted return of a portfolio that is long the top-quintile-ranked stocks and short the bottom-quintile-ranked stocks. Global investment-grade and high-yield bond returns are shown in excess of duration. US CPI Index is used to convert nominal to real returns. We do not subtract the change in CPI for relative sector returns.

From January 1, 1970, to May 31, 2021 | **Source:** AQR Capital Management, Bloomberg, FRED, Global Financial Data, Kenneth R. French Data Library, New York Fed, Robert Shiller database, Thomson Reuters Datastream and AB

Continued from page 145

Are Equities a Real Asset?

A core part of the view articulated in this black book is that equities are a portfolio anchor for investors needing positive real returns, given the moderate inflation we're expecting. What's the basis for our claim? We like to point out that, in many senses, equities count as a real asset, though discussions with clients and colleagues reveal that this view is far from universal.

There are two ways to argue that equities are a real asset: 1) One can follow in the footsteps of Roger Bacon and lay out the empirical evidence of equity returns in inflationary environments; or 2) one can take a theoretical and normative approach and argue that equities represent a claim on cash flows determined in the real economy, so they should be real assets.

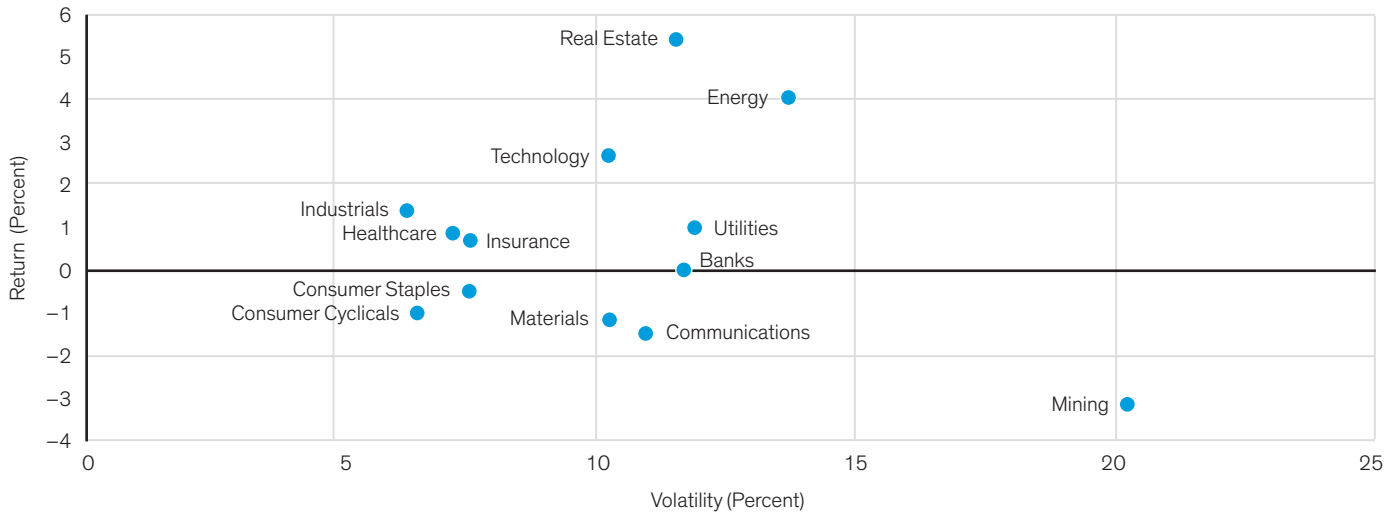
The role of equities in insuring portfolios against inflation depends very much on the time horizon. We made the case in Chapter 1, "Assessing the Inflation Trajectory and Portfolio Responses," that the meaning of an inflation hedge is tied to time horizon. For investors with a long horizon (such as those in the early stages of a target-date glide path), an inflation "hedge" probably translates into assets that can continue delivering positive real returns in higher-inflation environments.

By contrast, an investor with a shorter horizon or tighter risk controls might find an inflation hedge in an asset that positively correlates with inflation regardless of its long-term real return. In the short term, equities may be ineffective hedges, because upward inflation shocks tend to hurt returns, either through an expected rise in risk-free rates (such as a policy change) or an increase in the risk premium (given a risk of truly high inflation rates). Our case for equities as an inflation hedge is very much in the context of the long-horizon investor wishing to generate a sustained real return.

Let's start with the empirical data, since it's less controversial. In *Display 133, page 147*, we show the average annualized performance of the aggregate equity market, individual sectors and equity factors in different inflation regimes—defined by inflation bands ranging from less than 1% to more than 5%. In the 2%–4% inflation range, equity indices can deliver strongly positive real returns. From a long/short factor perspective, higher inflation (3%–4%) is positive for momentum, quality and low volatility. At the sector level, technology, real estate and industrials tend to outperform when inflation is in the 2%–4% range.

We also show, in *Display 134*, the relative return/risk trade-off for US sectors when inflation is in a 2%–4% range. An array of sectors tend to help portfolios: those directly tied to real assets, such as real estate and energy; sectors that can deliver positive real growth (healthcare, technology); and those offering lower-volatility income but with a link to inflation (utilities).

DISPLAY 134: RELATIVE RETURN/RISK FOR US SECTORS WITH INFLATION IN THE 2%–4% RANGE



Historical analysis and current forecasts do not guarantee future results.

January 1, 1970, through May 31, 2021 | **Source:** Thomson Reuters Datastream and AB

For the market overall, an inverse U-shaped relationship exists between equity valuation and inflation (*Display 135*). The common central bank inflation target of 2% is, lo and behold, the level that tends to maximize equity valuations. The risk premium tends to increase, so valuations decrease, at higher and lower inflation levels.

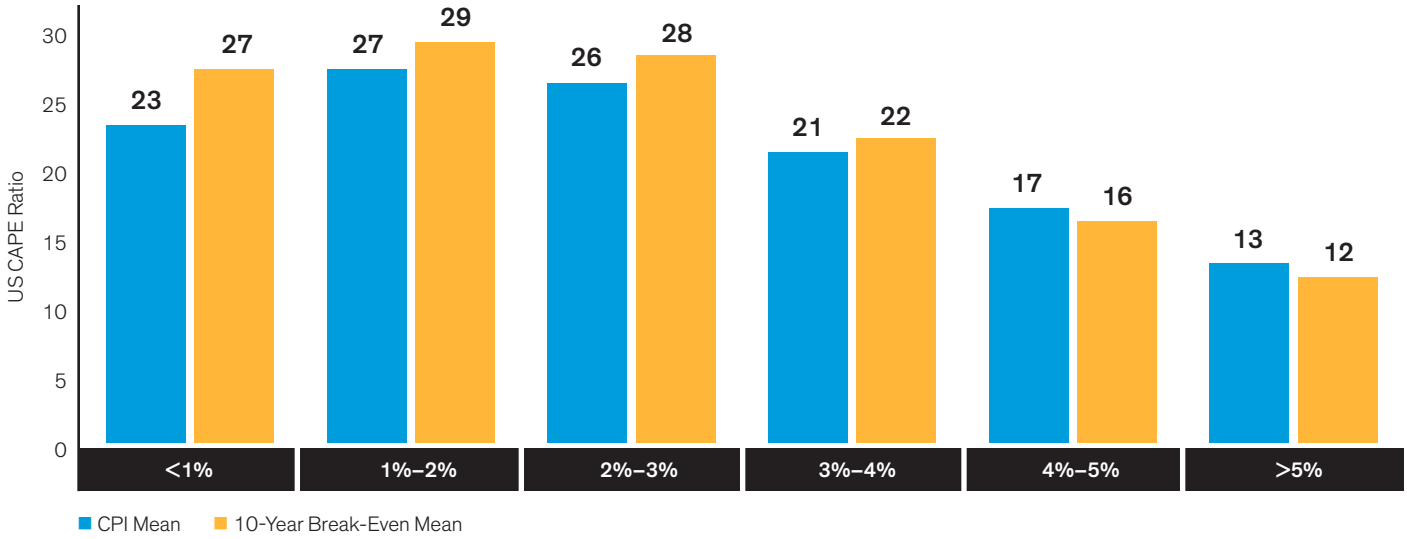
Low inflation raises the risk of outright disinflation, pointing to a lack of growth. Very high inflation destroys the visibility of far-distant earnings and raises the prospect of higher interest rates. Inflation in the 2%–4% range is still consistent with high multiples, so a moderate inflation outlook doesn't necessarily require a downward mean reversion in multiples.

Such is the empirical evidence for equity returns and valuations in response to inflation. But is there evidence from equity "fundamentals" demonstrating that stocks are indeed claims on cash flows in the real economy? The last 12 months have seen higher inflation along with high profits: how normal is that?

Let's start with the link between margins and inflation, measured both by CPI and 10-year break-even rates (*Display 136, page 150*). The connection isn't perfect but, on balance, margins have been able to rise even when inflation does. That's not to say margins can't suffer tactically over the next one to two years as labor costs rise, but in aggregate, the corporate sector has managed to raise prices along with inflation in a way that, over the cycle, can offset costs.

DISPLAY 135: MODERATELY HIGH INFLATION HAS SUPPORTED EQUITY MULTIPLES

Cyclically Adjusted Price/Earnings Ratio of US Equities by Inflation Regime (US CAPE Ratio)



Historical analysis and current forecasts do not guarantee future results.

Pre-1997 the 10-year break-even rate is a backcast of implied inflation calculated by the New York Fed.

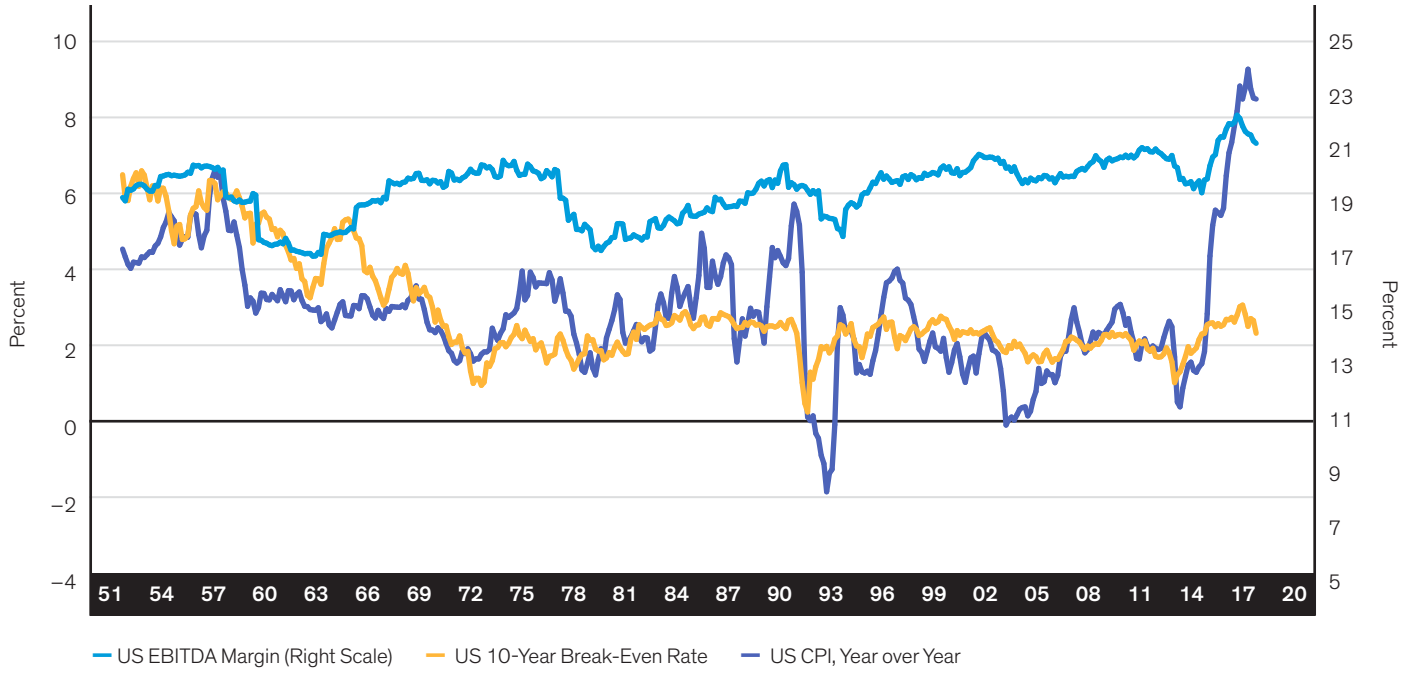
September 30, 1971, through August 31, 2022 | **Source:** Federal Reserve Bank of New York, Robert Shiller's Database, Thomson Reuters Datastream and AB

Viewed through an earnings lens, real earnings growth can also remain positive even in higher-inflation regimes (*Display 137, page 151*), based on year-over-year growth in real profits overlaid with inflation. We define real profits here as nominal earnings growth for S&P companies minus CPI. Because earnings growth is often flattered by buybacks, we remove that effect and use the growth in total nominal dollar earnings. As the evidence suggests, even higher inflation doesn't preclude positive real earnings growth.

Since 1965, the geometric average real growth of total earnings has been 4.0% annualized. There's a sweet spot when inflation has ranged from 2% to 4% and real growth in total earnings has averaged 8.5% annualized (*Display 138, page 152*). However, even in periods when inflation was above 4%, real earnings growth was 4% annualized. The worst periods were during low-inflation regimes, when real profit growth was less than 1% annualized. Thus, there's a nonlinear relationship between inflation and real profit growth, but skewed in favor of higher inflation.

We think this analysis points to a fundamental and empirical case for equities to be regarded as real assets, at least in the strategic inflation regime we've outlined in this black book.

DISPLAY 136: EVOLUTION OF CORPORATE MARGINS AND INFLATION

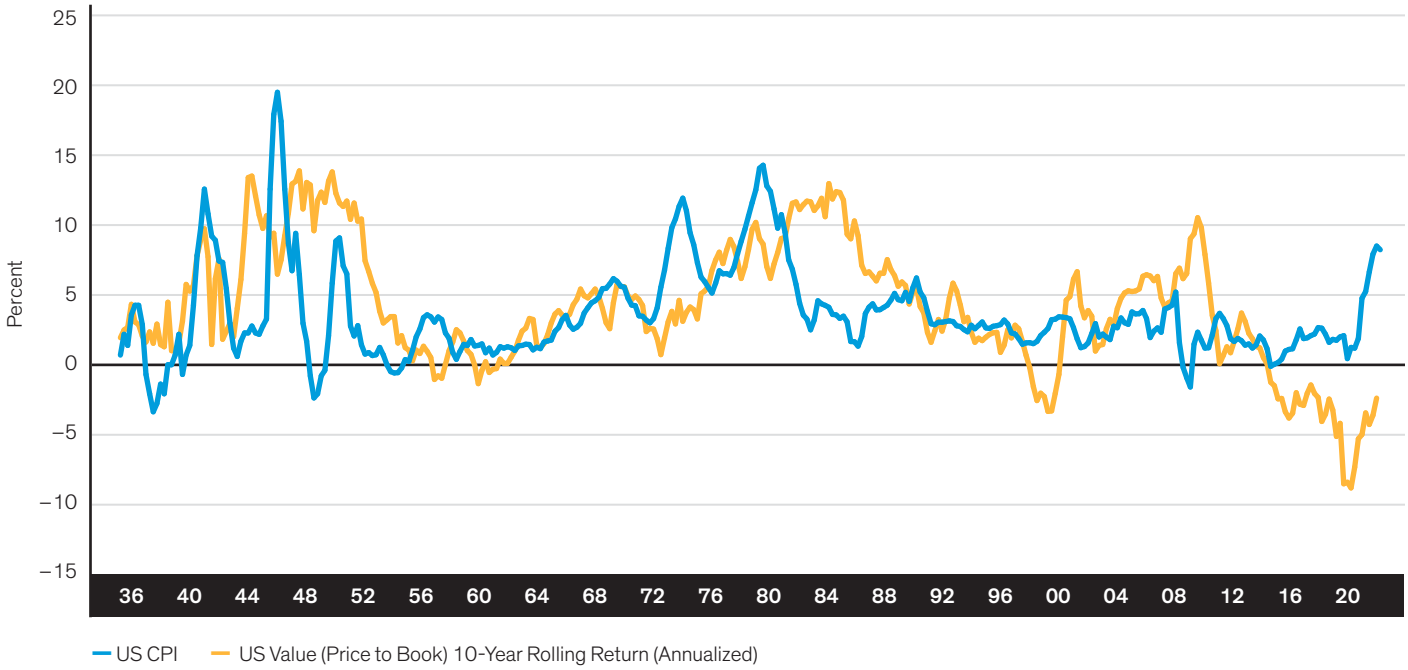


Historical analysis and current forecasts do not guarantee future results.

Through September 30, 2022 | **Source:** FactSet, Thomson Reuters Datastream and AB

DISPLAY 137: 90 YEARS OF INFLATION AND VALUE—IS INFLATION ALL THAT WAS MISSING?

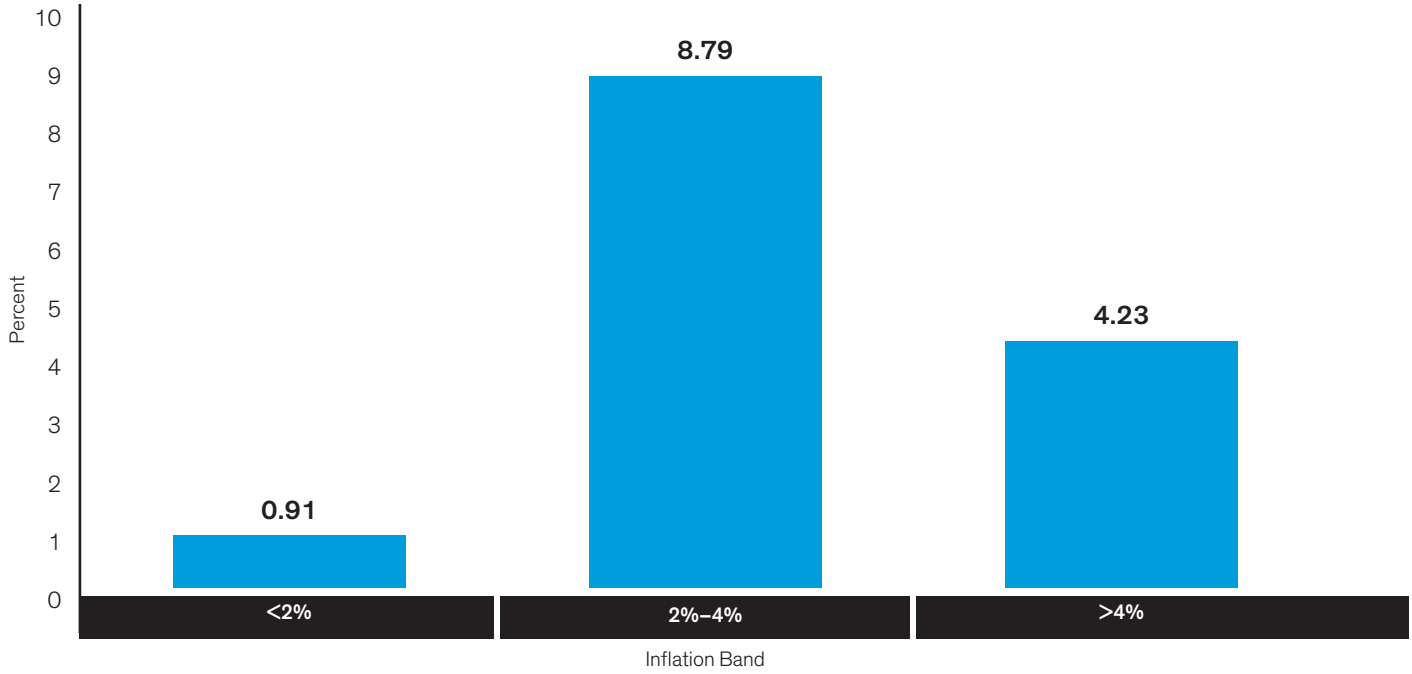
US Consumer Price Inflation and US Value Returns



Historical analysis and current forecasts do not guarantee future results.

Through March 31, 2022 | **Source:** Kenneth R. French Data Library, Thomson Reuters Datastream and AB

DISPLAY 138: AVERAGE REAL GROWTH IN TOTAL EARNINGS BY INFLATION BAND



Historical analysis and current forecasts do not guarantee future results.

December 31, 1964, through December 31, 2021 | **Source:** FactSet, Thomson Reuters Datastream and AB

CHAPTER 7

On the Fungibility of Asset Classes and Factors

Asset owners' increasing desperation to improve risk-adjusted returns will be a major catalyst for considering factor investing, despite skepticism based on its struggles in recent years. In this chapter, we examine key issues related to this topic, including the distinctions between asset classes and factors, how much to allocate to factors, which factors are likely to thrive and the ultimate implications for corporate organizational structure.

Investors often become too hung up on categories for delineating decisions. For large asset owners, investing is ultimately about crafting a combination of return streams. Ideally, these streams offer a variety of return distributions: a range of volatilities, covariances, skews, time horizons and linkages to the macro environment. But if this approach is the bedrock for institutional investment decisions, then investment practice looks very different, as it tends to focus strongly on asset-class divisions.

Asset owners should include factors alongside asset classes in strategic asset allocation. In fact, we don't believe they have a choice—from both a real-return and a diversification perspective. We think both angles are equally important, and investors should think of asset allocation in terms of betas and idiosyncratic alpha. At that foundational level, we'd be happy to treat asset-class betas and factor betas as the same kinds of things, sharing a category in the taxonomy of financial entities. Ultimately, asset allocation is about assembling return streams to achieve an outcome: in that context, there isn't necessarily a difference if some asset-class positions are replaced by factors.

Factors Are Back!

Based on our experience from client meetings in recent years, we understand that it's been hard to market the factor story with factors struggling, even if investors could see the case in principle. We never bought into the notion that factors had been "arbitraged out" by an inflow of capital,[85] but we've acknowledged that they can be less effective for long periods (*Display 139, page 154*).

The past year has seen a rebound in factors' effectiveness. The changing fortune of value is part of the resurgence, but momentum and quality have also delivered positive returns since mid-2021 in the US. The recent effectiveness of factors sharply contrasts with that of a passive position in stocks and bonds. A nine-month period of improved performance might not sound like much when our primary focus is the 10-year investment outlook, but we think it's critical for putting factors back on the table for discussion with asset owners. Even if the recent outsize factor returns aren't sustained, they show that investors ignore these return streams at their peril.

A Factor Point of View Prompts Profound Investing Questions

Using factors in asset allocation raises profound questions about the nature of investing. How should one set parameters for allocating risk and capital? Should traditional asset classes be the primary dividing line for portfolios? What, when all is said and done, are asset classes?

Issuers, whether governments or corporations, seek to raise capital by issuing securities. One can group these in multiple ways, either by the instrument's legal nature (asset class) or by statistical or quantitative characteristics (factors). It's not clear that one should have precedence over the other: What's the most efficient way to partition assets? Should it be constant or conditional on the investment environment?

This debate raises more questions: Are factors alphas or betas, or does seeing the world this way blur the distinction? Should factors be considered instruments of tactical allocation over the business cycle, or are they a potential strategic bedrock of return streams? Do factors really exist, or are they merely artifacts from 40 years of collective investment-industry data mining? If factors help, how much should be allocated to them?

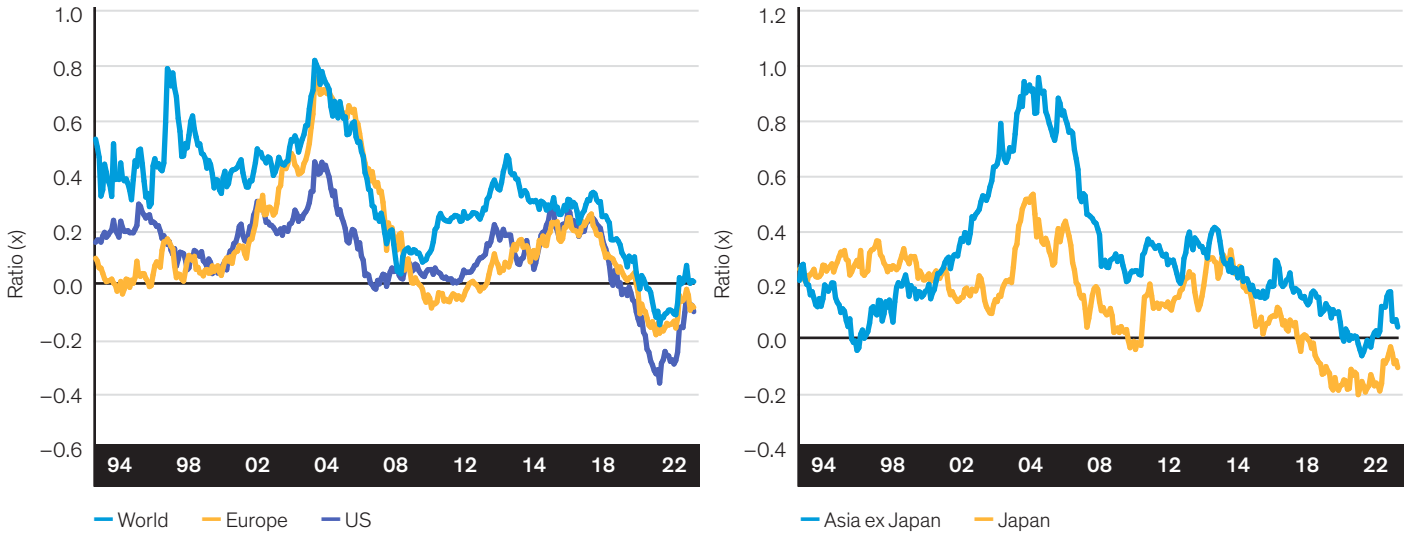
In the discussions we've had with investors over the past 20 years, one criticism they sometimes raise is that there seem to be many ways to define and construct factors. This is indeed the case.

One school of thought is that the active-passive distinction can be defined in terms of the sensitivity of the output to portfolio-construction choices. Factors can be defined by a variety of financial metrics (e.g., "value" can be defined by price/earnings [P/E], price/book [P/B], dividend yield or some other metric). Should factors be

85 Alla Harmsworth et al., *Global Quantitative Strategy: Are Factor Premia Disappearing?*, Bernstein Research, November 6, 2017.

DISPLAY 139: AGGREGATE FACTOR RISK-ADJUSTED RETURNS BY REGION

Five-Year Trailing Annualized Return/Risk



Historical analysis and current forecasts do not guarantee future results.

Display shows the five-year annualized return/risk ratios averaged for seven factors—price to book, dividend yield, ROE, long-term growth, price momentum, small-cap and free-cash-flow yield—in each region. Baskets are rebalanced quarterly, and we use total long/short USD returns.

Through May 31, 2022 | **Source:** FactSet, Thomson Reuters I/B/E/S and AB

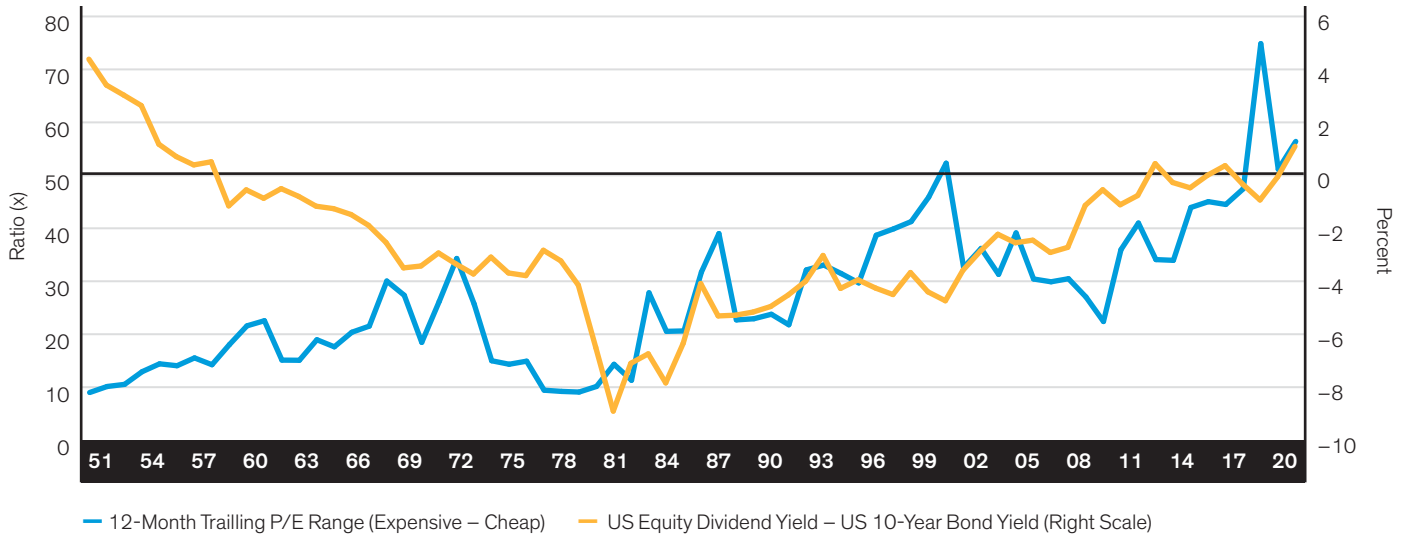
cross-sectional (a security ranked relative to its peers) or based on time series (an asset ranked relative to its history)? Should factors be "purified" in some way (sector-, industry- or even asset-class neutral)? How should they be rebalanced? How should they be weighted? Should they be risk controlled?

Then there's the question of how much risk to allocate to factors. Taking the logic of passivization over the past decade to its absurd extreme, there would be only one fund holding all public and private equity and debt instruments in proportion to their size. However, such an allocation would be unlikely to yield a return stream that's a good match for investors' liabilities, which are usually set in the real economy. Moreover, it would be a crude way to allocate risk and therefore unlikely to be considered in practice. Such an observation is one route to a conclusion that asset allocation is always an active act. If so, how should one allocate to factors? There's no natural way to weight by "size," so the factor/asset-class choice highlights deeper portfolio-construction questions.

Factors, especially when considered across asset classes, have diverse volatility levels. This suggests equal risk contributions from return streams as one possible default starting point for an allocation, accounting for both average volatility and covariances among returns. This points to an explicit attempt to make the basis of asset allocation and portfolio construction as efficient as possible. But it only applies if all else is equal—which is rarely the case in practice. Leverage is one limit, as are expected macro changes that would make the future substantially different from the past.

A discussion about factors in the context of the current low-yield outlook provokes other questions: What kinds of risks can investors choose exposure to? If factors are risk premia, what are the other options? Three popular routes are to take on more illiquidity risk, more quality/credit risk or more leverage. The rush into private assets has some merits in the current environment, but it also has limits, and one can question the ultimate risks offered. If the ultimate exit for private equity is an initial public offering, the only way private equity can escape equity beta over multiple cycles is through exposure to

DISPLAY 140: VALUATION SPREADS WITHIN ASSET CLASSES EXCEED THOSE BETWEEN ASSET CLASSES



Historical analysis and current forecasts do not guarantee future results.

The 12-month trailing P/E range shows the difference between the average P/E ratio of the most expensive and the cheapest quintile of US stocks.

Through December 31, 2021 | **Source:** Global Financial Data, Kenneth R. French Data Library, Thomson Reuters Datastream and AB

leverage and illiquidity. It's possible that long/short factors can claim to be truly different from private assets here, in that they may offer exposure to returns that are ultimately different from equity beta—in contrast with private equity.

We've laid out a long list of fundamental questions about factors—and even basic principles of investing. In this chapter, we'll attempt to answer some of these questions, while also creating a starting point for our research program, with future notes dedicated to specific aspects.

Why Factors Now?

One might ask: Why make the factors argument now? This argument could have been made at any time, and we've made this point before.[86] Indeed, we discussed this topic with a variety of Scandinavian pension plans (to give one concrete example) over a decade ago.

As we see it, the increasing desperation of asset owners to achieve a given return level at a given risk level will be a major catalyst in the post-pandemic world. The past 40 years have seen valuations rise for most financial assets, while inflation has fallen. In effect, the significant outperformance of the financial economy relative to the real economy has made achieving high real returns with passive exposure to asset classes appear to be easier than it usually is.

We don't mean to be dismissive: investing is hard, and it's easy to make such sweeping statements with the benefit of hindsight. But the return spread between financial assets and real assets over the last four decades is unusual in the longer-term sweep of history—and unlikely to be repeated. It's the result of a very favorable set of demographic, geopolitical and policy forces: an increased labor force, globalization, a policy preference for capital over labor, and declining rates, topics we've covered elsewhere in this black book and in *Are We Human or Are We Dancer?*[87]

A different outlook creates the incentive to try something new, but why should it imply an interest in investing in factors alongside asset classes? We believe the two are complementary, but to motivate the argument, let's consider valuation spreads. The general decline

86 Inigo Fraser Jenkins et al., *Portfolio Strategy: Strategic Outlook for Factors, and Why They Are Needed in Portfolios*, Bernstein Research, June 7, 2021.
87 Inigo Fraser Jenkins, *Are We Human or Are We Dancer?*, Bernstein Research, July 2021.

in yields and run-up in valuations over the past 40 years has made valuation spreads between asset classes unexceptional, and it's hard to make the case for relative value on that basis. However, *within* asset classes (the basis for many factor strategies), valuation spreads are unprecedented (*Display 140, page 155*).

Of course, one might claim that intra-asset-class valuation spreads are merely a sign of a one-way transition in the economy. The usefulness of valuations as a kind of "potential energy" for investment decisions is coterminous with their ability to signal mean reversion.

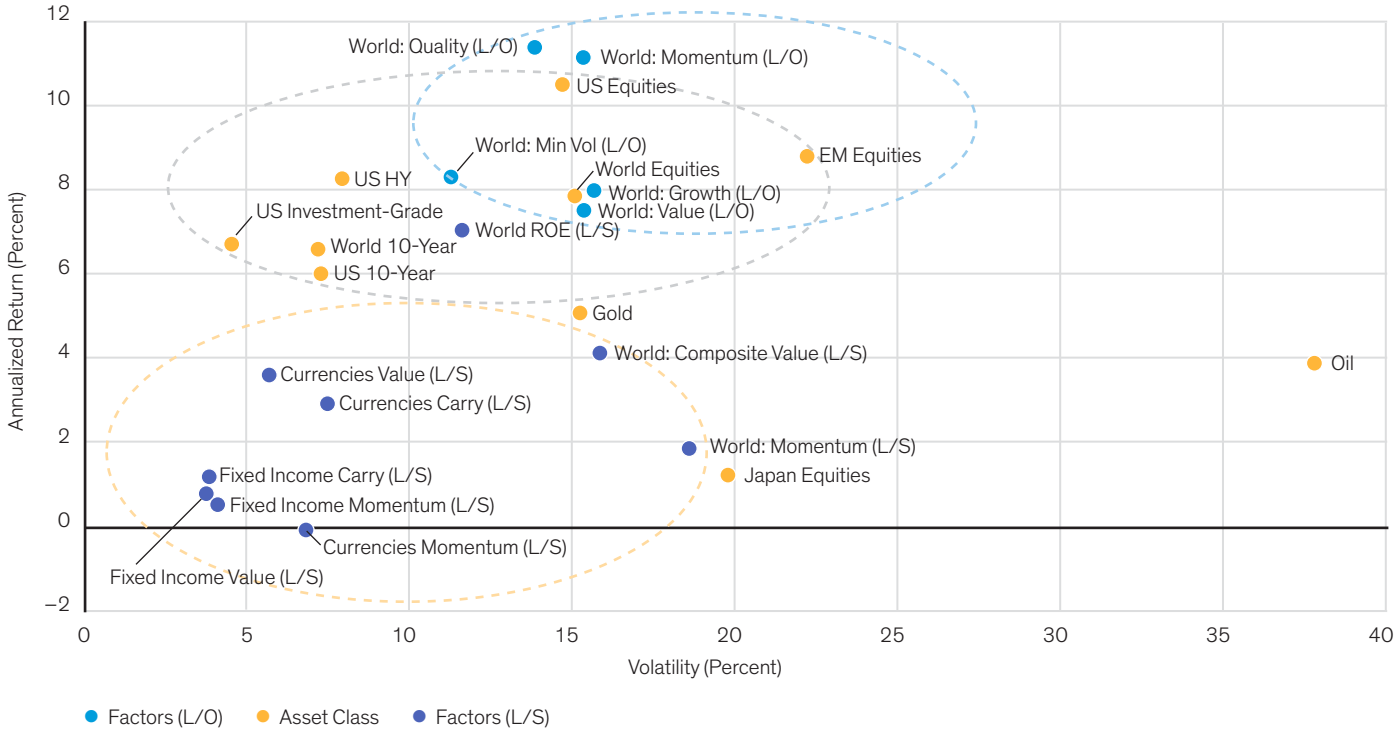
Wider valuation spreads could be partly driven by technology's destruction of moats around some industries; it might also reflect the fact that more corporate investment is now directed at intangible assets than tangible assets. Intangible assets have greater network and scale advantages that encourage a winner-take-all economy (though this can be partly balanced by policy choices on questions of quasi-monopolies). However, at least some part of the lack of mean reversion in recent years has also been from macro forces, such as declining inflation and rates. We need look no further than the experience of the last year to conclude that at least some valuation spreads in markets are cyclical.

What Is the Factor Opportunity?

If we're suggesting that asset classes and factors are in some sense fungible, what does that mean for investors? We'll assess this question from several angles: the returns, variance and covariance of assets versus factors; the theoretical case for why their return distributions might persist; liquidity; and how all this fits into an achievable range of returns for asset owners.

In *Display 141*, we show the historical return-risk trade-off for a range of equity factors and asset classes. There are myriad ways to define such factors, so this is necessarily an incomplete picture. But long-only and long/short factors (shown here using a very simple screening and construction approach) broadly map into distinct regions in the risk-return space. Later in this chapter, we discuss how the returns may vary, given macro linkages.

DISPLAY 141: HISTORICAL RETURN-RISK TRADE-OFF FOR ASSET CLASSES AND FACTORS



Historical analysis and current forecasts do not guarantee future results.

As of May 2021 | **Source:** AQR Capital Management, FactSet, Kenneth R. French Data Library and AB

Diversification is as much a motivation for allocating to factors as it is for return. Illustrating the diversification advantage of risk premia over asset classes, the correlation across risk premia has been very close to zero over the last 30 years (*Display 142*) and has been stable throughout multiple economic cycles. And while the historical average correlation across asset classes has also been quite low, at a positive 0.2, it has been much less stable, with periodic spikes to levels nearly double the historical average, including in 1998, 2005 and 2021.

This source of diversification is part of the core of the factor investment proposition. It's embedded in the nature of factors, with value, carry, momentum and quality available in many cases across a selection of asset classes including equities, credit, high-grade bonds and foreign exchange (FX). In time, these may be applicable to private assets too.

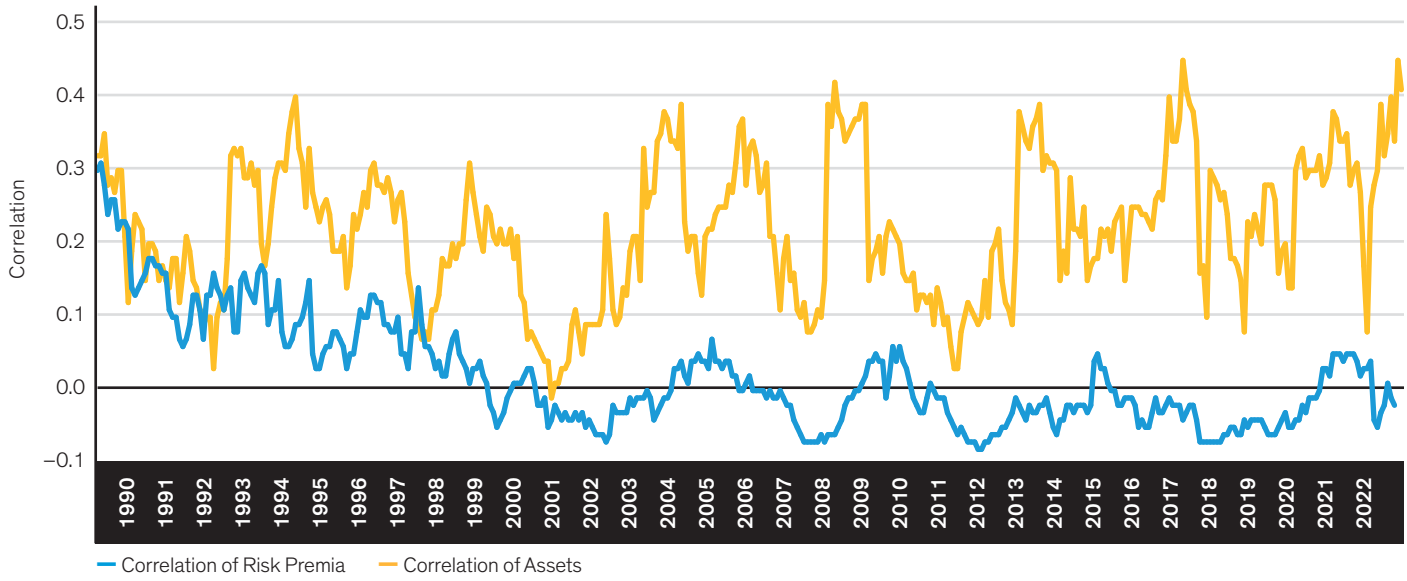
Capacity and Liquidity Considerations for Factors

The previous section detailed the return characteristics of asset classes and factors, but even if there's an attractive case for factors on that basis, can investors buy them in the same way? This question is intertwined with the more fundamental question of "what is a factor?"

More specifically, there's a question of where the dividing line might lie between an active investment strategy and a factor. Active strategies very clearly have tangible capacity constraints, so they may be adequate for a given investor. However, no one would ever claim that they were accessible in unlimited scale for the entire industry.

We don't see a hard dividing line between factors and investment strategies, just as there's no hard line between active and passive—it will always be a spectrum. Moreover, the distinction is dynamic. As automated analytical capacity increases and fees decline, there's

DISPLAY 142: THE CORRELATION OF FACTORS IS MORE STABLE THAN THE CORRELATION OF ASSET CLASSES



Historical analysis and current forecasts do not guarantee future results.

The risk premia series includes global equity composite value, ROE, long-term growth, momentum and low vol long/short factors as well as fixed income and FX momentum, carry and value. The asset class series includes global, US, EM and Japanese equities, US and Japanese 10-year government bonds, US investment-grade and high-yield credit series, and gold.

Through October 30, 2022 | **Source:** FactSet, MSCI and AB

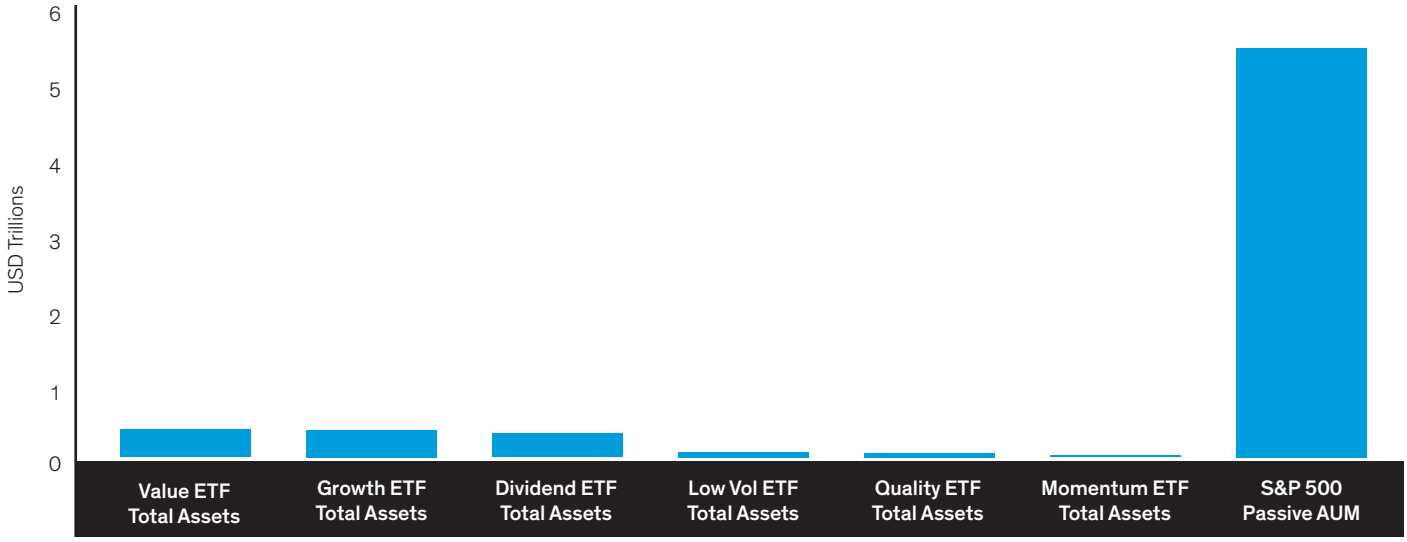
a natural temporal arrow in the movement of strategies that were once considered active to become "passive." By passive in this case, we mean following a simple, transparent, stable, rules-based approach. After all, that's what index providers have always done for indices such as the S&P or FTSE—and the "smart beta" value factor is no different. So, for this discussion, we define a factor as a generally accepted, simple and transparent strategy, such as a value or quality screen within equities or a carry strategy in fixed income. How does the capacity of these strategies compare to the capacity of asset classes?

Two types of factors must be considered: long-only and long/short. Long/short factors clearly have less capacity in general, because they require the ability to short sell at scale. For an individual investor, a natural way to consider this would be through transactions cost analysis. For the system overall, however, there are other considerations.

In *Display 143*, we show the relative size of invested assets, in the ETF format, of popular long-only equity factors versus the market overall (we're aggregating across a selection of ETFs within each category). Factors appear to be much smaller than the overall market, which might imply *prima facie* evidence for significant upside in the assets for factors. But we think that would be misleading. As we discuss in the next section, this leads to the question, "What is the basis for factor returns?"

Long/short factors have a clearer capacity limit. For an individual asset owner, the decision to invest in these factors involves considerations such as expected return net of fees and transactions costs for a given investment size. However, for the overall "system," it would be hard to have a very large allocation to long/short factors because of the reduced availability of securities to borrow.

DISPLAY 143: FACTORS REMAIN MUCH SMALLER THAN ASSET CLASSES



Historical analysis and current forecasts do not guarantee future results.

As of July 31, 2021 | **Source:** Bloomberg, S&P Global and AB

We see the capacity issue in *Displays 144 and 145, page 160*, which show the equal-weighted mean and median short-interest ratios for the broad US market and "short" quintile of key equity factors since the start of 2020. With the exception of US momentum, both the mean and median short-interest ratio is higher for factors than for the broad market, supporting the argument that investing in long/short factors is somewhat more capacity-constrained than the broader market.

However, the mean and median will always be very capacity-constrained ways to invest, because they equally weight stocks of all sizes. *Display 146, page 160*, compares the latest mean and median data points to the market-capitalization-weighted short-interest-rate average. That number is considerably lower than the equal-weighted average, implying that limits on smaller stocks are responsible for at least some of the high short-interest ratio. But the 1.0% market-cap-weighted short-interest ratio for the broader market is still lower than that of most factors, suggesting that factors' higher short-interest ratio isn't driven just by their exposure to small-caps, which tend to be more heavily shorted.

The question of how much to allocate to factors is ultimately driven by their ability to increase the richness of the return-variance-covariance of available return streams; factor capacity; and factor persistence across the business cycle and in the face of further capital inflows. The allocation to long/short factors will necessarily have more constraints, but can be thought of as akin to a hedge-fund allocation. In our view, investors' current allocation to hedge funds can be split between simple factor exposures and idiosyncratic alpha, over and above factors.

A Question of Persistence: Asset Class vs. Factor

The capacity aspect is bound up with a more theoretical debate: the rationale for ongoing returns of asset classes versus factors. Is there a capacity level beyond which factors fail to operate anymore? If so, how can that limit be identified?

The theoretical debate rests in part on whether factors are artifacts of investors' behavioral biases or compensation for some type of risk. This debate has raged for decades, but is particularly germane now. As investors entrust more capital to be run by "machines," behavioral effects will likely melt away, because quantitative strategies are designed in part to explicitly trade against them.

However, if factor returns are risk compensation, they may be more resilient against the growth of trading strategies designed to take the other side of behavioral biases. In that case, the relevant questions would be: What's the size of the risk premium offered, and what is the governance framework for dealing with relevant risks? The governance question could, for example, address the issue of the appropriate time horizon for assessing a risk premium's effectiveness. If a risk premium relies on value and mean reversion, the window should be appropriately long—measured in years, unlike the example of a merger-arbitrage strategy.

At the most basic level, whether the subject is public or private market, or equity or debt, any investing ultimately involves the needs of both investors and issuers. Investors want a return stream to meet liabilities (explicit or implicit); issuers need to raise capital for investment or operational spending. This has been the status quo for centuries…but is it still the case?

Changing motivations may be most evident for equities. In the past, corporations raised capital to invest, but capital-light businesses need less of it, suggesting that the impetus for seeking a public-equity listing have changed in some cases. It might be more about finding a liquid vehicle to compensate employees and cash out founders and early investors. As a result, the public equity market is deprived of some faster-growing early-stage firms that used to influence the upward skew in cross-sectional stock returns—replaced by some of the largest established companies.

This might sound like a *prima facie* case for investing in private markets, but not necessarily. Fundamentally, if the relative needs of those who raise capital and those who provide it have shifted, capital raisers may be able to drive a harder bargain and investors should expect a lower return, whether the route is public or private.[88]

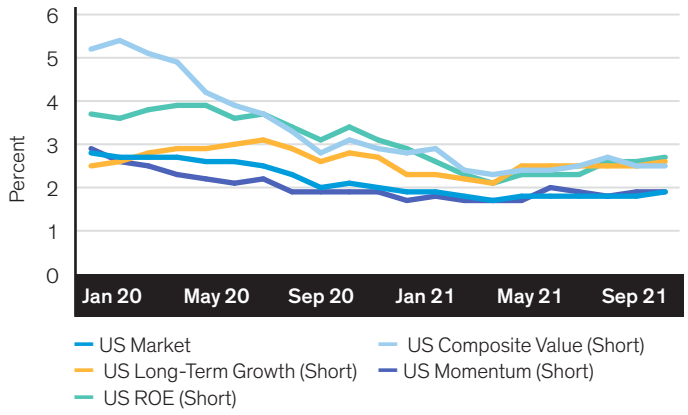
A similar argument applies for credit. A significant proportion of credit issued over the past decade has been financial engineering on an epic scale, funding buyback programs and taking advantage of a desperate reach for yield, especially among fixed-income investors. We won't argue a turning point for credit spreads here, but as with equity markets, credit investors' needs appear more desperate, so they shouldn't necessarily expect historical returns to persist.

What about sovereign debt investors? Do the same changing needs of investors and issuers apply in that market? In a sense, the situation is the reverse of equities. The massive scale of issuance and dire

88 We examine this topic more closely in the chapter "What Is the Point of the Stock Market (in a Capital-Light World)?" in *Are We Human or Are We Dancer?*

DISPLAY 144: SHORT-INTEREST RATIOS: MEAN

Equal-Weight Mean

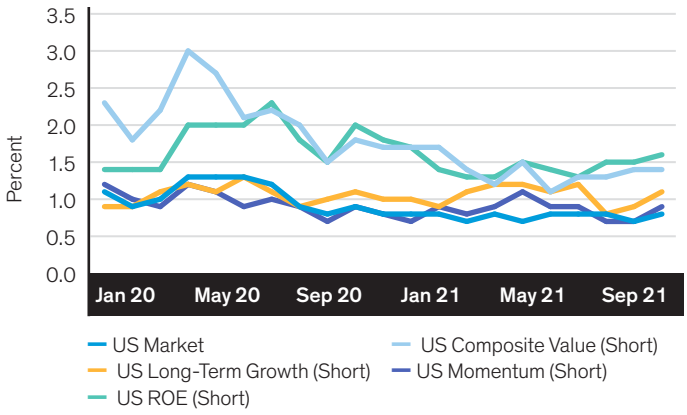


Historical analysis and current forecasts do not guarantee future results.

Through September 30, 2021 | **Source:** FactSet, MSCI and AB

DISPLAY 145: SHORT-INTEREST RATIOS: MEDIAN

Equal-Weight Median



Historical analysis and current forecasts do not guarantee future results.

Through September 30, 2021 | **Source:** FactSet, MSCI and AB

DISPLAY 146: COMPARING SHORT-INTEREST RATIOS

Date	US Composite Value (Short)			US Long-Term Growth (Short)		
	Mean	Median	Cap-Weighted	Mean	Median	Cap-Weighted
Sep 21	2.5%	1.4%	1.3%	2.6%	1.1%	1.2%
	US ROE (Short)			US Momentum (Short)		
	Mean	Median	Cap-Weighted	Mean	Median	Cap-Weighted
Sep 21	2.7%	1.6%	1.6%	1.9%	0.9%	0.9%
	US Market					
	Mean	Median	Cap-Weighted	Mean	Median	Cap-Weighted
Sep 21	1.9%	0.8%	1.0%			

Historical analysis and current forecasts do not guarantee future results.

As of September 30, 2021 | **Source:** FactSet, MSCI and AB

state of G10 government finances "should" imply a drop in prices, given greater supply and a repricing of sovereign risk. But, of course, that hasn't happened, given heavy central bank buying and investors' desperation for "risk free" (the term is nonsensical, we think) assets.

From our perspective, real interest rates will remain below historical norms, and inflation will stay elevated. This suggests that the payback for a duration trade will strategically decline, while investments in cash-like assets may suffer from debasement risk. The bottom line: fundamental forces at work in equities, credit and rates, beyond valuations, imply that returns will be dampened over a strategic horizon.

Asset classes might see lower returns; is there a case that factors will see higher returns?

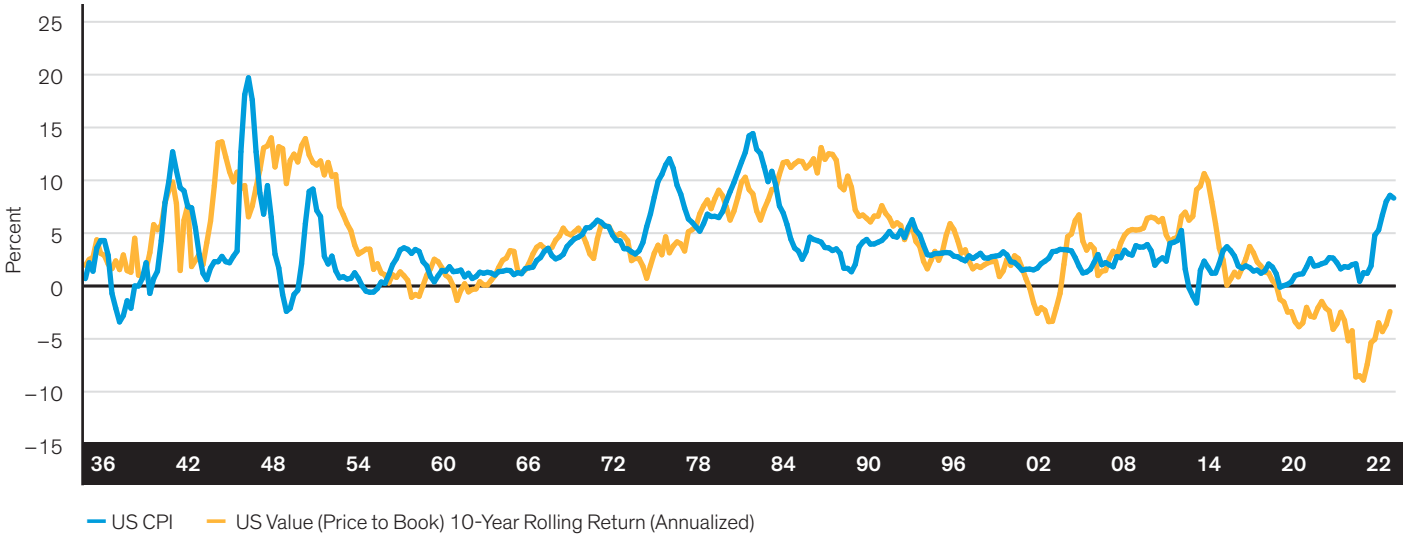
The Outlook for Key Factors

One question we raised at the beginning of this chapter is whether factors are tactical allocation instruments or can be used in a strategic context. We've outlined a case that they're risk compensation; therefore a return stream that can persist over the business cycle. However, no risk premium can be immune from the vagaries of the investment environment, so there's also a tactical component, at least for considering entry points to longer-term positions. In this section, we share our outlook for select factors.

There's a long-established link between value performance and inflation (*Display 147*). Indeed, value has received a significant performance bump over the last year as inflation expectations have soared. Looking beyond tactical horizons, we still think there's a case to be made that expectations for long-term inflation need to rise, therefore supplying a potential tailwind for value.

Valuation could be another strategic support for the value factor: spreads are smaller than they were a year ago but still wider than their historical averages. The market-cap-weighted trailing P/E ratio for expensive stocks is 61× (*Display 148, page 162*), while cheap stocks trade at the same absolute multiple as in the early 1960s, even though discount rates are a lot lower now. And on a P/B basis, the disconnect is even more extreme (*Display 149, page 162*).

DISPLAY 147: STRONG RELATIONSHIP BETWEEN VALUE PERFORMANCE AND INFLATION



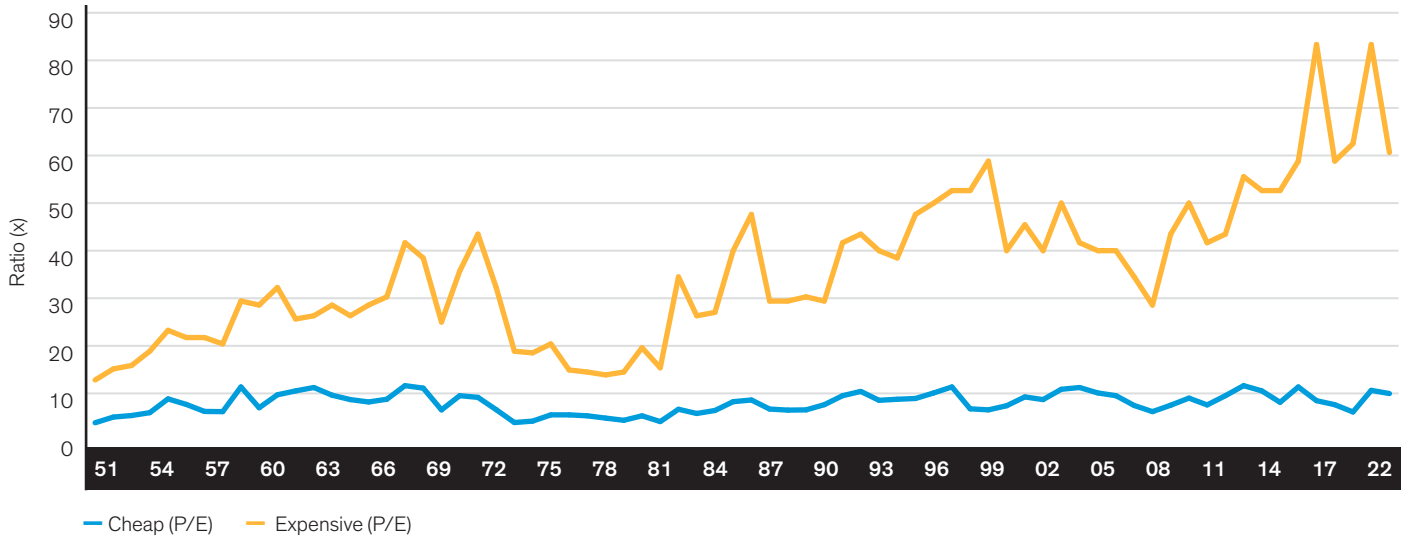
Historical analysis and current forecasts do not guarantee future results.

Display shows the annualized 10-year rolling return for Ken French's value portfolios using the top quintile of cheapest stocks by price to book versus the most expensive quintile. Inflation is proxied by the change in the US CPI.

Through March 31, 2021 | **Source:** Kenneth R. French Data Library, Thomson Reuters Datastream and AB

DISPLAY 148: P/E RATIOS NEAR ALL-TIME HIGHS

US Long-Run Valuation Spreads (P/E)



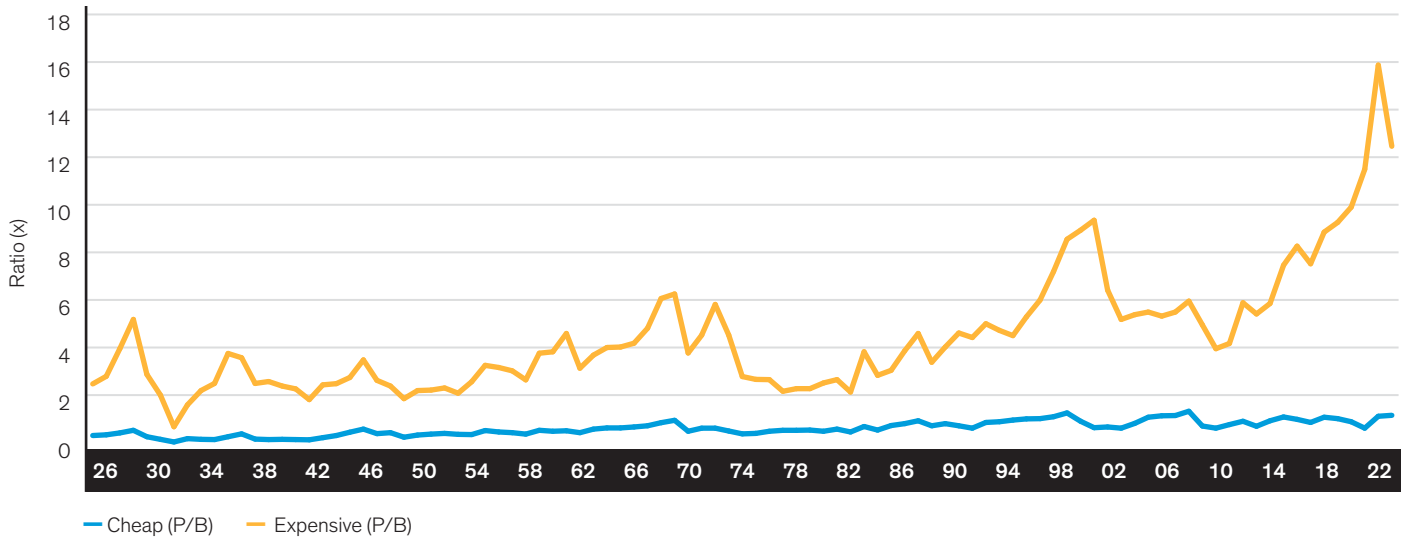
Historical analysis and current forecasts do not guarantee future results.

Display shows the market-cap-weighted inverted trailing earnings yield for the most expensive and cheapest quintile of stocks out of the largest 1,200 US stocks.

Through November 30, 2022 | **Source:** Kenneth R. French Data Library and AB

DISPLAY 149: AN EXTREME VALUATION DISCONNECT

US Long-Run Valuation Spreads (P/B)



Historical analysis and current forecasts do not guarantee future results.

Display shows the market-cap-weighted P/B multiple for the most expensive and cheapest quintile of stocks out of the largest 1,200 US stocks.

Through November 30, 2022 | **Source:** Kenneth R. French Data Library and AB

Using the very long-run history of the US deep-value (P/B) factor (*Display 150, page 164*), valuation has historically been a strong indicator of value performance over strategic horizons of three to five years. Since 1926, the correlation between the US P/B factor valuation and five-year forward return has been –0.44.

We think there's a positive medium-term case to be made for the growth factor too, that rests on two key attributes: 1) the greater longevity of profitability for high-growth companies; and 2) real interest rates anchored at a low level.

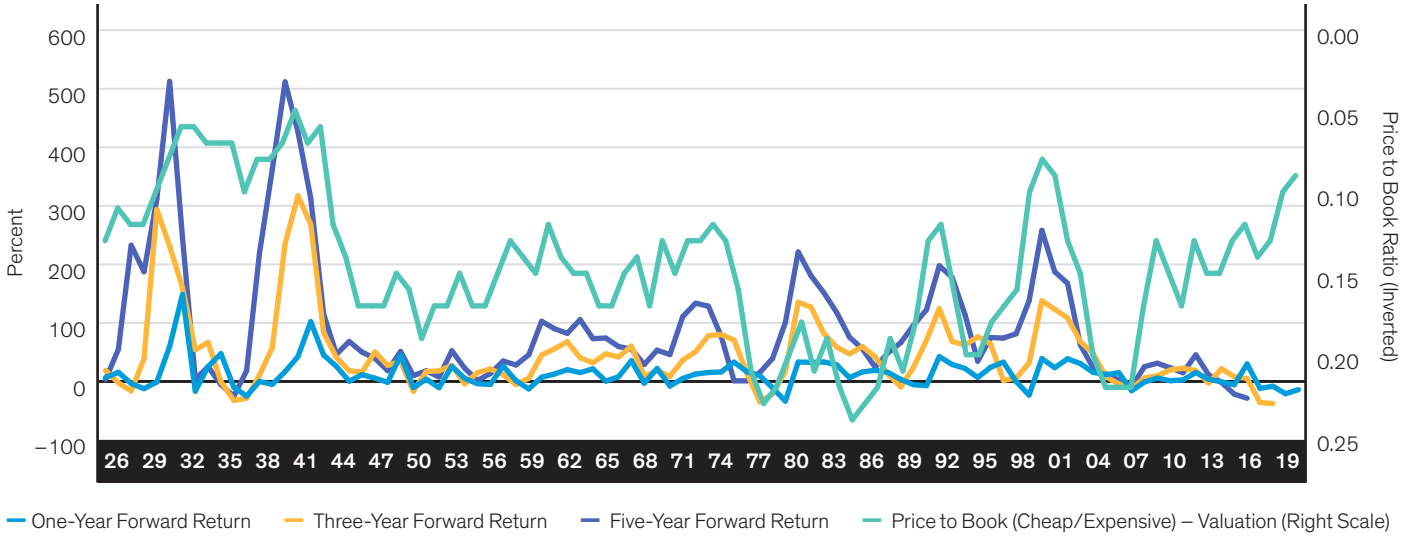
Incumbent high-growth/high-profitability companies have been increasingly able to stay that way in recent years (*Display 151, page 164*). This is distinct from our view that the profitability of the corporate sector in aggregate is set to decline. We suspect the greater persistence is due to the network and scale advantages of intangible assets, creating a favorable case for these stocks, specifically from the perspective of contributing long-horizon cash flows to net present value.

The second support for the growth case is our expectation that real rates will remain below their long-run averages despite their volatility in 2022. There's a strong argument that policymakers may wish to keep the cost of debt below the growth rate for an extended period, given the explosion in global debt/GDP ratios in response to the pandemic. The greater persistence of profitability, together with low discount rates, can justify very high valuation multiples for growth stocks.[89]

89 For a model illustration of this, see Inigo Fraser Jenkins et al., *Portfolio Strategy: Strategic Outlook for Factors, and Why They Are Needed in Portfolio*s, Bernstein Research, June 7, 2021.

DISPLAY 150: VALUATION HAS BEEN A STRONG INDICATOR OF VALUE PERFORMANCE

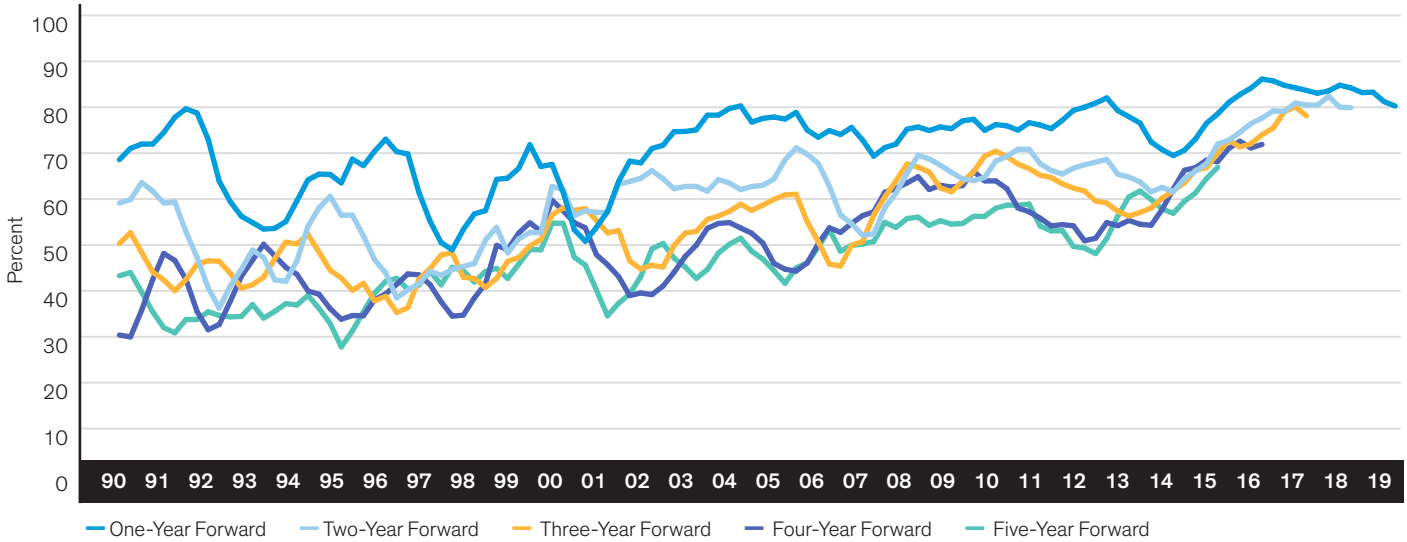
US P/B Factor Valuation and Forward Returns



Historical analysis and current forecasts do not guarantee future results.

Through December 31, 2020 | **Source:** Kenneth R. French Data Library and AB

DISPLAY 151: HIGH-PROFITABILITY COMPANIES HAVE BEEN INCREASINGLY STAYING THAT WAY



Historical analysis and current forecasts do not guarantee future results.

Note: In each quarter since 1990 we split the stocks in the MSCI US index into groups by ROE decile (within sectors) and calculated the percentage of stocks in the high ROE decile at the time they were in the highest two deciles over the next one- to five-year period. Four-quarter smoothing is applied to the quarterly percentages.

Through September 30, 2019 | **Source:** FactSet, MSCI and AB

Factor Choices: How Pure vs. How Complex?

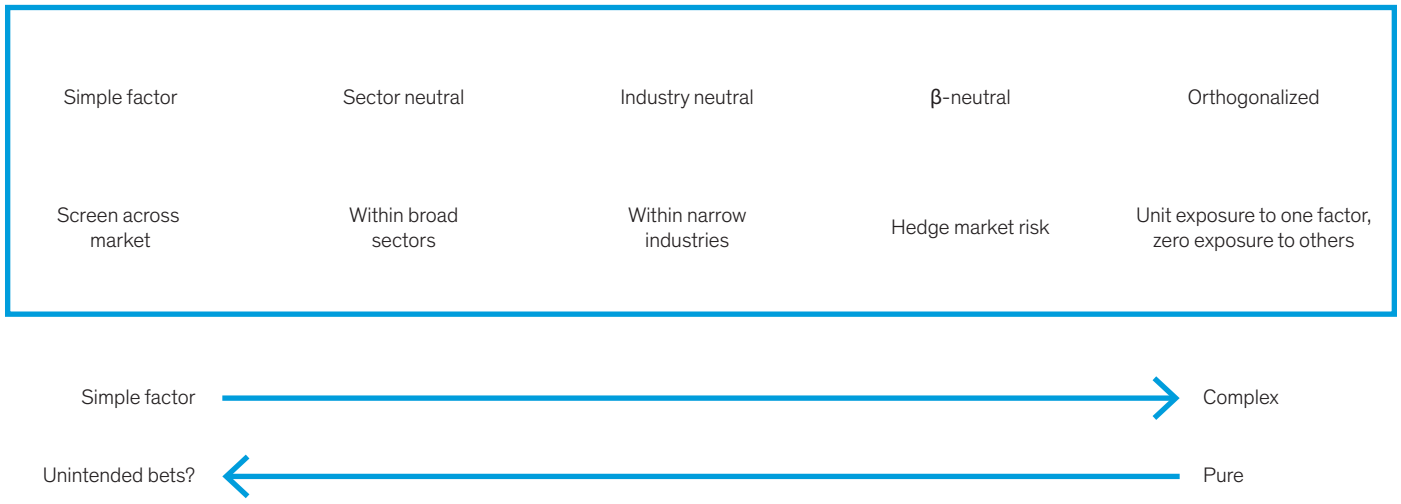
Earlier in this chapter, we alluded to the number of choices required in factor investing, making it qualitatively different from an asset-class-based approach. Viewed through the lens of purity of expression, long/short factors are free of classic asset-class risks like equity beta and duration. But is comparing asset classes with (potentially) long/short return streams fair? We think it is: they're all simply return streams, and the ultimate goal of a portfolio is to deliver some form of aggregate return.

In practice, there are a host of questions about what factor construction should look like. For example, equity factors could be built from a simple screen across the market, but many investors want to purify that exposure in some way. In *Display 152*, we describe this as a spectrum of factors with progressively more purity: sector neutral, industry neutral, equity-beta neutral and a fully orthogonalized factor constructed to be neutral to other factors. In theory, this spectrum could extend to asset-class-neutral factors.

Which approach is best? It depends. There's a trade-off between how pure a factor is, in the sense of avoiding unintended bets, and how complex it is to achieve. This creates the potential for a trade-off in terms of how quantitatively attractive a certain factor might be versus how easy it is to articulate its rationale.

This choice of approach requires trade-offs in return-risk outcomes (*Displays 153 and 154, page 166*), which we show for a set of equity factors using a range of construction techniques and metrics. In Display 153, we ignore the accounting metric used to create the factor, instead coloring the points based on how they were constructed. For example, many of the beta-neutral factors have delivered better return/risk regardless of the actual metric used. Display 154 shows the same data but colored based on the accounting metric used for screening.

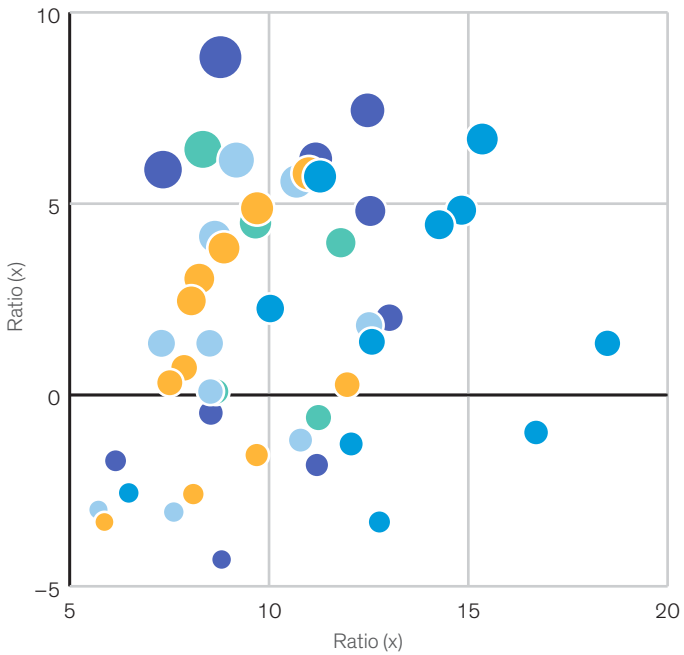
DISPLAY 152: A SPECTRUM OF FACTOR PURITY



For illustrative purposes only.

Source: AB

DISPLAY 153: RETURN/RISK OF FACTORS BY CONSTRUCTION TECHNIQUE



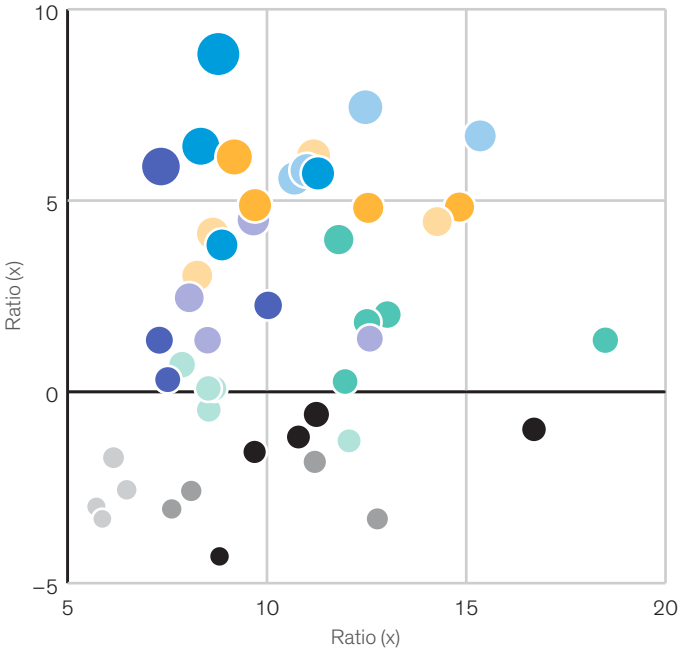
Non-Sector-Neutral Sector-Neutral Industry-Neutral
Beta-Neutral Pure

Historical analysis and current forecasts do not guarantee future results.

The size of the circle represents the range of return/risk values for non-sector-neutral, sector neutral, industry neutral, beta neutral and pure factors.

As of May 5, 2017 | **Source:** FactSet, Thomson Reuters I/B/E/S and AB

DISPLAY 154: RETURN/RISK OF FACTORS BY FACTOR METRIC



Return on Equity (high/low) 12-Month Forward P/E (cheap/expensive)
Comp Value (cheap/expensive) Dividend Yield (cheap/expensive)
Comp Quality (high/low) Price to Book (cheap/expensive)
Price Momentum (high/low) Long-Term Growth (high/low)
12-Month Price Standard Deviation (high/low) Comp Growth (high/low)

Historical analysis and current forecasts do not guarantee future results.

The size of the circle represents the range of return/risk values.

As of May 5, 2017 | **Source:** FactSet, Thomson Reuters I/B/E/S and AB

What Does This Mean for Portfolios?

How do factors fit into the achievable range of return and risk for asset owners? We opened this chapter by outlining the historical return range for factors and asset classes and comparing the valuation levels of major asset classes with the valuation spreads within them. We think these relationships make the post-pandemic return outlook different from what we've seen before.

In *Display 155*, the dots show the return/risk trade-off of major asset classes and factors over the past decade; the arrows show how we expect these trade-offs to evolve over the next 10 years. Generally, expectations will decline for major assets, though many remain positive—at least in nominal terms. In contrast, we think factor returns can exceed the last decade's levels.

The problem with this claim is that it asks asset owners to allocate to strategies such as value, yield and low volatility, which have struggled for a long time, and to reduce their allocation to high-grade fixed income in particular, which has worked for a long time. There may be an understandable wall of skepticism facing the idea of allocating to factors at the expense of asset classes.

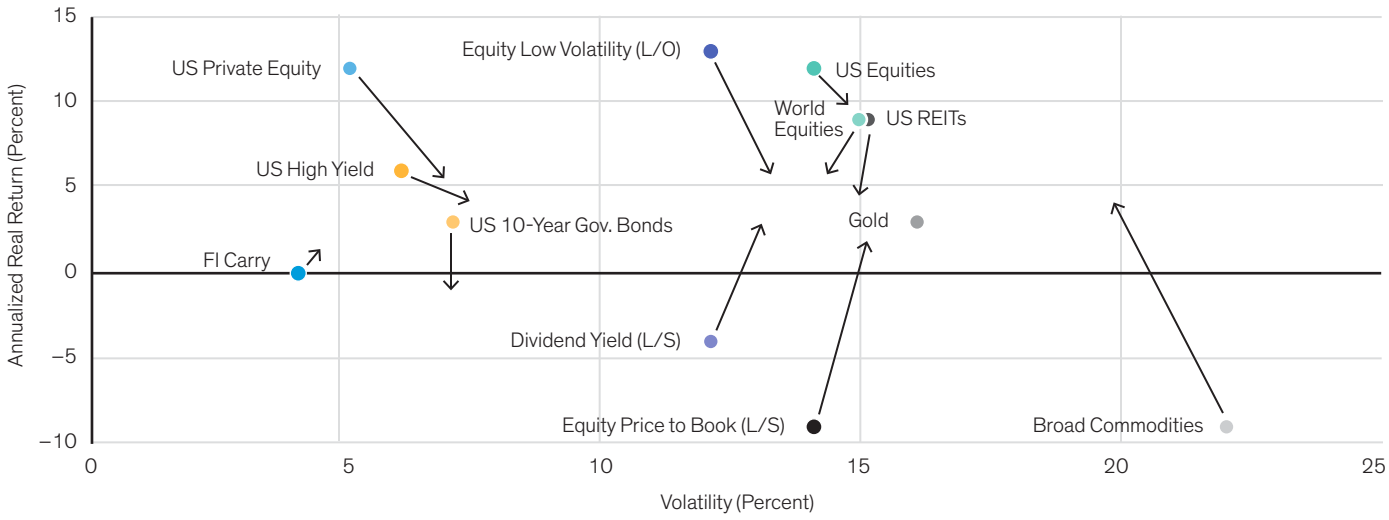
Aside from the case for individual factors outlined earlier, one might justifiably ask a broader question: Why now?

Valuation isn't a strong enough argument. After all, following a valuation signal would have led to progressive reductions in equity exposure over the past decade, which would have punished portfolio returns. However, we think the combination of valuation and the post-pandemic policy outlook makes a strong argument that asset allocators need to make this shift. As noted earlier, headwinds to some factor returns remain, but the proposition of moderately higher equilibrium inflation materially changes the outlook, as does a cyclical upswing.

The other potential pushback on the claim that factors are interchangeable with asset classes is the question of fees. Exposure to traditional asset classes comes at a nearly zero fee, so would a shift to allocate more to factors entail paying a higher fee?

Not really. First, the price of access for the simplest forms of long-only factors has been declining. The going rate for ETF-based exposure to common equity factors is now only 4 b.p. for US-benchmarked products (*Display 156, page 168*). The price of

DISPLAY 155: RETURN FORECASTS FOR SELECT ASSET CLASSES AND FACTORS



Historical analysis and current forecasts do not guarantee future results.

The dots represent real returns and volatility during the period from January 2010 to December 2020 for the major return streams that investors can buy. The arrows represent the AB Institutional Solutions team's forecasts for the next 5–10 years.

As of October 14, 2022 | **Source:** FactSet, FRED, Kenneth R. French Data Library, Thomson Reuters Datastream and AB

long/short and more sophisticated factors is higher, but this should be viewed as part of the broader fee picture.

Of course, fees are critical in allocation decisions, but should only really matter to asset owners to the extent that they affect net-of-fee returns. A low fee doesn't justify a passive allocation to an asset likely to deliver a negative real return. And even though fees have been cut for traditional active products, asset owners have been happy to allocate more to high-fee private equity funds.

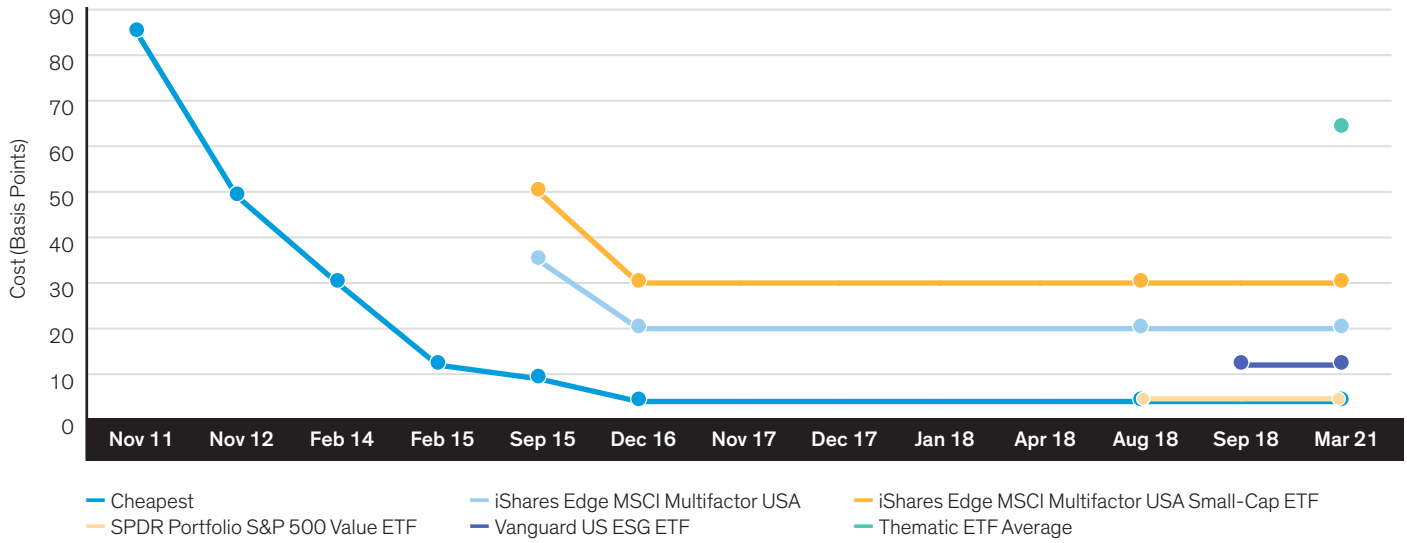
Higher private equity allocations are motivated by many of the same forces that make an allocation to factors more attractive: the prospect of lower returns on traditional asset classes, greater difficulty in achieving diversification and the wish to build in some protection against a potential upward move in inflation.

Are factors alphas or betas? We think it's impossible to answer that question without acknowledging that the alpha-beta distinction, while very helpful for modern investment theory and practice, isn't set in stone. Declining fees on smart-beta products have revealed that the alpha-beta distinction is dynamic. An alpha source requires research and implementation work to achieve. From an asset manager's point of view, it's a return stream that can command a fee. From an asset owner's perspective, alpha seems to require an active allocation decision.

In reality, none of these are fixed concepts. There's really no such thing as a passive investment decision—even buying an ETF based on the S&P 500 is an active act of asset allocation. As a return steam migrates from alpha to beta, it becomes easier to identify and access (easier data processing and lower fees, for example). But the migration process also involves a social change in the acceptability of factors in the language of asset allocation. Twenty years ago, these concepts were less familiar; now they're more of a common currency. Within this fluid definition, we see "simple" factors such as equity value or fixed-income carry as being more like betas.

There is, however, a range. As we discussed earlier, the return stream a factor delivers is sensitive to paramaterization, which gives it aspects, at least from a governance perspective, akin to alpha. Likewise, there are more complex manifestations of factors that appear highly active. So factor investing Is really a spectrum from beta to alpha, especially in the context of an alpha that can be "portable" and distinct from asset classes. The events of 2022 have put factors back on the agenda for strategic asset allocation.

DISPLAY 156: THE DECLINING COST OF BUYING FACTORS



Historical analysis and current forecasts do not guarantee future results.

Data sourced as follows: Powershares RAFI pre-2012 fee referenced in http://www.ft.com/cms/s/0/5133d548-3a3a-11e2-a32f-00144feabdc0.html#axzz3mdRjfaGM; Powershares RAFI fee cuts of 21–36 b.p. referenced in http://www.ft.com/cms/s/0/5133d548-3a3a-11e2-a32f-00144feabdc0.html#axzz3mdRjfaGM; pre-2015 average fee level of State Street smart-beta products as reported in http://www.ft.com/cms/s/0/cc2c12da-b04c-11e4-a2cc-00144feab7de.html#axzz3pEk5uFHY; February 2015 price reductions for State Street smart-beta products as reported in http://www.ft.com/cms/s/0/cc2c12da-b04c-11e4-a2cc-00144feab7de.html#axzz3pEk5uFHY; GSAM active beta (multivariate smart beta) fee as reported in http://www.ft.com/cms/s/0/21831abe-61f3-11e5-9846-de406ccb37f2.html#axzz3pEk5uFHY; Vanguard factor ETF as offered by http://www.nutmeg.com; Schwab US Large-Cap Value ETF from December 2016 prospectus.

Source: *Financial Times* and AB

CHAPTER 8

Are Bonds Back?

The abrupt, painful surge in bond yields in 2022 radically changed the outlook for fixed income. Investors are no longer forced to accept a negative real return in exchange for the liquidity and diversification potential of US high-grade fixed income. And high-yield bonds offering yields around 8.1% are hard to ignore for investors who—until recently—faced a low-return environment. However, there's also been a reduction in diversifying power, the potential for higher defaults as economic growth slows, and the sudden need of many investors for positive real returns.

This reshaped market landscape points to a positive view on inflation-linked securities in inflation-aware portfolios—a big change from their status a year ago as the most expensive inflation hedge. The cross-asset strategic view on credit is also positive, though with near-term tactical concerns. We're relatively negative on duration, aside from its use in the direct matching of known nominal liabilities and drawdown protection.

Bonds Now Offer Positive Real Returns

An often-heard phrase in recent months is that "bonds are back," a sentiment reflecting the upward shift in yields during 2022. Long-term investors entering a high-grade fixed-income position, in the US at least, can now expect to achieve a positive real return over the next decade. This is a significant change that lessens the case against fixed income in absolute terms. Indeed, US investment-grade credit is yielding close to 5.2%, not far below the expected return on equities. Meanwhile, the prospect of not losing money in real terms with US government bonds makes their case stronger. A positive real yield will likely attract more investors, or at least slow decisions to reduce bond allocations.

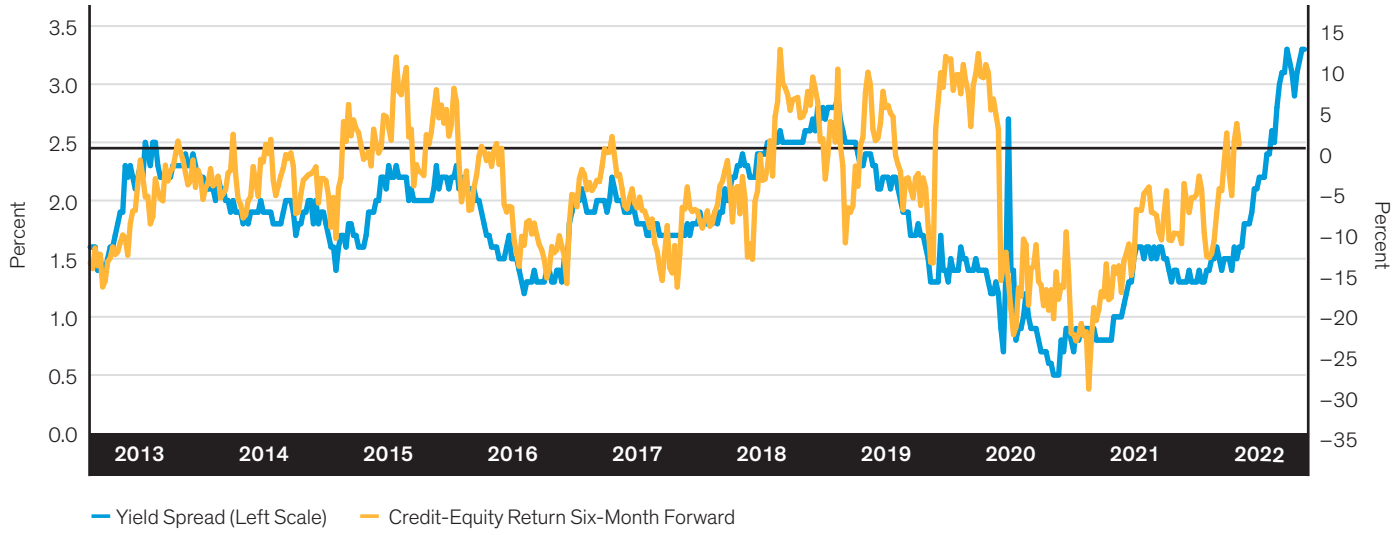
However, it's important to view these changes in the broader context of all potential return sources and the macro environment. In other words, the absolute case for bonds has clearly improved; the open question is whether the relative cross-asset case has shifted enough. On this point, investors with different constraints will come to different conclusions. The challenge is for investors who require a long-term positive real return, given our view of higher equilibrium inflation, which creates a need to increase allocations to real assets. While there's been a huge focus on near-term inflation protection, there's much further to go in adjusting strategic asset allocations to address the prospect of higher inflation.

Credit

The run-up in credit yields over the past year makes them appear highly attractive when viewed through the lens of strategic capital-market assumptions—a statement true for both investment-grade and high-yield credit. In an environment where the duration trade has lost its appeal, this can be an attractive proposition for investors.

How should they think about the relative cases for credit and equities? A positive relative case for credit rests on the increase in yields so far this year. In *Display 157*, we show the yield spread of US investment-grade credit over the equity dividend yield, overlaid with six-month forward relative returns. If the history of the past decade is a guide, then at face value the credit-yield/dividend-yield spread is large enough to support a tactical pro-credit position—even versus equities.

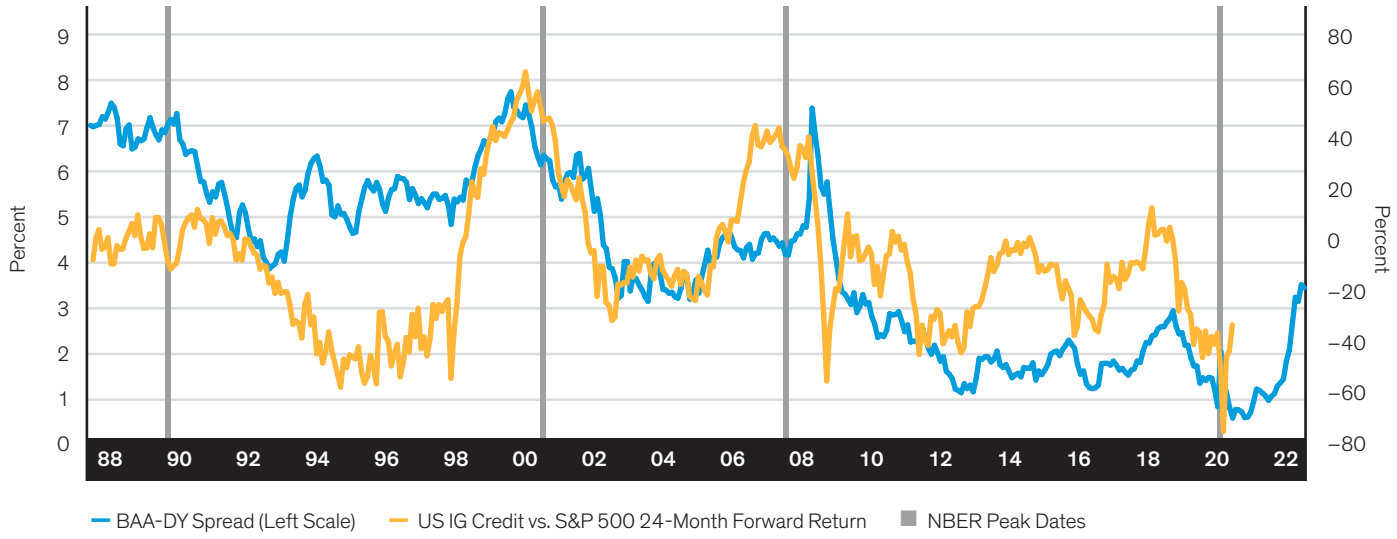
DISPLAY 157: CREDIT-DIVIDEND YIELD SPREAD AND FORWARD RETURNS



Historical analysis and current forecasts do not guarantee future results.

Through June 24, 2022 | **Source:** Bloomberg, National Bureau of Economic Research (NBER) and AB

DISPLAY 158: CREDIT-DIVIDEND YIELD SPREAD AND FORWARD RETURNS (WITH RECESSIONS)

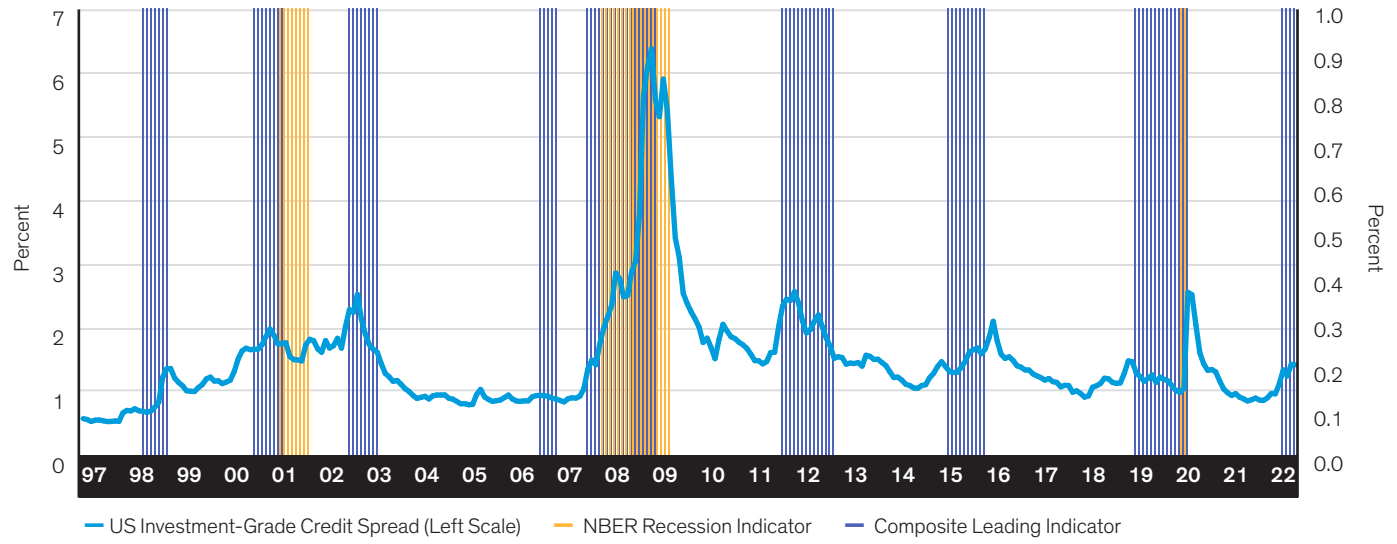


Historical analysis and current forecasts do not guarantee future results.

DY: dividend yeild; IG: investment grade

Through July 1, 2022 | **Source:** Bloomberg, NBER, S&P and AB

DISPLAY 159: INVESTMENT-GRADE CREDIT SPREADS OVER TREASURIES AND RECESSIONS



Historical analysis and current forecasts do not guarantee future results.

Through June 30, 2022 | **Source:** Bloomberg, NBER and AB

However, there are caveats. Except for the pandemic, this period does not include an outright recession. We think a more relevant context looks back over a longer period that includes actual recessions. In *Display 158, page 171*, we show a similar chart with the spread of the BAA-rated credit yield over the dividend yield—shading previous peaks prior to recessions, as determined by the National Bureau of Economic Research. For the recessions of 1990, 2001 and 2007, credit performed in line with or better than equities, but from starting yield spreads that were 350 b.p. higher than today's.

With their recent climb, investment-grade credit spreads over US Treasuries are above the median nonrecessionary level (*Display 159, page 171*). If the current slowdown avoids transitioning to a recession, the current credit yield could prove attractive—especially for investors focused on income rather than total return. We think a parallel argument can be made for high yield, where yields have reached 8.2%.

However, spreads don't reflect a significant growth slowdown. We would argue that investors shouldn't get too hung up on whether the US prognosis is actually a recession or not—the point is that growth will slow. Prominent mitigating factors need to be recognized: debt has been termed out, in the US at least; corporate balance sheets are well positioned; and there was something of a clearing-out of lower-quality credits during the pandemic. But the more attractive current yields seem to be more due to higher underlying risk-free yields than the way the market has priced credit risk.

While credit looks attractive from a long-horizon perspective, the possible path of coming quarters suggests a delay in implementing for higher yield, but with a more promising near-term prognosis for investment grade.

Duration

From a strategic asset allocation perspective, the huge change for high-grade fixed income post 2022 was the prospect of positive real returns—for the US at least. For investors that target real return, there are two questions: 1) Is this return enough? and 2) What is duration's role if it's no longer a diversifier of equity beta? For investors with fixed nominal liabilities, 2022 may have been a game changer, as meeting those liabilities likely became materially easier.

We covered the point about bonds no longer being as effective a diversifier in an earlier chapter, but what about the return prospect for investors who face a real-return target? This question applies to sovereign wealth funds, endowments and individuals saving for retirement, because the underlying reason for the investment is to cover liabilities or goals set in the real economy. In some cases, this need for a real return might not be explicit—for the last 30 years, financial-asset returns have strongly outstripped inflation. But that doesn't avoid the observation that many such return targets should be couched in real terms.

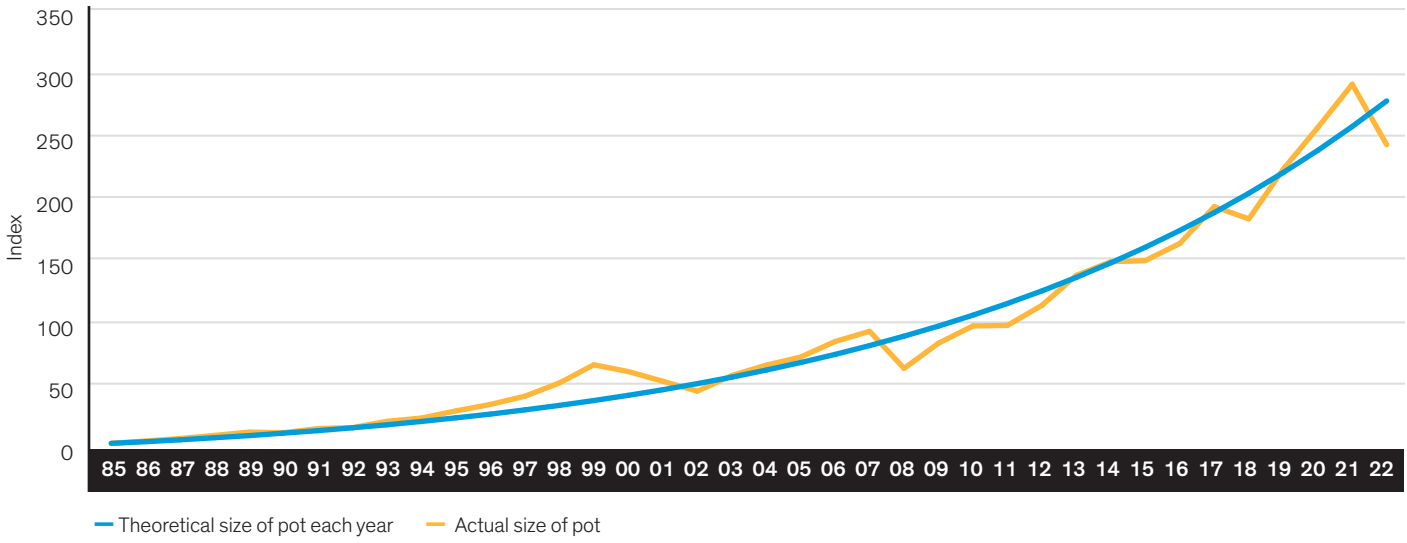
As an aside, many US pension plans target a nominal return in the region of 7%, but we've long questioned the ability to achieve such a return. Higher inflation could theoretically make it easier, but we think it would come at the expense of a larger problem: in an environment where inflation is expected to remain high, a nominal return target might become insufficient. We fully recognize, though, that this is likely to be more of a sociopolitical question than one that keeps pension plan CIOs awake at night.

In *Display 160, page 173*, we show the returns from a broad set of target-date funds for the 2030 cohort versus an assumed required glide path. Even several years of healthy returns haven't obviated the need to generate high returns from here. The 2040 cohort faces the same predicament (*Display 161, page 174*).

In a similar vein (*Display 162, page 174*), we show the rolling 10-year return from a US 60/40 strategy versus US inflation. The 60/40 combination delivered its best-ever real returns from 1980 to 2021, and did so with low overall portfolio risk. This streak was shattered in 2022, when a 60/40 strategy using US equities and 10-year Treasury bonds would have lost nearly 18% since the start of the year—the worst losses since the 60/40 became popular in the early 1980s.

DISPLAY 160: ACTUAL AND THEORETICAL PENSION POT FOR 2030 RETIREMENT COHORT

2030 Target-Date Fund



Historical analysis and current forecasts do not guarantee future results.

The display shows the theoretical size of the savings pot for a person who saves 5% of his or her salary every year and on average achieves a 7% return on investment vs. the actual achieved return by the 2030 Target Date fund cohort.

Sample period 1985–2022; 2022 returns are prorated with US 60/40 portfolio return. | **Source:** eVestment and AB

The dangers of 60/40 strategies have been well flagged, and many investors have moved away from this model. However, it still holds sway as a benchmark, and many investment strategies continue to cling to it. As an aside, we've long argued that this investing approach is far from being a default or "passive" one—a position illustrated by 2022's outcome.

The recent tumble may not be cathartic—it may foreshadow what's to come, given the potential structural increase in the volatility of such a strategy if the stock-bond correlation increases. After a decline like we've seen, investors in a 60/40 strategy may be unable to accept low returns if their ultimate benchmark is to fund needs tied to the real economy—such as retirement.

Another problem for high-grade bonds, though admittedly not one on the radar of most CIOs, is our view that there's no such thing as a risk-free rate anymore—an assertion based on the observation that the existence of real risk-free assets is contingent, not a given.[90] Also, higher debt/GDP ratios are in line with those last seen at the end of WWII, with no obvious path out through growth, so investors must at least consider the risk of currency debasement. The recent UK pension crisis and its impact on UK government bonds might be taken as a warning shot for a new regime. Among other things, it raises the question of whether sovereign risk needs to be priced.

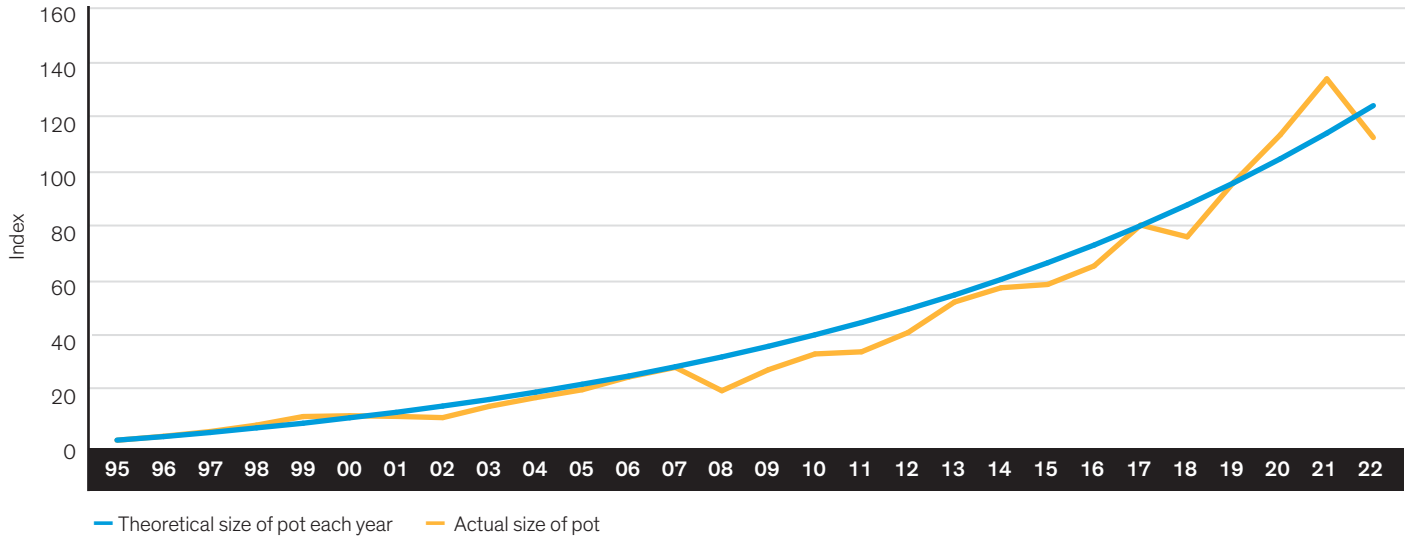
Despite the recent concurrent losses from equities and bonds, there's still a crucial role for high-grade fixed income in reducing short-term drawdowns. This admittedly didn't work in 2022, but history suggests it has an important place in this regard. Such allocations also have an important role in controlling overall risk levels, because most "fixed-income replacements" are more volatile.

In *Display 163, page 175*, we show the trade-off between the return (or cost) of holding a strategy and its performance in past equity drawdowns over the past 30 years. High-grade bonds occupied an enviable position, tending to offer positive returns in a drawdown and a positive overall return. Six months ago, they faced the prospect of being a net drag on a portfolio; at today's yields, they offer potential drawdown protection and at least a slight positive return in the US.

Continued on page 176

90 Inigo Fraser Jenkins et al., *Global Quantitative Strategy: The End of Pax Americana and What It Means for the Market*, Bernstein Research, January 23, 2019.

DISPLAY 161: ACTUAL AND THEORETICAL PENSION POT FOR 2040 RETIREMENT COHORT

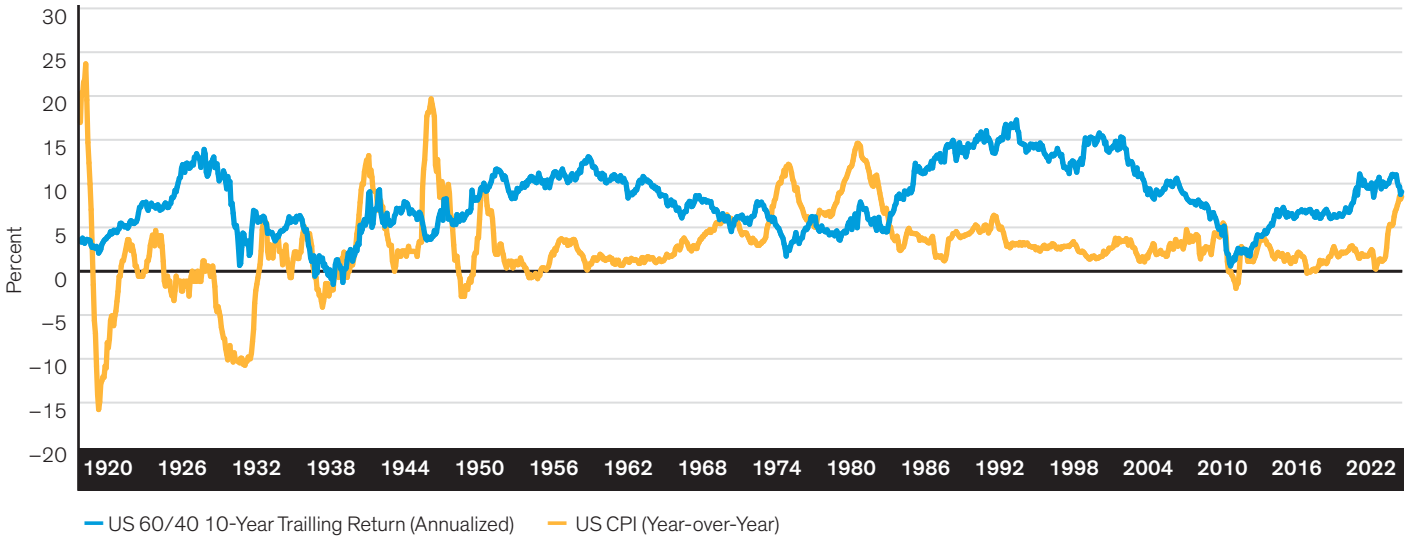


Historical analysis and current forecasts do not guarantee future results.

The display shows the theoretical size of the savings pot for a person who saves 5% of his or her salary every year and on average achieves a 7% return on investment vs. the actual achieved return by the 2040 Target Date fund cohort.

Sample period 1995–2022; 2022 returns are prorated with US 60/40 portfolio return. | **Source:** eVestment and AB

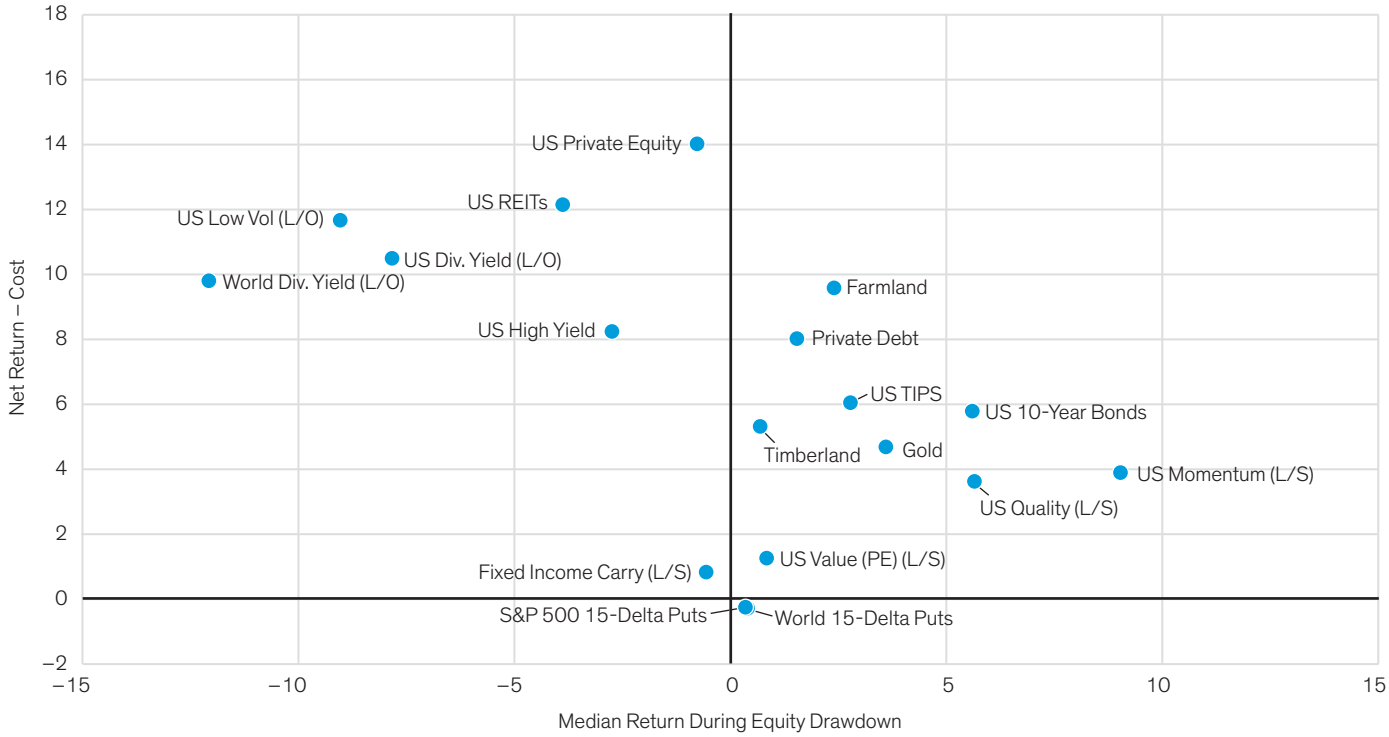
DISPLAY 162: RETURNS FROM A 60/40 STRATEGY AND INFLATION (US)



Historical analysis and current forecasts do not guarantee future results.

Through May 31, 2022 | **Source:** Global Financial Data, Thomson Reuters Datastream and AB

DISPLAY 163: NET RETURN VS. EQUITY DRAWDOWN PROTECTION



Historical analysis and current forecasts do not guarantee future results.

The display uses monthly data since 1990. Private equity, private debt, farmland and timberland series are quarterly, and we match the drawdown periods to the nearest quarter. We assume a 10 b.p. fee for US 10-year bonds, gold, REITs, TIPS and high-yield bonds. We assume a 20 b.p. fee for long-only factors and a 50 b.p. fee for long/short factors. For timberland, farmland and private debt we assume a 150 b.p. fee. The option strategies are shown for one-year 15-delta puts, market-cap weighted and delta-hedged daily. Multi-asset trend strategy is based on 12-month momentum across equities, fixed income, FX and commodities implemented through most liquid futures contracts with a 12% annualized volatility target. To calculate the annualized return for this strategy, we add back the annualized three-month Treasury bill return and subtract a 200 b.p. fee.

Drawdown periods include December 1999 to March 2000, September 2000 to September 2002, September 2007 to March 2009, March 2011 to September 2011, March 2012 to June 2012, June 2015 to September 2015, September 2018 to December 2018, March 2019 to June 2019, December 2019 to March 2020 and September 2020 to December 2020.

January 31, 1990, through March 31, 2022 | **Source:** Bloomberg, Cambridge Associates, Cliffwater, Global Financial Data, NCREIF, Thomson Reuters Datastream and AB

Continued from page 173

Inflation-Linked Securities

One of the big strategic debates with clients right now is how far to rotate into real assets. If we look across a broad range of return streams that could be used for inflation protection, inflation-linked bonds have seen the biggest valuation shift (*Display 164*). When measured as a z score against their own history, TIPS were the most expensive form of inflation protection a year ago. That's no longer the case.

Furthermore, we see constraints on how high real yields can move. One needs to be humble in forecasting, given the very abrupt rise in real yields so far that took investors by surprise. But over strategic horizons, we would argue that macro forces put downward pressure on real yields:

1. If real yields are taken as an indicator of expected future growth, then deglobalization and demographic changes imply lower growth, unless there's a significant increase in productivity (something very hard to forecast).
2. We've argued that pension-system health and policy are intimately linked. A growing share of DC assets would be hurt by a very large increase in real yields.[91]
3. We think that developed-market governments will be tempted to monetize debt as a way to deal with high debt/GDP ratios, implying lower interest rates per unit of inflation.

Today, no assets occupy the privileged position of high-grade debt in recent decades—offering positive real returns and deeply negative correlation with equity beta. Instead, a combination of assets is needed, and we would argue that inflation-linked bonds should be part of that mix.

In summary, the case for fixed income is much stronger than it was a year ago in absolute terms. The relative case as part of a strategic asset allocation depends a lot on the type of liabilities an investor faces. We can see a positive strategic case for credit, though we're mindful that spreads aren't yet very wide compared with previous periods of slower growth, suggesting some tactical caution still for high yield. For investors who have a real-return benchmark, we argue that inflation-linked bonds have had the biggest valuation shift of all the major inflation-protecting assets, and that they now look attractive.

For nominal sovereign debt, we worry that the end of its negative correlation with equities removes one of the major pillars of the case for owning such assets. In our view, even offering slightly positive real returns might not be enough for investors who need higher levels of return. It does, however, still play an important role in drawdown mitigation, and it clearly remains key for investors like DB pensions that have known nominal liabilities.

DISPLAY 164: TIPS HAVE SEEN THE LARGEST VALUATION MOVE OF INFLATION-SENSITIVE ASSETS

Start Date	Asset	October 2022 Valuation (Z Score)	June 2021 Valuation (Z Score)
Jan 70	60/40 Strategy	0.73	1.1
Jan 70	Japan Equities	–0.78	–0.55
Jan 70	Municipal Bonds	0.57	1.16
Jan 70	US 10-Year Government Bonds	0.63	1.19
Jan 70	US Equities	0.79	1.04
Sep 71	US TIPS 10 Year	0.42	2.5
Jan 87	Emerging-Market Equities	0.09	1.04
Jan 90	Global Infrastructure	0.20	0.58
Jan 95	US Banks (relative)	–1.46	–0.75
Jan 95	US Energy (relative)	–2.42	–2.12
Jan 95	US Metals and Mining (relative)	–0.50	–0.96

Historical analysis and current forecasts do not guarantee future results.

Data start from January 1970 or earliest available date (indicated in Start Date column) and run through September 2022. Equity index valuations are cyclically adjusted earnings yield (1/CAPE ratio). Bond valuation is based on yield. Relative valuation is measured as the relative 12-month forward earnings yield (1/PE) relative to the broader US market. The z score of the 60/40 portfolio is calculated as 0.6 * z score of US equities and 0.4 * z score of US 10-year government bonds. A higher z-score value indicates a higher premium to historical valuation.

As of October 31, 2022 | **Source:** FRED, Global Financial Data, MSCI, Thomson Reuters Datastream and AB

91 Inigo Fraser Jenkins and David Hutchins, "Long-Run Global Implications of the UK's LDI Crisis," *Context: The AB Blog on Investing* (October 17, 2022), https://www.alliancebernstein.com/americas/en/institutions/insights/investment-insights/long-run-global-implications-of-the-uks-ldi-crisis.html.

CHAPTER 9

The Role of Digital Assets in Portfolios

Conversations around digital assets have so far been mainly focused on cryptocurrencies. The recent volatility has made these all but uninvestable in the near term for institutional investors. In the longer term, we think they may have a role to play given the risks to fiat currencies, but that lies in the future.

The tangible focus for asset owners in digital assets is likely to be on the tokenization of real assets. This technology has come along just as asset owners find themselves wanting structurally higher allocations to real private assets, but also worrying about liquidity and fees. Digital assets might help with both of these issues. Ultimately, the rise of digital assets highlights that the hard divisions between private and public assets are somewhat artificial and likely to fade over time.

The Role of Crypto and Digital Assets in Allocation

Discussions about the role of digital assets and cryptocurrencies don't reflect a single theme, but a myriad of related investment topics.

There are macro questions about the role of cryptocurrencies and central bank digital currencies (CBDCs), and how they might shape the global economy and policy. Strategy questions exist around the role that such technology can play in corporate profitability, decentralized finance and determining leadership within markets. There are also questions surrounding portfolio construction and the role of crypto and other digital assets as a source of return and diversification (or not!). Finally, there's the growing role of blockchains as the mechanism for market function and the distribution of financial products, particularly with respect to tokenization as a way to create more desperately needed liquidity in private real assets.

Crypto assets witnessed a spectacular collapse in 2022, with Bitcoin down 64% and Ethereum down by 67% (*Display 165, page 178*). Meanwhile, the market capitalization of the entire cryptocurrency universe has declined from $2.2 trillion at the end of 2021 to less than $1 trillion today. The high volatility of crypto was widely known and appreciated, but such a rapid price decline has caused clients' questions on the role of crypto in asset allocation to largely dry up over the past year.

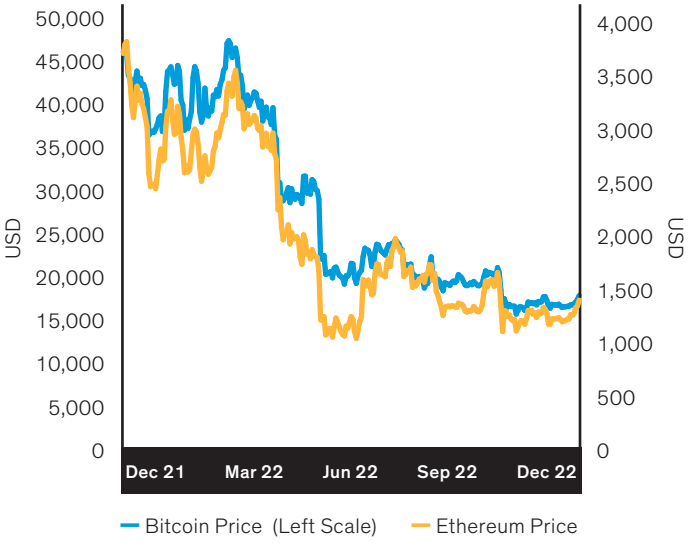
When asset owners do ask strategic portfolio questions about crypto, they're centered more on its possible role as a diversifier. However, crypto has shown no ability to diversify risk assets over the past year. As 2022 progressed, the correlation of Bitcoin with US equity markets surged to all-time highs, as both equities and cryptocurrencies sold off in tandem. By contrast, the correlation between equities and gold remained subdued. The day Russia invaded Ukraine was a case in point—gold was up and Bitcoin was down. One worked as a hedge and the other didn't (*Display 166, page 178*).

Aside from the question of hedging equity beta, crypto offered no protection against the inflation surge when US CPI went from under 7% at the start of the year to more than 8.5% at its peak in June 2022. And as we show in *Display 167, page 179*, crypto's correlation with long-term inflation expectations remained mostly negative throughout the year.

On this point, we would argue that crypto may yet become more important, though it hasn't proved to be a hedge against the type of inflation we've seen over the past year—in part because we think it's an immature asset class.

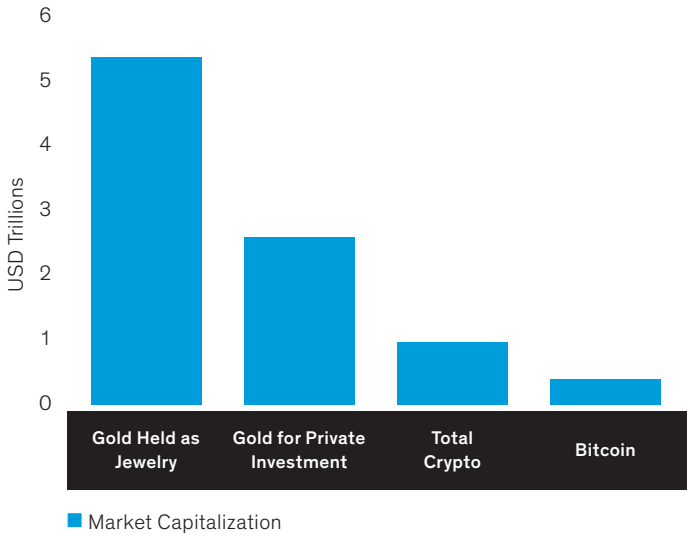
Continued on page 180

DISPLAY 165: CRYPTO PERFORMANCE TUMBLE AND ASSET DECLINE



Historical analysis and current forecasts do not guarantee future results.

From January 1, 2021, through January 11, 2023 | **Source:** Thomson Reuters Datastream and AB

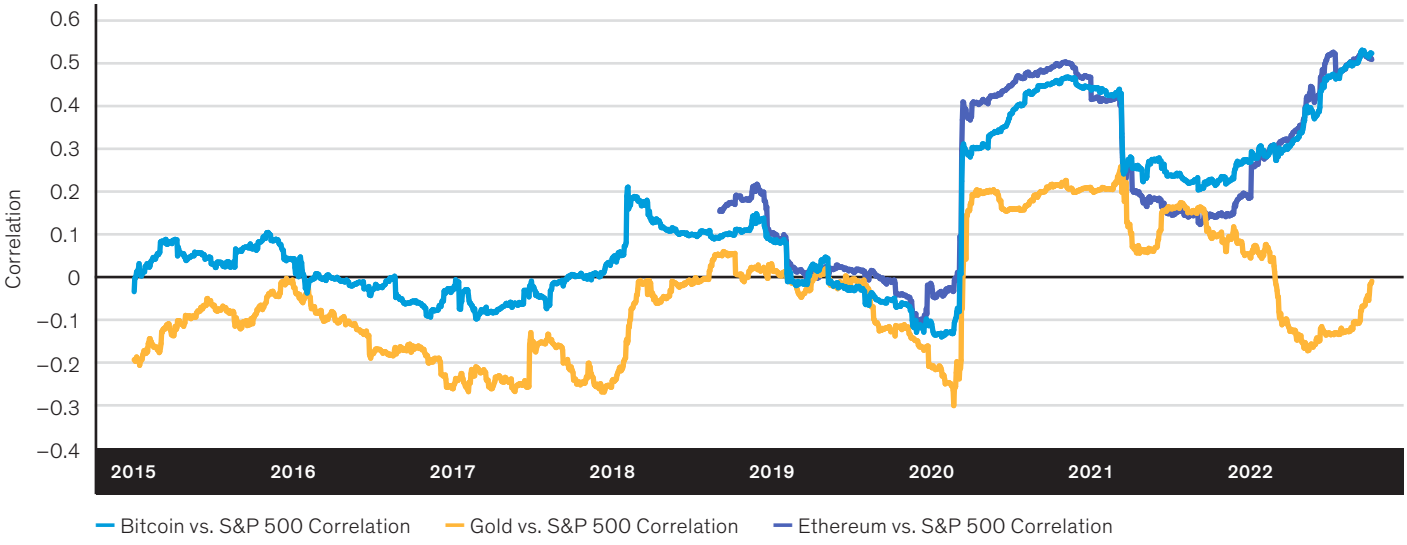


Historical analysis and current forecasts do not guarantee future results.

As of September 29, 2022 | **Source:** CoinMarketCap, Thomson Reuters Datastream, World Gold Council and AB

DISPLAY 166: CRYPTO FAILED AS A DIVERSIFIER IN 2022

12-Month Rolling Correlation

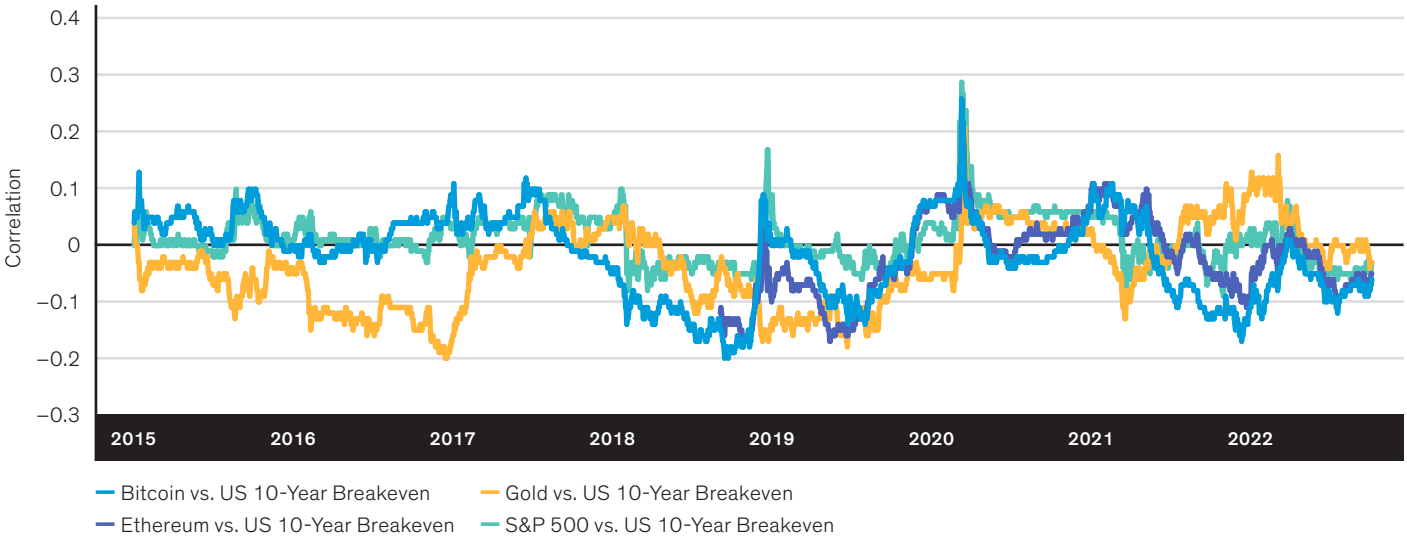


Historical analysis and current forecasts do not guarantee future results.

From January 1, 2015, through November 9, 2022 | **Source:** S&P, Thomson Reuters Datastream and AB

DISPLAY 167: CRYPTO'S CORRELATION TO INFLATION WAS MOSTLY NEGATIVE IN 2022

12-Month Rolling Correlation

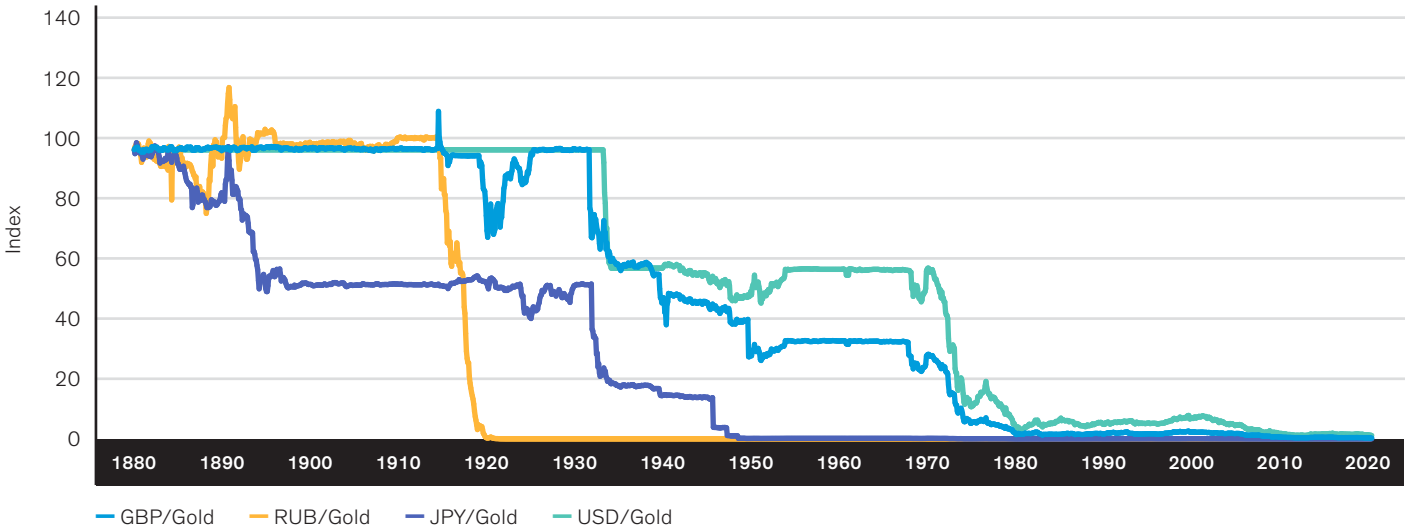


Historical analysis and current forecasts do not guarantee future results.

From January 1, 2015, through November 9, 2022 | **Source:** S&P, Thomson Reuters Datastream and AB

DISPLAY 168: ALL MAJOR CURRENCIES HAVE DEPRECIATED VS. GOLD

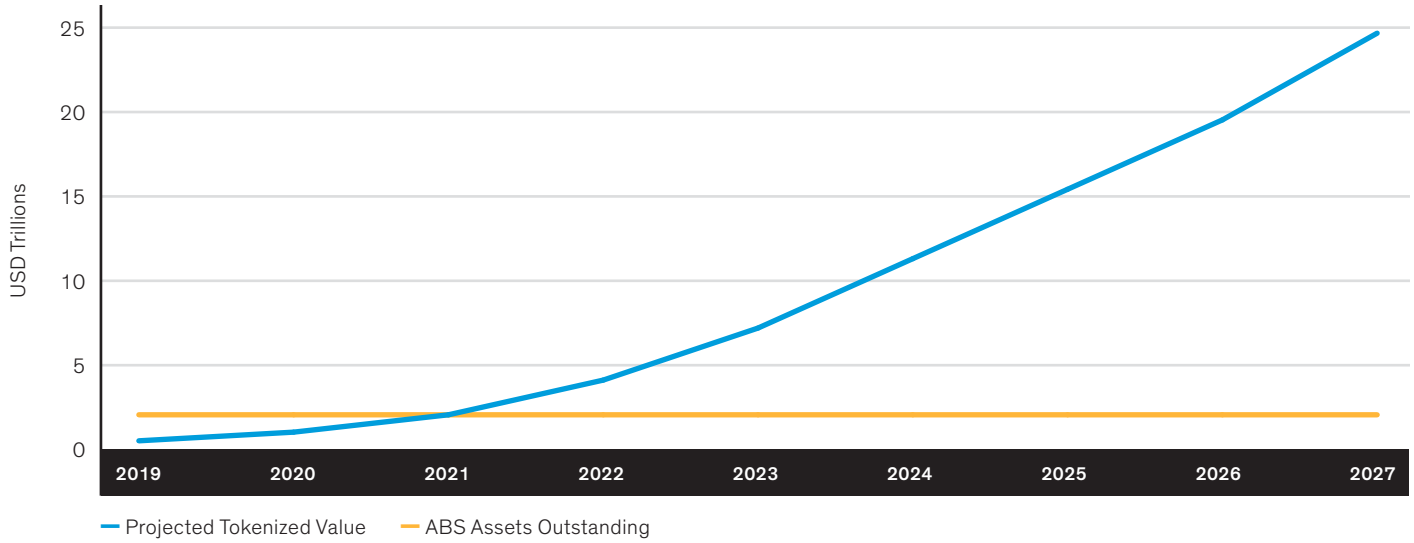
Select Currency Performance vs. Gold



Historical analysis and current forecasts do not guarantee future results.

Through May 31, 2020 | **Source:** Global Financial Data and AB

DISPLAY 169: A PROJECTED SURGE IN TOKENIZED ASSET VALUE



Historical analysis and current estimates do not guarantee future results.

As of December 31, 2020 | **Source:** Securities Industry and Financial Markets Association (SIFMA), World Economic Forum and AB

Continued from page 177

Nevertheless, we think a case *should* be made that demand for zero-duration, non-fiat assets will grow, especially if the policy path becomes tolerant of, or even implicitly encourages, currency debasement as a way out of current debt levels. Gold would be the first port of call in such an environment, but we could also see demand for a broader set of assets, possibly including crypto. All major currencies have depreciated against gold over time (*Display 168, page 179*), in some cases due to the outbreak of revolution or war, but also even in countries that avoided the worst impact of such events.

The bottom line is that we don't expect crypto's inflation-hedging properties to become evident over a tactical time horizon. Such a shift, if it happens, will take longer.

Digital Assets and Tokenization

One area where we still see great potential for digital assets is in making tokenized real assets more tangible (*Display 169*); we think the industry will spend much more time exploring this aspect in the coming years.

In recent years, institutional investors have shifted a significant part of their portfolios from public fixed income and equities to illiquid private assets, such as private equity, infrastructure and private real estate. Since 2008, the aggregate institutional-investor allocation to alternative assets has grown from around 15% to more than 22% (*Display 170, page 181*), severely reducing portfolio liquidity profiles in the process.

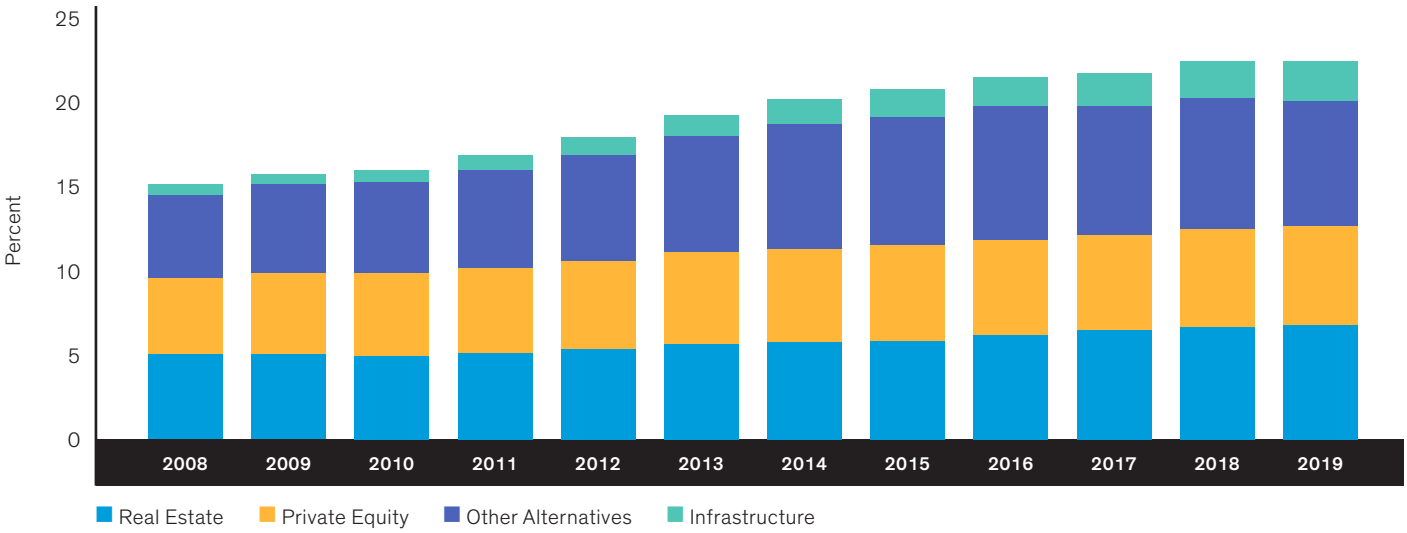
With the severe drawdowns across almost all asset classes in 2022, many institutions face a liquidity crunch: unable to access and adjust their private asset allocations, they aim to de-risk their portfolios. In a world with more volatile inflation and interest rates, and with business cycles back as a feature of investing, we think there will be a more explicit focus on the liquidity challenge of private assets. In the broader light of illiquid asset allocation and with a changed macro backdrop that implies a need for liquidity, this issue is relevant for institutional asset owners right now.

What Exactly Is Tokenization?

The tokenization of real assets is the process of converting the ownership rights to an asset into a digital token on a blockchain. The tokens are initially created through a security token offering (STO), similar to an IPO in equity markets, which represents the ownership interest in an asset. Tokens can then be traded on the secondary market. This process can be implemented for assets with a readily observed price, such as an asset that has already traded in a market, or for assets where the price must be assessed.[92]

92 For more details on tokenization, see Inigo Fraser Jenkins et al., *Inflation and the Shape of Portfolios*, Bernstein Research, May 2021.

DISPLAY 170: INSTITUTIONAL INVESTORS' GROWING ALLOCATION TO ALTERNATIVES



Historical analysis and current forecasts do not guarantee future results.

Alternatives data as of April 30, 2021; equities and bonds data as of November 30, 2021 | **Source:** CEM Benchmarking, Emerging Portfolio Fund Research Global (EPFR Global), McKinsey and AB

Tokenization offers potentially greater liquidity of private assets while also reducing costs. The liquidity increase comes from the greater ease of creating secondary markets, the ability to fractionalize ownership, increased transparency and faster transactions. Tokenization may also make it possible to "financialize" idiosyncratic assets that were hard to access before. This process also offers the potential to democratize access to private assets. While there are positives and negatives to this, in a world where important parts of the return-risk "space" are only accessible for those who can access private assets, this will likely have an important role to play. Currently, direct real-asset investments usually have very high investment minimums that can be prohibitive to smaller institutions and retail clients.

Right now, the market for real-asset tokens is in its nascency. For example, RealT offers fractionalized ownership of individual residential property, mainly in Detroit. Individual retail investors are able to buy tokens representing fractionalized ownership for amounts as low as $50. This is a very niche example but highlights the potential use cases. It can be effective for individual investors wishing to add real estate diversification into portfolios, or for those seeking exposure to the housing market but unable to buy an entire home. Another example from real estate: the $18 million tokenization of St. Regis Aspen Resort in Colorado.[93]

The Impact of Cryptocurrencies and CBDCs on the Global Economy and Policy

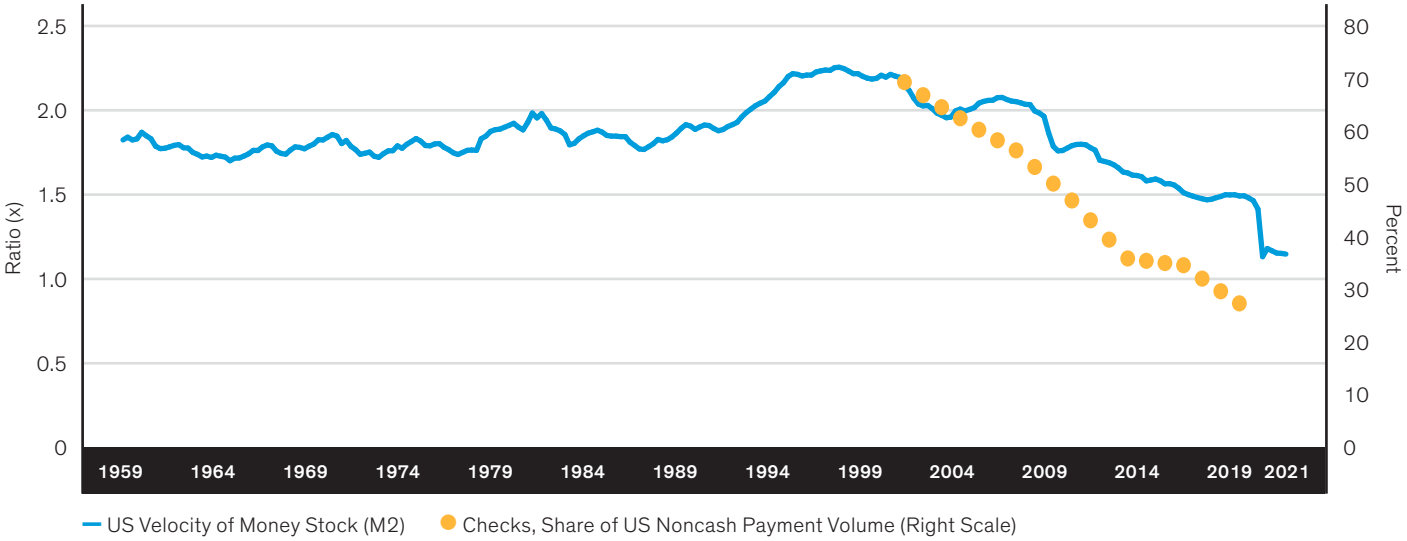
The strategic case for inflation and cryptocurrencies is that they are linked in several ways—not just in terms of crypto's possible future role as a hedge. Policymakers faced a challenge in trying to raise inflation in the years before the pandemic: a persistent decline in money velocity. This may seem to be a remote worry in today's high-inflation regime, but it does matter for those trying to make strategic forecasts of inflation.

There are numerous reasons for the long-term decline in the velocity of money, but the erosion of bond yields and rising wealth inequality across society are likely key causes. Rich people tend to save more, so both these forces—bond yields and inequality—contributed to a higher savings rate and lower velocity. Other things being equal, we think this velocity could fall even further. When investors realize that the nominal return on their savings is decreasing, and that both the risk around those returns and inflation are rising, they'll likely react by increasing their savings rates even more. And we don't think the degree of inequality will change anytime soon, despite it becoming a key policy debate in many countries.

It's been suggested that a technological innovation, such as the adoption of CBDC or crypto, could stop this decline by changing the

93 Jenkins, *Inflation and the Shape of Portfolios*.

DISPLAY 171: PAYMENT TECHNOLOGY HASN'T OFFSET LARGER FORCES



Historical analysis and current forecasts do not guarantee future results.

Through July 1, 2021 | **Source:** FRED, New York Fed and AB

way money is used. Any shift that increases the velocity of money could be exceedingly helpful for policymakers: despite the current tactical fixation with high inflation, we suspect that background strategic deflationary forces are still a concern.

The possibility of faster settlement for some transactions and a broader reach of banking services globally for those with limited access could increase the velocity of money. We've never seen such a shift to digital money before, so it's hard to be sure. However, if we focus on the payment technology aspect of the transition, the evidence suggests that neither CBDCs nor crypto will increase velocity. If anything, prior innovations in payments technology have happened as money velocity has fallen.

At the very least, it appears that payments technology has failed to offset the larger forces at work. Starting in the mid-1990s, the velocity of the money supply (M2) in the US has been on a long downward shift, even as checks and cash payments were replaced by credit and debit cards as well as other electronic payment means (*Display 171*).

Sweden is probably closer to being a cashless society than any other country in the world. According to its central bank, the use of cash quickly declined from 40% of transactions to 13% between 2010 and 2018—even before the pandemic. In many cases, businesses no longer accept cash, and surveys show that the majority of small businesses plan to follow suit. But even as cash was replaced by electronic means of payment, the velocity of Sweden's money supply has declined rapidly over the past 10 years (*Display 172, page 183*).

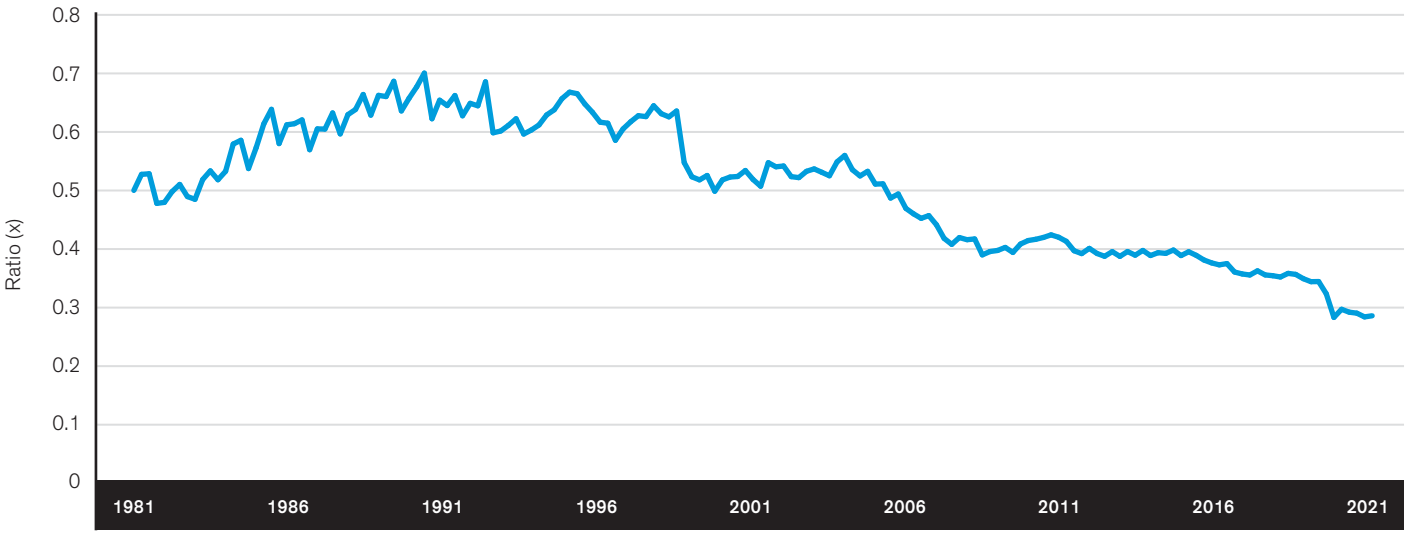
Moreover, and from a very different angle, recent research[94] has shown that the adoption of cell-phone payment technology in African countries that previously had relatively poor banking penetration has led to money velocity declining, or at the very least failing to rise. Adopting digital currencies isn't the same as jumping from checks to electronic payments, but we think this experience offers at least circumstantial evidence that we shouldn't expect the digital shift to increase money velocity.

What prospects do the next one to two years hold for CBDC and cryptocurrency regulation? According to the CBDC tracker website,[95] only a handful of countries, including China, Canada, France, South Africa, Nigeria, Ghana, Uruguay and UAE, have reached the piloting

94 *The Impact of Mobile Money on Monetary and Financial Stability in Sub-Saharan Africa*, GSMA, March 2019, available at: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2019/03/The-impact-of-mobile-money-on-monetary-and-financial-stability.pdf.
95 https://cbdctracker.org/.

DISPLAY 172: THE VELOCITY OF MONEY (M3) HAS DECLINED RAPIDLY IN SWEDEN

Sweden M3 Velocity



Historical analysis and current forecasts do not guarantee future results.

Through September 30, 2021 | **Source:** Thomson Reuters Datastream and AB

stage for a CBDC program. A few others, such as Sweden, South Korea, Turkey, Japan, Ukraine and Thailand, have advanced proof-of-concept projects.

Meanwhile, the US, UK, Australia, India, Brazil and other countries are still only at the research stage, with the Bahamas currently the only nation that has officially deployed a CBDC. Most countries don't have a firm timeline for CBDC launch and adoption, but according to press statements from the ECB, BoE and Sveriges Riksbank, it's not expected until at least 2025. It's often pointed out that the US may have to pursue a CBDC given its reluctance to cede a significant share of international payments to China. However, that motivation is unclear—China has capital controls, but it's not evident that a digital yuan could even take on such a role.

CHAPTER 10

The Stagflation Scenario: Defining It and Adapting Asset Allocations

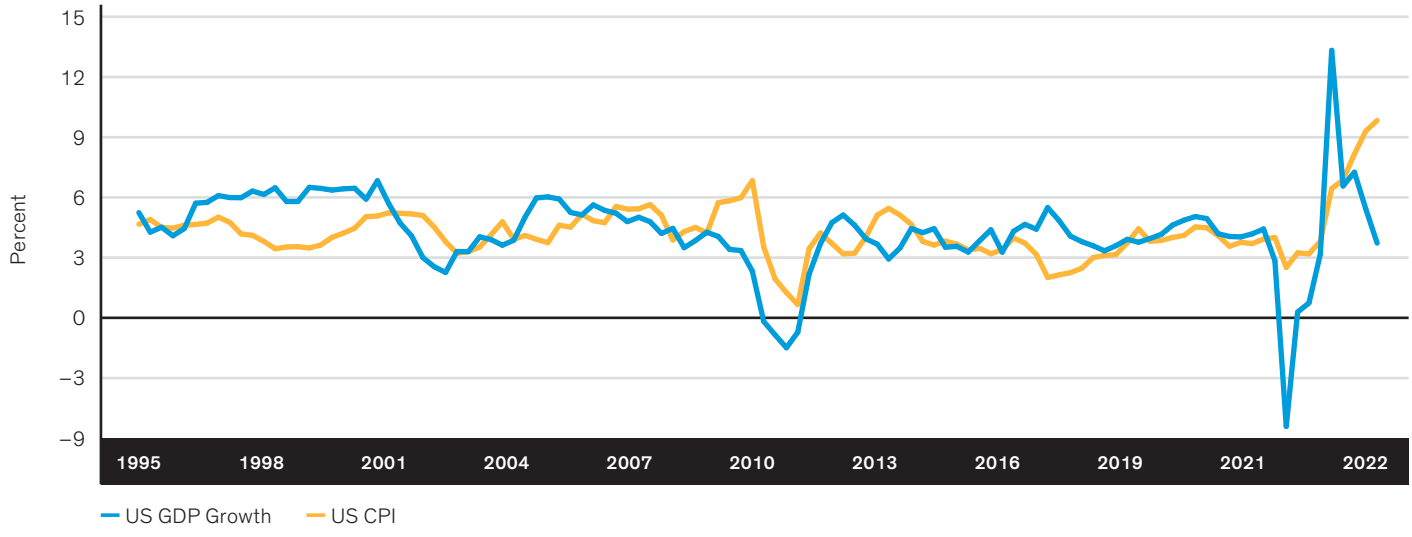
Stagflation may not be a central case in our economic forecast, but it's a possible scenario with an uncertain probability. For investors who regard stagflation as a risk worth budgeting for, the next question is: How should that response translate into strategic portfolio design?

Stagflation isn't a central case in our outlook, but the risk of such an outcome is rising, so it should at least be discussed for holistic portfolio planning. In the US, the rates of GDP growth and inflation have recently crossed over (*Display 173*). We wouldn't call it stagflation yet—GDP growth is still positive year over year and any recession would likely be shallow. So, our concern isn't really tactical. From a strategic asset allocation perspective, we suggest that the tail risk investors should consider is a more prolonged period of subpar growth with inflation made stubbornly higher by the confluence of deglobalization, demographics and ESG.

Room for a Higher-Inflation Scenario

For asset owners wanting to plan for potential "bad" scenarios, the question is whether the macro landscape points to a possibly longer stagflation period over the next three to five years, which would be a major shock to current strategic asset-allocation assumptions. This scenario wouldn't be driven by the temporary supply/demand shock fueling exceptionally high short-term inflation, but by the longer-term prognosis for growth and inflation.

DISPLAY 173: INFLATION IS NOW HIGHER THAN GDP GROWTH



Historical analysis and current forecasts do not guarantee future results.

Through June 30, 2021 | **Source:** Thomson Reuters Datastream and AB

DISPLAY 174: RETURN SOURCES THAT MAY HELP IN STAGFLATION PERIODS

Year-over-Year Returns

Winners	Average			Median		
Asset Class	**Scenario 1**	**Scenario 2**	**Scenario 3**	**Scenario 1**	**Scenario 2**	**Scenario 3**
US TIPS (10-Year)	15.38	13.93	14.49	12.29	10.93	12.82
Broad Commodities	11.04	2.34	50.74	11.72	4.35	43.87
Gold	13.67	–5.17	71.87	10.37	–7.50	54.21
US Real Estate	4.62	5.17	6.30	7.65	7.05	8.96
Fixed Income Value	3.01	3.67	1.63	4.58	2.53	–0.30
Fixed Income Carry	1.30	2.58	3.43	0.17	3.08	4.31
FX Value	2.59	2.13	4.79	2.35	5.86	4.79
FX Carry	2.63	2.32	4.68	2.21	1.41	4.68
Equity FCF Yield (L/S)	3.06	6.88	4.49	–5.03	3.34	12.75
Equity Low Vol (L/S)	0.42	2.21	18.35	–5.35	5.10	15.43
Equity Momentum (L/S)	12.33	0.05	34.29	1.34	–3.63	34.87
US Consumer Staples (Relative)	1.64	5.77	1.88	4.07	3.36	–4.39
US Healthcare (Relative)	1.00	4.51	7.07	0.34	5.18	3.35

Historical analysis and current forecasts do not guarantee future results.

From 1Q 1970 to 3Q 1991 | **Source:** AQR Capital Management, Global Financial Data, Kenneth R. French Data Library, Robert Shiller's database, Thomson Reuters Datastream and AB

How likely is this scenario?

We've made the point elsewhere in this black book that strong inflationary and deflationary forces exist over strategic horizons. In our central case, these forces lead to equilibrium inflation above the pre-pandemic level but still in "moderate" territory. However, no one knows what coefficients to put on these forces, because we've never been in this state before. That leaves room for a higher-inflation outlook, which requires monitoring for several key forces—in the strategic, not tactical, outlook.

Defining Stagflation Scenarios—and Asset Responses

Stagflation requires a growth slowdown in addition to higher inflation. Tactically, we're seeing this in activity data, but what about longer-term prospects? Strategically, the key *marginal* growth drivers are the upward pressure from investment required for the energy transition facing off against the downward pressure from a shrinking labor force.

In order to translate this state into asset views, it helps to look at how various types of return streams have behaved in the past. No one really agrees on the exact definition of stagflation, and this ambiguity helpfully covers a wide range of outcomes across assets. For our purposes, we suggest looking at three distinct scenarios:

Scenario One: The historical inflationary shocks that coincided with a sharp slowdown in real economic growth: 1Q–4Q 1970, 1Q 1974–3Q 1975, 4Q 1979–4Q 1980, 1Q–4Q 1982 and 3Q 1990–3Q 1991.

Scenario Two: Using a narrower definition of inflationary shocks and low growth, looking only at periods where real GDP growth was less than 1% and inflation was more than 4%: 1Q–4Q 1970, 1Q 1974–3Q 1975, 2Q–4Q 1980, 1Q–4Q 1982 and 4Q 1990–2Q 1991.

Scenario Three: Based on the changes in growth and inflation, focusing on scenario one episodes, but extending the time horizon to earlier quarters, when higher growth was beginning to slow and inflation starting to rise. This scenario includes only quarters where declining real GDP coincided with rising inflation: 3Q 1973–4Q 1974, 1Q 1979–1Q 1980 and 2Q–4Q 1990.

In *Display 174*, we show the average and median year-over-year quarterly returns for select asset classes that have posted positive

DISPLAY 175: RETURN SOURCES THAT MAY SUFFER IN STAGFLATION PERIODS

Year-over-Year Returns

Winners	Average			Median		
Asset Class	**Scenario 1**	**Scenario 2**	**Scenario 3**	**Scenario 1**	**Scenario 2**	**Scenario 3**
US Equities	18.60	18.32	–7.44	23.14	14.73	–13.91
World Equities	10.45	7.76	–10.27	10.36	5.71	–15.94
Japan Equities	1.65	2.07	–20.89	–3.19	4.58	–23.55
US Technology (Relative)	–1.39	–2.13	–12.69	–6.31	–3.18	–10.75
US Banks (relative)	0.46	16.65	–11.34	–6.02	8.55	–6.40
US Consumer Cyclicals (Relative)	4.44	13.10	–18.60	0.29	17.76	–18.12
US Mining (Relative)	–5.37	–7.47	1.79	–5.89	–3.48	0.50

Historical analysis and current forecasts do not guarantee future results.

From 1Q 1970 to 3Q 1991 | **Source:** AQR Capital Management, Global Financial Data, Kenneth R. French Data Library, Robert Shiller's database, Thomson Reuters Datastream and AB

average returns in most of the above three stagflation scenarios. We put extra emphasis on scenario three, which uses the change in growth and change in inflation, because that anticipatory period is probably the most critical for investors today. In *Display 175*, we show the average and median return of assets with mostly negative average returns in stagflation periods, again putting particular emphasis on the returns in scenario three.

Individual asset analysis hides some of the worst problems at the portfolio level. For example, in one of the underlying periods, November 1973 to August 1974, total returns for both US equities and bonds were negative—with strong positive correlation at the worst possible time.

We extend the analysis to account for the varying risk levels of different assets (*Display 176*), showing average annualized returns during stagflationary periods adjusted for the overall volatility across the full return history since 1970. Real estate in this case is the Case-Shiller Index, so it's not listed. This inflates the return/risk ratio because of the lack of mark to market, but we include it for completeness. TIPS and gold stand out with very high return/risk ratios in such periods, but, as we note below, that historical picture must be tempered by today's relatively high TIPS valuations, though that's not a problem for gold.

Trend strategies, such as equity momentum, clearly depend a lot on the path of returns. They tend to strongly underperform at turning points, but once a path is established—such as a higher movement in inflation—they deliver strong returns. The data imply that equity

DISPLAY 176: RETURN/RISK RATIO OF KEY STAGFLATIONARY RETURN STREAMS

Winners

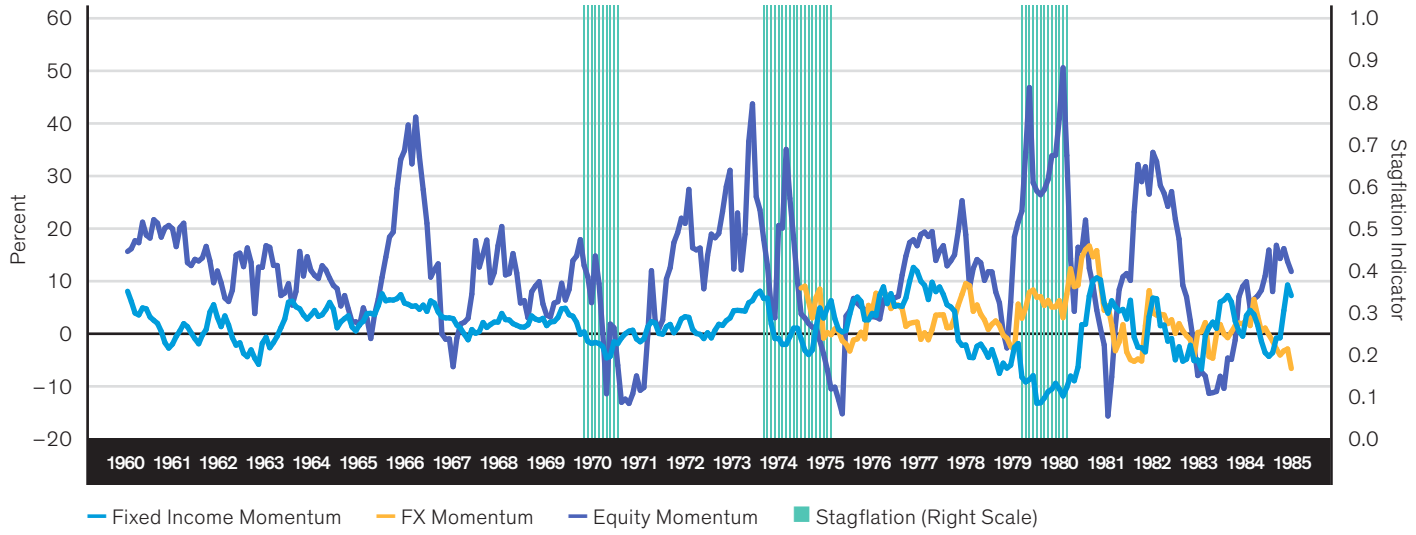
	Return/Risk		
Asset Class	**Scenario 1**	**Scenario 2**	**Scenario 3**
US Real Estate	3.69	4.13	5.03
Gold	0.78	–0.29	4.09
US TIPS (10-Year)	3.19	2.89	3.01
Broad Commodities	0.60	0.13	2.78
Equity Momentum (L/S)	0.95	0.00	2.65
FX Value	0.52	0.43	0.97
Equity Low Volatility (L/S)	0.02	0.11	0.93
Fixed Income Carry	0.34	0.68	0.91
US Healthcare (Relative)	0.12	0.55	0.86
FX Carry	0.45	0.40	0.80
Fixed Income Value	0.79	0.96	0.43
Equity FCF Yield (L/S)	0.27	0.61	0.40
US Consumer Staples (Relative)	0.20	0.68	0.22

Historical analysis and current forecasts do not guarantee future results.

From 1Q 1970 to 3Q 1991 | **Source:** AQR Capital Management, Global Financial Data, Kenneth R. French Data Library, Robert Shiller's database, Thomson Reuters Datastream and AB

DISPLAY 177: TREND STRATEGIES FARE WELL IN STAGFLATION, BUT BE NIMBLE

Year-over-Year Returns



Historical analysis and current forecasts do not guarantee future results.

Fixed income and FX momentum factors use the past 12-month cumulative excess of cash return on an asset, and the factor portfolios skip the most recent month's return. Equity momentum factor shows the market-cap-weighted return of a portfolio that is long the top-quintile-ranked stocks and short the bottom-quintile-ranked stocks.

Through December 31, 1985 | **Source:** AQR Capital Management, Kenneth R. French Data Library, Thomson Reuters Datastream and AB

momentum is a good contributor to portfolio returns, especially in the run-up to one of the episodes shown here—scenario 3. However, one has to be ready to allocate out of the strategy rapidly once the trend breaks (*Display 177*). Momentum in fixed income has a less effective track record in these types of periods.

Action-Point Considerations for Asset Owners

A coming period of stagflation isn't our core view, but investors are right to consider it as a possible risk in their portfolio planning.

A few conclusions stand out when surveying a half century of the previous stagflation episodes defined in diverse ways. For one, they've generally been weak periods for equities. The real winners have been return streams that are inflation protected and not linked to business cyclicality: TIPS and gold stand out in this respect. Commodities also do well (of course, commodities usually have a link to the cycle in normal growth periods). We would also suggest considering other forms of portfolio protection against high inflation, including real physical assets such as farmland, timberland and infrastructure.

Value equity strategies might initially be considered an option, given that they tend to be effective as inflation rises. However, their stagflation record is patchy at best: many forces that drive value trades tend to be procyclical, so declining growth in stagflationary periods tends to hurt. Also, value historically benefits from moderate inflation, but sharply higher movements can be damaging. The decline in growth is a performance drag on passive equity exposure overall, and a stagflationary period with sharply higher inflation passes the point at which moderate inflation is a "good thing," raising the equity risk premium and depressing multiples. Free cash flow yield–type factors and more defensive measures of value do better.

From an equity sector perspective, healthcare and staples, as defensive sectors, have stood out once a higher-inflation/low-growth regime has been established. In factor terms, this has been a good period for the low-volatility factor within equities. However, if one focuses only on the run-up to stagflation periods, commodity sectors deliver an even stronger performance showing.

So, there's definitely an opportunity to take a more explicitly pro-inflationary stance going into such periods. The sector that stands out as suffering at this juncture is banking, which is also why value-factor performance is more of a mixed picture if commodity sectors and banks move in opposite directions. These relationships make a stagflationary period different from a simple inflationary period.

For investors interpreting this historical evidence today, the poor performance of equities in stagflation is worrying, given that they're valued near the top end of their 140-year range, and are already widely owned after a $1 trillion inflow. A stagflationary outcome would be a shock to those starting positions, indicating the need to reduce equity beta. Investors might seek to take cover in private equity, but that might be a mistake. Valuations are at historical highs, and these assets still share equity beta over the cycle. Only marking to market can create a useful fiction of uncorrelated returns, but we think an extended stagflation period would likely burst that.

A Barbell Approach to Stagflation Protection

While stagflation isn't our base-case economic forecast, investors concerned about that risk to the outlook might want to consider a barbell if stagflation becomes a reality. A higher allocation to TIPS and gold would be the lower-risk part of the response, combined with an allocation to cross-asset factor strategies as well as select physical real assets and commodities.

There are also opportunities for adjusting equity sector positioning, with commodity-sector exposure going into a stagflation period followed by switching to healthcare, consumer staples and an equity low-volatility factor once higher inflation becomes established. The overall equity weight would be reduced too. And we think that lower expected returns from key passive asset-class exposures could open more opportunity for idiosyncratic return to play a role in portfolio allocation.

PART III: The Investment Industry

CHAPTER 11

Metamorphosis: An Investment Industry in Transformation

From the changing distinctions between traditional asset classes and factors to the way analysts spend their time, change is a constant in the investment industry. The implications of this are far-reaching, including the evolutions within organizations.

Innovation is overtaking a broad swath of the industry, from portfolio design to the definition of alpha and from investment methodology to organizations themselves. We argue that there are two vectors for change acting on the industry. Much of this evolution is driven by changes within the industry (such as lower fees on passive products and the growth of alternatives), but the crucial second force is exogenous factors in the form of the radically changed investment outlook.

In this chapter we offer brief glimpses of these changes, which we think are key.

Rotation from Traditional Active to a Passive/ Alternatives Barbell

One of the biggest industry changes in recent years has come in the form of asset allocation—the rotation away from traditional public market active strategies into a barbell of passive allocation in public markets and a higher alternatives allocation. We think this trend is set to continue, but one needs to unpack the motivations for it and view them through the lens of a new post-pandemic investment regime. This leads, we think, to changes in this approach.

Traditionally, the lion's share of active investment by asset owners took place via their allocation to active equity managers. Now the bulk is in alternatives, with private equity taking the largest share (in fee terms). The motivation for this shift has rested on beliefs about the potential returns from both alpha and beta. There's been a general disbelief in the ability of traditional active management to pay off, and that returns on public markets will be below par. We think the new post-pandemic investment regime should challenge this view.

We agree that the expected returns for equity and government bonds will likely be lower than the average levels of recent decades, implying a need for other return sources. However, other changes are at play. We don't think high-grade fixed income can play its traditional diversification role as effectively, so there's a greater need to find alternative sources. Investors must also find sources of strategic portfolio inflation protection that weren't needed before the pandemic. As for active management, we challenge the assumption that it can't deliver. By shifting the evaluation metric to idiosyncratic alpha, discussed below, and putting it in the context of different macroeconomic realities, we see a place for active management.

From a big picture perspective, this situation points to a nuanced change in asset-allocation methodology for many investors. The need for diversification, higher returns and inflation protection implies a continuing shift into alternatives (both private and public). But a need for real returns implies that some investors might need to source more funding from high-grade nominal fixed-income positions as opposed to equity.

This reorientation has profound implications for required risk levels, which we think challenges the notion of risk measured as expected portfolio volatility. Instead, the bar is the ability to meet beneficiaries' long-run real-return needs. Finally, the value add of active approaches can be assessed in a more holistic way through the lens of idiosyncratic alpha applied across traditional active and alternative allocations.

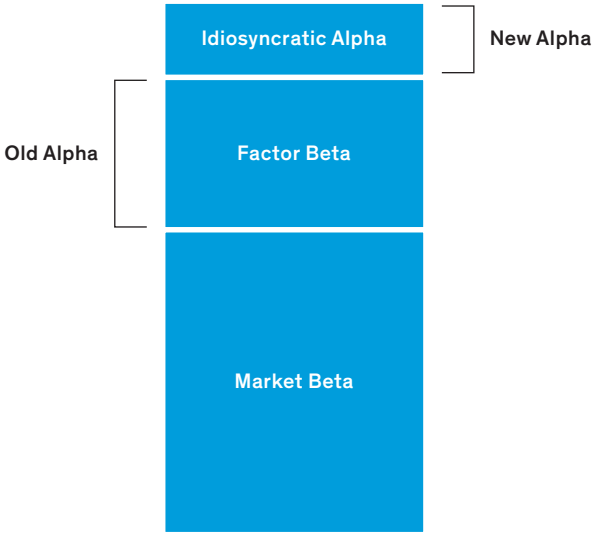
A Blurring Line Between Passive and Active

As the active/passive equity migration continues, the line between what counts as active and what counts as passive has been revealed to be a dynamic frontier, not a line set in stone. This changing nature is most evident in the declining fee for equity factors, from over 20 b.p. to 4 b.p. in the past decade under the guise of so-called smart beta.

We were mistaken in our (published) belief that the fees on these products would rapidly continue to decline to zero, or possibly below. However, they're still low-fee products, and given their transparent construction, we think they should be viewed as passive—at least from an implementation perspective. So the cheap benchmarks for funds are no longer just broad market indices, but broad indices plus a set of cheap factor exposures that are almost free. Seen in this way, the benchmark for active management is revealed to be multivariate—not univariate.

On the one hand, this massively raises the bar for active management; on the other hand, it bolsters active management by revealing which kinds of funds genuinely add value through return streams that can't

DISPLAY 178: THE RETURN SOURCES THAT COUNT AS ALPHA ARE SHRINKING



For illustrative purposes only.

Source: AB

be easily replicated. We think this evolution shifts the key definition of alpha within the industry away from simple excess return and toward idiosyncratic alpha measurement versus a passive factor set.

Isolating Idiosyncratic Alpha

The blurring of the lines between traditional definitions of active and passive raises a question: What should the metric for active management be? This discussion can be illustrated using the case of a long-only fund (though the concept isn't limited to long-only) by dividing the return into passive market exposure, exposure to simple factors and idiosyncratic alpha (*Display 178*). In theory, it's always been possible to divide returns this way (risk-management departments have been doing this for decades). However, the emergence of generally accepted, cheap quasi-passive products in recent years has turned the question from one of risk management to one of practical fund allocation.

We think it's important to think about alpha this way, in part because it ensures a fair allocation of fees, and is a route to identifying more persistent returns. Viewed from this perspective, idiosyncratic alpha becomes a key element in asset allocation. Idiosyncratic alpha is the alpha that remains after adjusting for simple, investable and cheaply available factor exposures.[96]

At a high level, we estimate idiosyncratic alpha via a two-stage linear regression of active fund returns against the appropriate factors. As an extension of this approach, we also use quadratic factors to separate timing-derived idiosyncratic alpha from stock-picking idiosyncratic alpha. Each of these two separate and important sources of manager skill deserve to be rewarded, because they can't be replicated by holding a static combination of passive-factor exchange-traded funds.

Our research has shown that idiosyncratic alpha is considerably more persistent over time than past performance, and is more predictive of a strategy's future excess return. Crucially, maximizing idiosyncratic alpha and idiosyncratic-alpha diversification at the overall portfolio-of-funds level also results in higher expected excess return, so idiosyncratic alpha should be a key area of focus in manager selection and portfolio construction.

Our Alphalytics platform's interactive, web-based interface enables asset owners to quickly and easily access idiosyncratic-alpha data and rankings for thousands of equity and fixed-income products globally, identifying the most highly skilled managers to best suit their needs, monitoring their existing holdings (and analyzing any custom return stream in complete confidence), performing factor-based return attribution, and building effective portfolios of strategies.

From Excel to Python…and Then Machine Learning?

A very different kind of innovation in the industry is transforming the methodology of financial analysis. We would argue that the switch from paper spreadsheets to Excel 30 years ago didn't materially change the nature of financial models—it merely made them more complicated and easier to update. But a switch from Excel to Python is likely to fuel a more profound change, with analysts spending their time very differently (*Display 179, page 192*).

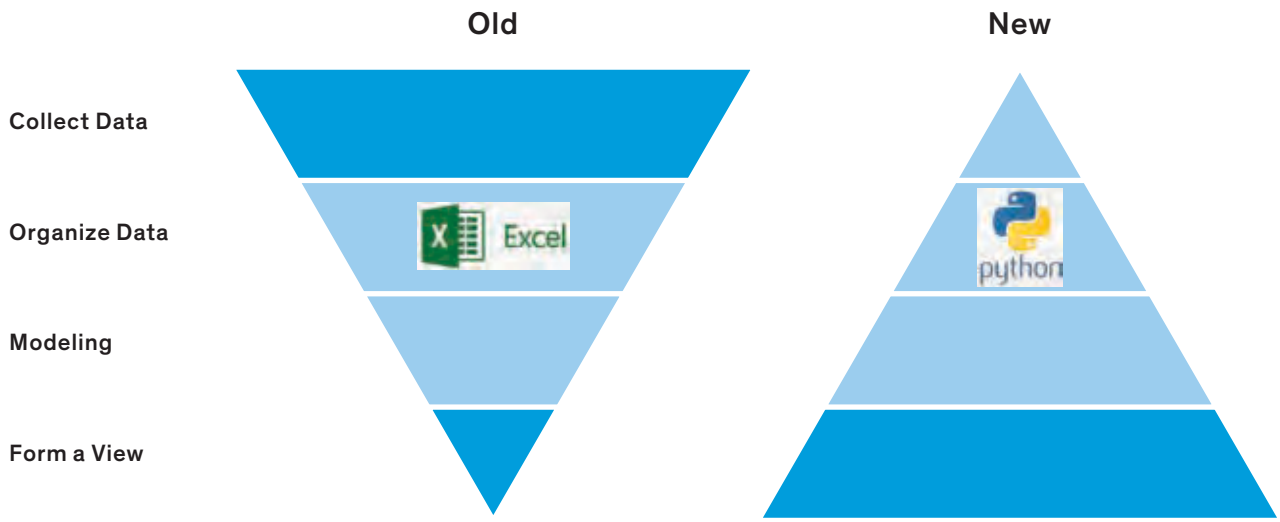
Already, some data collection—such as web-scraping of prices—is executed with Python. Python also seems likely to increasingly handle the organizing of that data. In time, this role could extend to the actual modeling process. There's always resistance to this type of change, but both push and pull factors will enable this evolution.

The pull factor: as "passive" strategies develop, the dividing line between passive and active will shift, requiring active approaches to tap a broader data set in order to achieve idiosyncratic returns and stay ahead of the competition. The push factor is cost: it's likely more efficient in time and personnel to manipulate data in Python, and inexorably declining fees and pressure on margins will force the transition.

This process has advanced the most in quantitative modeling. Modeling for truly systematic investment wasn't taking place in Excel in the first place, but here the methodology is changing by

96 See Alla Harmsworth and Harjaspreet Mand, *Alphalytics: Tearing Up the Rules on Active Management*, Bernstein Research, January 27, 2020; and Alla Harmsworth and Harjaspreet Mand, *Alphalytics: Is There "True" Alpha in Fixed Income?*, Bernstein Research, January 20, 2021, which detail how we define this metric.

DISPLAY 179: THE CHANGING USES OF RESEARCH ANALYSTS' TIME



For illustrative purposes only.

As of August 31, 2021 | **Source:** AB

adopting machine learning—and in some cases the claim of artificial intelligence. The push and pull factors are similar, but the jury remains out on how far the process will play out. The adoption of machine learning for manipulating and extracting data seems set to grow dramatically, but it's unclear to what extent it can be applied to making actual investment decisions.

There are also open questions as to how much complexity is acceptable in financial models, especially when they fail; preferences may develop for different kinds of machine-learning models. So-called ensemble models, like random forests, can be constrained structurally so they can be mapped onto the "real world," while neural nets and support-vector machines lack that option.

Organizational Implications: Falling Silos?

What are some of the organizational ramifications of the innovations we've discussed? In an environment in which it's harder to generate a given level of real return, it's more likely that the industry will need to consider its output as a "return stream" rather than as a certain kind of fund "product."

This process could lead to a realigning of organizations based on the nature or characteristics of return streams (alpha, factors, security-specific, macro) rather than traditional asset classes. A specific example of this is investors who agree that protecting against a new strategic inflation regime is key. This case could bring together the management of return streams that ultimately contribute to the ability to protect real returns—which could include elements of active public equities, private alternatives and long/short public alternatives.

Moreover, the switch from Excel to Python for financial models seems poised to blur the distinction between quantitative and "fundamental" models—and hence the historical partition between these modes of investing. At the same time, to the extent that this modeling change enables the use of (expensive) new data sets, it's implied that the new models that are needed, and the teams that develop them, will become functions spread across organizations rather than limited to a specific asset class. That shift could make new modeling capabilities more cost efficient. It might be necessary to break up long-established investment industry silos before these changes can be fully realized.

CHAPTER 12

The Renewed Case for Active Management

- A new investment regime will prompt a rethinking of the role of active management in investing, as a return of the business cycle and less trended markets dents part of the case for simply holding passive long positions in public markets.
- Asset owners face lower long-term real returns in the years ahead. The response should be allocating to a combination of different risk types, including illiquid assets, factor strategies and active strategies.
- As we see it, the true goal should be maximizing net-of-fee returns. While alternatives will continue to take the lion's share of fees, we advocate a more holistic approach to deploying fee budgets, targeting areas where managers can deliver idiosyncratic alpha across public and private markets.
- As ESG investing continues to evolve, it will lead investors to articulate a clearer picture of what it really means to be active and passive when it comes to ESG investing strategies.
- Passive proponents claim that market-cap-weighted indices should be a starting point, but when it comes to China, we suggest that the "proper" weight is highly unclear. Changes in that weight could prompt disagreements among investors, raising questions of what it means to be passive.
- We think strategically higher inflation will prompt a rethinking of benchmarks, with more investors identifying inflation as the true benchmark, not a financial market index. Seen in this light, there's in fact no such thing as being truly passive.
- We're not intending to defend all active investment in a blanket way. However, the current regime change will prompt asset owners to set limits on how much of their asset allocations can be directed to passive strategies.

The Road to a Renewed Active-Passive Discussion

There was a lot of excitement in active-management circles during the COVID-19 pandemic, as the share of equity assets managed passively dipped—the first discernible pause in its inexorable upward trajectory in more than a dozen years. However, flows into passive from active have accelerated once again (*Display 180*), with passive now accounting for 48% of global assets under management (AUM); for US equities, the passive share is 52%.

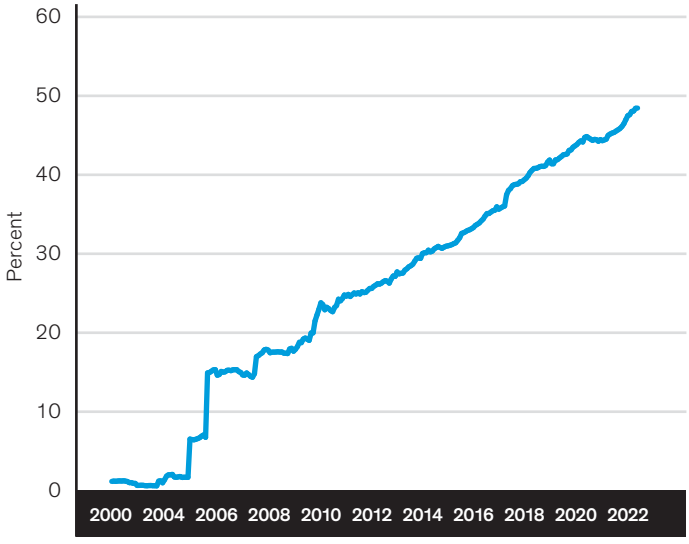
Does the resumption of this long-term trend mark the path forward for asset owners? We don't think so. The active-passive debate can't be divorced from the broader macro outlook for global capital markets, and that outlook delineates a different future.

The active-to-passive rotation has unquestionably helped lower investors' fees over the past decade, but the persistent nature of the rotation prompts a question: Is there a limit to the degree that equities can be managed passively?

Six years ago, we made the case that passive-management growth affects efficient capital allocation. Seen through the lens of efficient capital allocation (as distinct from an investment perspective), we've

DISPLAY 180: THE INEXORABLE TRAJECTORY OF PASSIVE INVESTING

Passive Share of Global Equity AUM



Historical analysis and current forecasts do not guarantee future results.

Through June 30, 2022 | **Source:** Bernstein Research, Emerging Portfolio Fund Research Global (EPFR Global) and AB

argued that passive investing is worse than Marxism.[97] At least in a Marxist economy, someone is planning where capital should go. The painful reality for those believing in the broader economic benefits of active management is that the market has no intrinsic feedback mechanism to correct this.

How would one even know in "real time" if capital allocation in the economy had gone awry? If it took years to notice a misallocation, it would be hard to envision a way that this could be self-corrected. What's more, we're not aware that anyone has been able to articulate exactly where a limit might exist beyond which capital allocation would break down—or even if the relationship between the active-passive split and capital-allocation efficiency is linear or nonlinear.

Others have suggested potential limits to passive investing based on market efficiency. Perhaps too much passive investing would somehow herald an active-management nirvana? Well, Japanese equities are close to 80% passively managed, and yet there's no sign of sustained supernormal profits generated by active managers. Still others have suggested limits in terms of market function; therefore, an implicit potential limit on passive investing from a regulatory perspective.[98]

Our own research has noted that markets with a higher penetration of passive investing tend to endure correlation spikes of a higher amplitude when exogenous shocks occur. Maybe that link is enough to pique regulators' interest, though correlations tend to revert to the mean. The view that passive investing leads to a sustained rise in correlation was surely shattered by the great declines in correlation in 2016–2018 and 2020–2021.

All these views describe theoretical limits to how much money can be run passively, but we don't think any of them translate into a practical limit. Regulators and politicians should care about efficient capital allocation in the economy, but it's too nebulous and slow-moving a topic to demand action, and it's lowering investors' costs. We think the limit to passive investing's penetration will come not from the market itself, but from asset owners.

Asset Owners Set the Limits for Passive Investing

We think the passive share of equity and fixed-income AUM will continue to rise—it would take a brave analyst to call a turning point in a series so monotonic. One could no more declare a turning point in that series than King Canute could command the tide to recede.

Asset owners will come to realize that the infatuation with passive investing doesn't work when the macro regime has changed. Recognizing this new regime, along with a greater challenge in achieving a given return level, demands a rethinking of active investing's strategic role. In hindsight (always a dangerous, but unavoidably tempting, tool for analysis), there have been two reasons for the $3.7 trillion global flow from active to passive investing over the past dozen years.

First, in aggregate, the active industry charged too much for what it offered in years past. Too many funds charged active fees for near-index performance, and there was too little evidence of repeatable success. Asset owners and consultants briefly flirted (misguidedly) with the concept of "active share" as a metric for active success, but that development played a role in capital migrating away from funds that demanded active fees for passive returns. Those funds are never coming back.

An upward-trending market was the second reason behind the massive shift of assets to passive. A passive allocation to stocks and bonds would have handsomely beaten inflation for most of the last 12 years, with a negative correlation between them to boot. Why bother paying for active management in such a world? A passive stock/bond investment could fill the need for any asset owner who needed to beat inflation, which we suggest is the true benchmark for investors, including individual retirement savers, many state or national pension plans, sovereign wealth funds and endowments.

The rising market rationale for the passive wave no longer applies in the post-pandemic world. The outlook for equities will likely be positive in real terms, though lower than before. Perhaps US government bonds can deliver returns in line with inflation, but that's a more difficult task globally. Looking back, 2022 delivered the shock that these asset classes are no longer as mutually diversifying, which we think sets the tone for the coming years. Central banks are much more hawkish, macro uncertainly is radically higher and inflation is likely to settle at a higher equilibrium level.

In the context of this very different investment regime, we invite investors to reconsider the strategic case for active management. We'll lay out the main supporting arguments behind this case in the rest of this chapter.

Argument One: Markets Less Likely to Trend, Central Banks More Active

In recent years, when we've been asked where we were in the business cycle, our response was that there wasn't a business cycle anymore—it had been swamped by government policy decisions. Well, the business cycle is clearly back now.

We're now in an environment where central banks are much more proactive. Also, the pre-pandemic status quo, with the business cycle stretched to lengths of time never seen before, has been shattered. Add in new forces of deglobalization (see Chapter 3, "Investing in a Post-Global World") as another variable that disrupts the pre-pandemic norm, and the result is that markets are much less likely to be trend-bound.

97 Inigo Fraser Jenkins, *The Silent Road to Serfdom: Why Passive Investing Is Worse than Marxism*, Bernstein Research, August 23, 2016.
98 Lidia Bolla, Alexander Kohler and Hagen Wittig, "Index-Linked Investing—A Curse for the Stability of Financial Markets Around the Globe?" *Journal of Portfolio Management* 42, no. 3 (Spring 2016): 26–43.

This mix implies a better opportunity for active approaches to help enhance end-client returns, a markedly different environment than the past decade, when multiyear trends became entrenched and there was no conventional recessionary cycle.

The active-management industry has faced heavy criticism over the past two decades that a lot of apparent alpha was just beta in disguise. If markets are no longer trending, a beta-masquerading-as-alpha strategy is harder to pull off, but we would argue that the industry has already adapted to discount such pseudo alpha. An investment environment that makes it harder to follow a persistent trend suggests, at least in theory, a greater role for active management. Of course, this presumes the existence of skill, a point we'll return to later in this chapter.

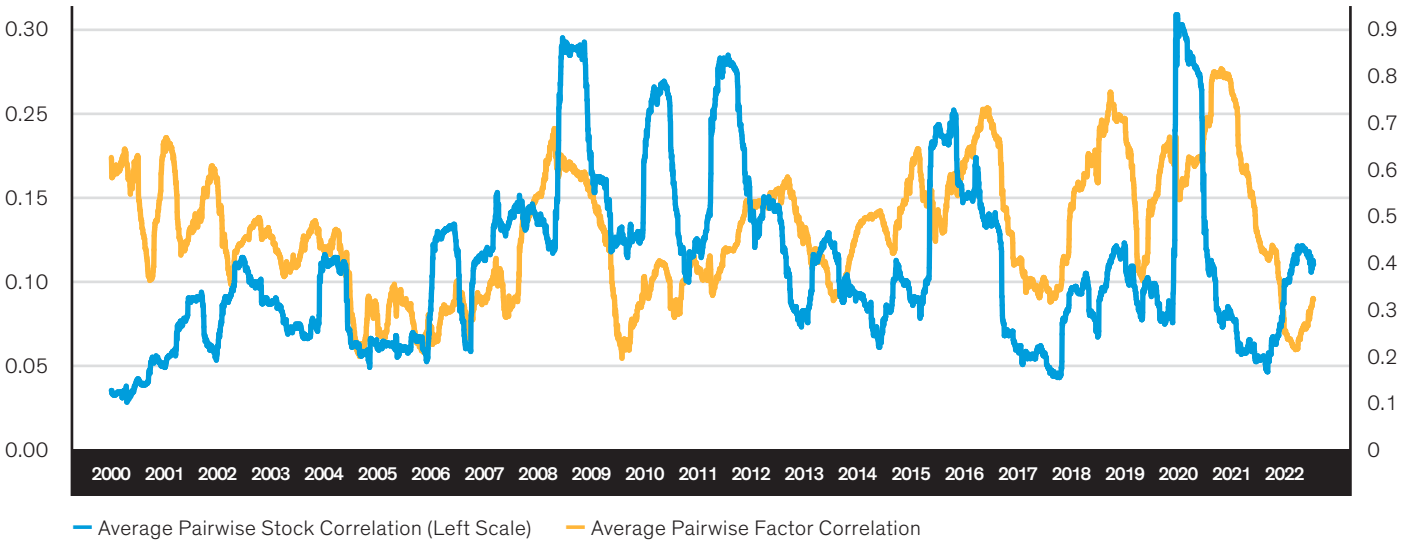
Most of the research here is concerned with long-run strategic allocations, but articulating a case for active investing requires some evidence that an opportunity set for active managers actually exists. One of the most effective ways to gauge such an opportunity over shorter time horizons is to assess the degree of correlations in markets.

The average pairwise correlation of stocks and the pairwise correlation of factors has been cyclical (*Display 181*). There's been much debate about whether correlations in markets were trending higher, possibly driven by passive investing, central banks or globalization, among other forces. However, we think history clearly demonstrates that the key force is cyclical: exogenous shocks, such as the pandemic, push correlations higher, and correlations then naturally revert to the mean.

The correlation of factors is low right now, implying a high degree of "factor richness" in the market, which we think contributed to the greater effectiveness of factor strategies in 2022. Stock correlation has risen somewhat as macro stress has risen, but remains far below its previous levels—implying an above-average return for active strategies in the year ahead.

We also note a historical relationship between the ability of value-type strategies to perform and the average performance of active managers. We're not saying all managers need to follow a value approach, but this relationship suggests that environments with higher intra-asset-class valuation dispersion are more fertile ground for security selection. Dispersions, by this measure, have compressed somewhat this year, but are still very wide historically. Moreover, in an environment where most asset classes are fully valued, the largest valuation spreads are within asset classes (*Display 182, page 196*).

DISPLAY 181: CORRELATION LEVELS REMAIN BENIGN

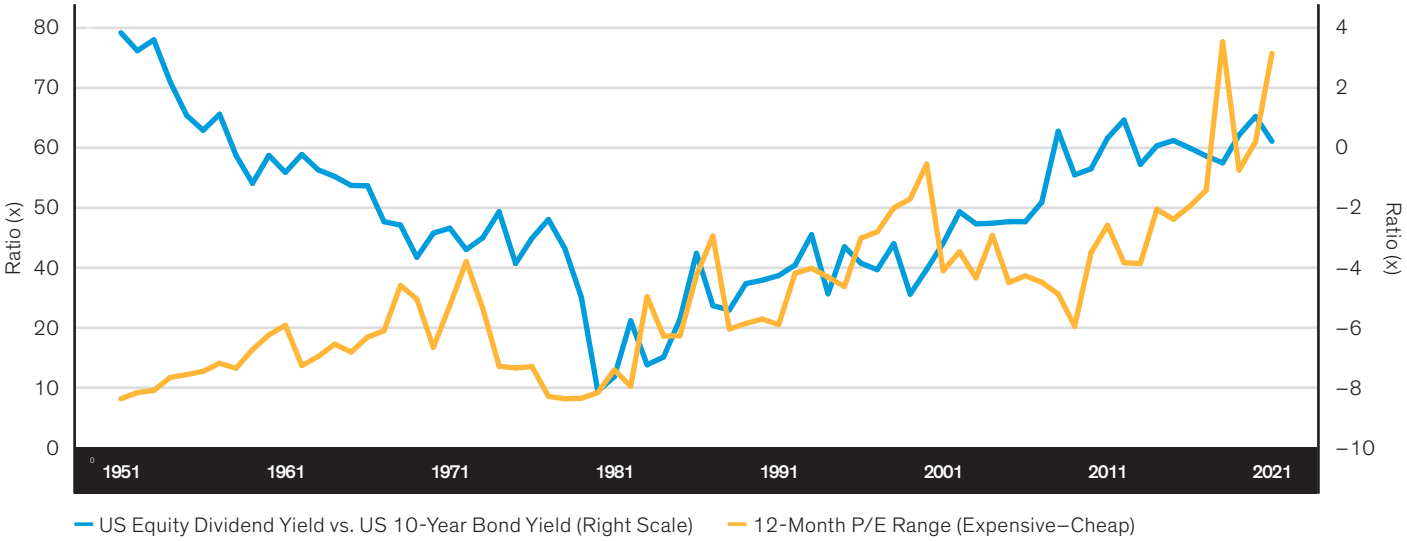


Historical analysis and current forecasts do not guarantee future results.

Correlations are based on the average absolute pairwise correlations of daily signed long/short factor returns for global composite value, global composite quality, global long-term growth and global price momentum. The correlations are calculated over a rolling six-month window.

Through September 30, 2022 | **Source:** FactSet, MSCI, Thomson Reuters I/B/E/S and AB

DISPLAY 182: VALUATION SPREADS ARE WIDER WITHIN THAN BETWEEN ASSET CLASSES



Historical analysis and current forecasts do not guarantee future results.

The 12-month trailing P/E range shows the difference between the average P/E ratio of the most expensive and the cheapest quintile of US stocks.

Through December 31, 2021 | **Source:** Global Financial Data, Kenneth R. French Data Library, Thomson Reuters Datastream and AB

Argument Two: Lower Expected Beta Returns and a Bigger Role for Persistent "Alpha"

In hindsight, one can say that the past decade was a very fortunate period based on historical returns and risk measures. Simple beta exposure to almost any major asset class delivered positive real returns with historically low volatility. Over the next 10 years (represented by the arrows), we expect a much more challenging environment, though not bearish (*Display 183, page 197*). The landscape will feature lower real returns and higher volatility, driven partly by higher asset-class volatility but also by lower stock-bond diversification.

This is the central challenge for asset owners: the information ratio, in real terms, seems destined to fall. To counter this decline, asset owners will need to add more risk—as efficiently as possible, subject to their specific governance or liquidity constraints. We suggest the following main dimensions for adding risk:

- More private assets
- More leverage
- More factor risk
- More active management
- All of the above (in combination)

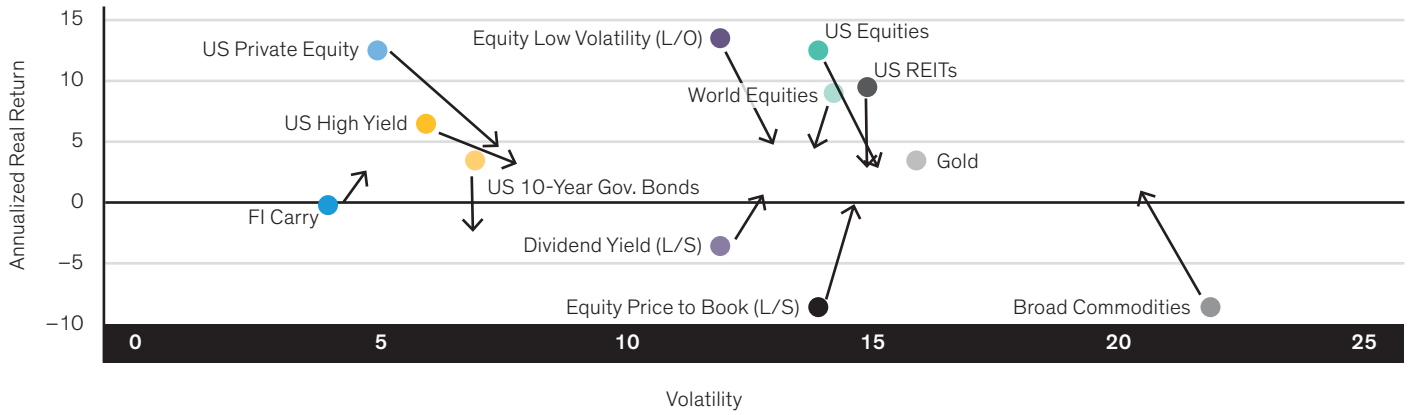
The decision to invest in active versus passive should be seen as part of the strategic asset allocation decision, implying a key challenge for the future of strategic asset allocation. That challenge is providing an analysis and narrative of how these risks fit together, the extent that they overlap, how they link to the macro environment, and the level of conviction investors have that any of them will persistently be helpful. An important question for the industry (and our own research program) to analyze will be the extent to which the returns generated from an active fund allocation, a factor investment strategy and a private asset, for example, are mutually diversifying.

The key in adding more active exposure is for alpha to be persistent, so we think it's critical that active managers are assessed based on idiosyncratic alpha—not simple excess returns. The surge in "smart beta" exchange-traded funds enables asset owners to access simple factor beta at scale and very low cost. This raises the bar for active managers: they must now demonstrate the ability to earn excess returns above simple factors, such as value, momentum or low volatility. But it also clarifies the kinds of active return streams that will likely be useful. Our research has shown that idiosyncratic alpha is more persistent than simple excess return, and a more reliable way to evaluate managers and strategies across different universes.

As evidence, future idiosyncratic returns are more significantly linked to prior idiosyncratic returns than is the case with simple definitions of excess return (*Display 184, page 197*). We think there's a strong

DISPLAY 183: A MORE CHALLENGING DECADE AHEAD FOR CAPITAL MARKETS

Historical Real Return/Risk of Select Asset Classes and Future Projection



Historical analysis and current forecasts do not guarantee future results.

The dots represent the last 10 years of real returns and volatility for the major return streams that investors can buy. The arrows represent the AB Institutional Solutions team's forecasts for the next 5–10 years. Note: The US private equity data are compiled from 1,562 funds, including fully liquidated partnerships, formed between 1986 and 2019. All returns are net of fees, expenses and carried interest. Data are provided at no cost to managers. FI: fixed income; L/S: long/short; REITs: real estate investment trusts

As of October 14, 2022 | **Source:** Cambridge Associates, FactSet, FRED, Kenneth R. French Data Library, Thomson Reuters Datastream and AB

DISPLAY 184: PERSISTENCE OF IDIOSYNCRATIC ALPHA IN US EQUITY FUNDS

Regressions of Forward Excess Returns/Idiosyncratic Alphas Against Trailing Values (US Funds)

Three-Year Regressions		
	Coefficient	T-Stat
Excess Return Persistence	0.04	2.20
Idiosyncratic Alpha Persistence	0.15	7.10

Top Alpha Quartile: Regressions of Forward Excess Returns/Idiosyncratic Alphas Against Trailing Values (US Funds)

Top Alpha Quartile Three-Year Regressions		
	Coefficient	T-Stat
Excess Return Persistence	0.07	2.79
Idiosyncratic Alpha Persistence	0.17	4.96

Historical analysis and current forecasts do not guarantee future results.

Persistency is defined as the strength of the relationship between past and future idiosyncratic alpha (IA), as measured by the beta coefficient in the regression of forward to trailing IA.

As of January 27, 2020 | **Source:** eVestment, FactSet, Morningstar, MSCI, S&P and AB

theoretical rationale for this too. If a manager has genuine skill in stock selection, for instance, and constructs its portfolio so that stock selection is the dominant return driver (equally important), the strategy is less likely to be adversely affected by a sudden factor-leadership change in the market.

Put another way, we think idiosyncratic alpha is a superior way to measure manager skill than alpha as defined by excess return. We can show that the link between idiosyncratic alpha and persistent alpha applies to fixed-income funds as well as equity funds. The debate about the existence of skill in the active industry will always rage—but the "beta hurdle" active managers have to overcome seems set to be lower in the years ahead.

Argument Three: Fee Budgets Will Likely Skew Toward Idiosyncratic Alpha

Fees have been a key motivation for the shift in active versus passive allocations. Reducing fees is a laudable goal, but one needs to be clear about what the target should be. We would suggest that low fees are important because they're a way to increase net-of-fee returns to the end investor. Maximizing that return should be the real goal asset owners set. Of course, it's hard to know what that return will be ahead of time, so the understandable shortcut is a focus on minimizing fees that are usually knowable in advance.

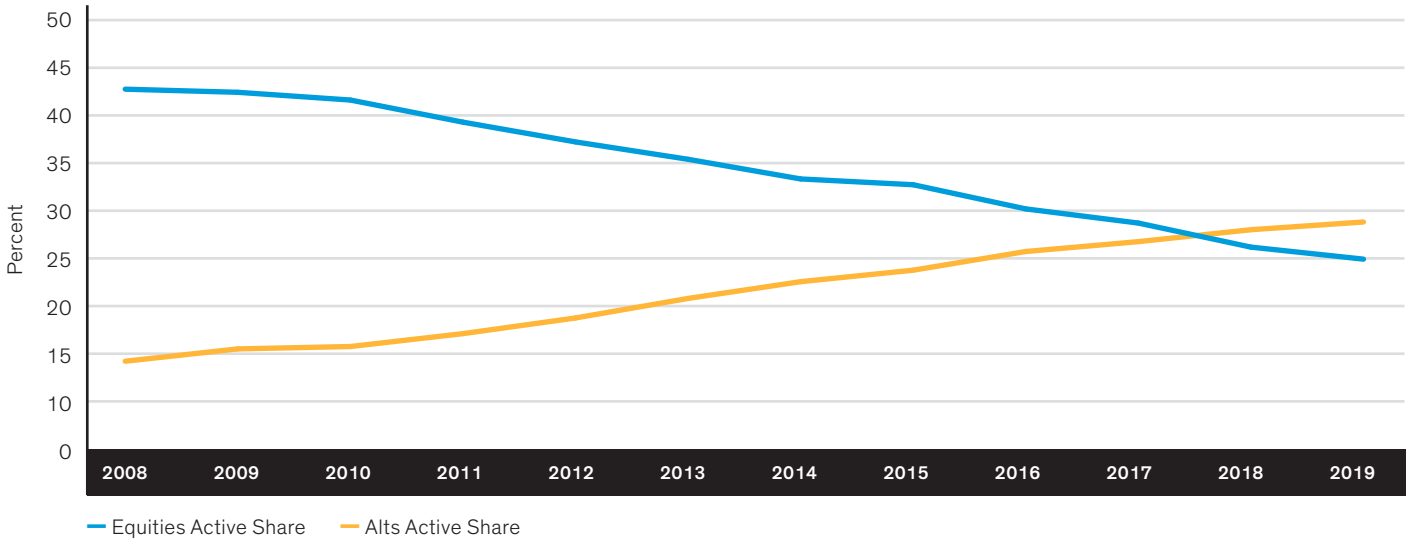
However, we think this approach is often dominated by heuristics, such as the notion that it's acceptable to pay fees for alternatives but not for traditional investments. There's a need for a holistic approach that addresses how an asset manager deploys its whole book in response to the challenge of lower returns and higher inflation.

A decade ago, the lion's share of active investment by asset owners was directed to active public equities. That emphasis declined as a result of the extended strong performance of a simple passive long-only market position. We think different rules apply now. The largest fee allocation now goes to alternatives, not active equities (*Display 185*); within alternatives, private equity consumes the largest fee share (*Display 186, page 199*).

The defense of this state of affairs is that it directs fees to areas where they're better able to fund added value, though this defense presumes a privileged position for private equity investments.

DISPLAY 185: THE MAJORITY OF ACTIVE INVESTING IS IN ALTERNATIVES, NOT IN EQUITIES

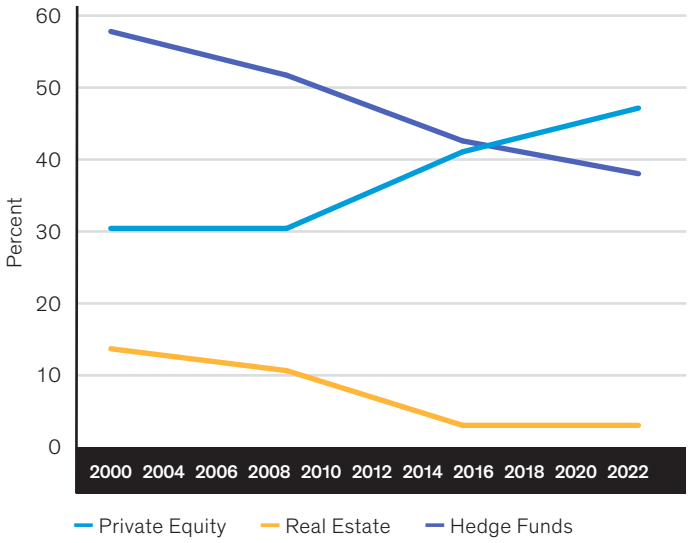
Risk Taken via Active Alternatives and Equity



Historical analysis and current forecasts do not guarantee future results.

Alternatives data as of April 30, 2021; equities and bonds data as of November 30, 2021 | **Source:** CEM Benchmarking and AB

DISPLAY 186: PRIVATE EQUITY HAS TAKEN FEE SHARE FROM HEDGE FUNDS AND OTHER ALTERNATIVES



Historical analysis and current forecasts do not guarantee future results.

Alternatives revenue split by product. Real estate includes REITs.

Through July 31, 2020 | **Source:** Boston Consulting Group, Thinking Ahead Institute at Willis Towers Watson and AB

We think this risks flirting with the same misunderstandings that surrounded active public equity investment in previous decades.

We argue that the historical average returns of private equity are unlikely to be repeated, given high starting valuations and the likely path of credit (see Chapter 5, "Private Assets and the Future of Asset Allocation"). Private equity absolutely has a role in adapting a portfolio to a lower-return world, but we think such an allocation now seems more about alpha generated by a manager than the beta of overall private equity allocations. The dispersion of outcomes for private equity funds is much wider than that for active public equity funds, so skill in fund selection does indeed deserve a high fee—but wider dispersion cuts both ways.

We think the allocation to private assets and alternative investments should increase further, because they're important parts of the response to a new investment regime. As part of this response, we suggest that fee allocation requires a process akin to that for asset allocation, with fees ideally assigned in proportion to the contribution to real risk-adjusted return.

It will enhance the process if investors consider asset allocation not only in terms of asset classes, but also on a more fundamental plane of beta versus idiosyncratic alpha across all asset classes. The implication is that fee budgets are saved for managers who can deliver idiosyncratic returns—a large portion of which will likely happen in alternative assets, though not exclusively.

Argument Four: ESG Is the Core of the Active-Passive Debate's Next Evolution

Aside from the macro forces at work on allocations to active management, changes are also coming from within the investment industry, which we think will definitively shift further toward ESG. But we also recognize that the emergence of a world with higher-equilibrium inflation poses new challenges for ESG investing that haven't been present in the dozen years during which it has been a significant force in finance. This will likely bring changes to how the industry thinks about the definition of ESG investing (see Chapter 2, "The Intimate Linkage of ESG and Inflation: ESG and the Hegelian Dialectic").

There must be a greater distinction between what counts as passive or active in an ESG context. Simply screening out certain sectors or reweighting a portfolio to make its stated carbon footprint lower than that of a benchmark is, to paraphrase the famous Prussian, an extension of passive investing by other means. It may be a key part of how a given investor achieves ESG ambitions, but we're not sure it counts as active. This issue is linked to a question: Is the cost of capital for a listed company meaningfully changed simply by secondary-market trading in its equities?

The evolving ESG definition points to a more clearly defined role for active managers in engaging with investee firms to achieve a certain ESG output, or by overtly integrating ESG with broader financial considerations as inputs for active investment decisions. These roles are mechanically harder to fulfill from a passive perspective because they require adopting an explicit view—there's no equivalent to "let's just buy the cap-weighted index" when taking a stance on ESG issues.

Moreover, ESG engagement and integration presume that investors know the relevant questions to ask—knowledge that requires an expensive research process. Seen in this way, the evolution of ESG-as-engagement lies at the heart of the next evolution of the active/passive investment debate.

Argument Five: China's Index Weight Raises Fundamental Questions About Passive Investing

An increasingly urgent question for investors in passive indices is: What weight should be assigned to China? To any investor who believes that the cap-weighted index is the default starting position for investment, China represents a fundamental problem—there's no real market weight.

To provide one example, MSCI followed a three-step process of changing China's weight in its equity indices by adjusting the "inclusion factor" applied to Chinese securities. The factor started from 5% in 2018 and ended at 20% in 2019. According to the current list of active MSCI index consultations, there are no immediate plans to make further changes.[99]

The resulting weight of China in the MSCI All-Country World Index (ACWI) currently stands at 3.6%, making it the fourth-largest country allocation in the index. Full inclusion would push China into second place, as it would imply a much larger weight, in the 15%–20% range, substantially more than the current second-place country, Japan, at 5.5%. The implications for the MSCI Emerging Markets (EM) Index would be even more dramatic: China is already the largest exposure in the index by far, with a 31% weight. Full inclusion would increase its dominance, likely pushing it to nearly half of the index.

FTSE Russell followed a similar process when adding China A-shares in four tranches from June 2019 to June 2020, with an inclusion factor of 25%. The weight of China A-shares in the FTSE All-World and FTSE Emerging Markets indices closely matches that in the MSCI ACWI and EM, with a 4.1% and 37.4% weight, respectively. FTSE has also confirmed that it has no immediate plans to increase the China A-shares weight.

This chapter is strategic, not focused on the minutiae of weighting decisions, but the China weighting raises foundational issues regarding the nature of passive investing. It reveals that passive investing doesn't obviate the need for active choices. This should be obvious, since all market indices require rules that are ultimately arbitrary—though they are usually at least transparent. This has been true ever since Charles Dow first calculated his average of prices to provide a journalistic narrative of market events. We think the choice of an inclusion factor for a market like China will always require a large dose of qualitative rather than quantitative input—stated requirements of capital controls and market access notwithstanding.

Any further advance of market reforms in China would prompt a question of whether to increase the representation of Chinese stocks in global indices. But what if this happens when more investors are wary of such a shift, given current US-Chinese tensions? And what if such a shift would clash with an expanded set of ESG-type considerations for some investors? These questions have already been raised by clients. There would be consultation on them, but one can easily imagine different asset owners reaching profoundly different answers.

Beyond the uncertain path of China's index weight, there's a question of what changing the weight would do to the nature of passive equity investing. Until now, passive equity indices have been dominated by open capitalist societies operating within a globalized US-led order. A larger weight for China would change this dynamic for the first time—a place passive investing has simply never gone before. What does passive investing mean when applied to an economy whose government plays a significant role in its planning and direction?

We're not making a value judgment about this issue—we're merely pointing out that it would cause a fundamental shift in the nature of passive investing, stretching the term "passive" to the point that a different term may be warranted.

On the active side of the ledger, by contrast, China offers a sizable opportunity. This is a different angle but germane to our overall subject. As strategists, we frankly struggle to make a directional case for exposure to Chinese equity beta, given the pronounced role of China's government in the economy. It's a political call not in the usual realm of quantified models. However, when we assess the availability of idiosyncratic alpha by active managers in different regions, China stands out (*Display 187, page 201*).[100]

As a final point on this topic, our deglobalization chapter notes that a lower regional correlation within asset classes will likely be a key diversification source, making up for some of the shortfall from traditional equity-bond diversification. For this reason, there's less incentive from a risk perspective for investors to buy a global passive asset class.

Argument Six: There's Really No Such Thing as Passive Investing Anyway

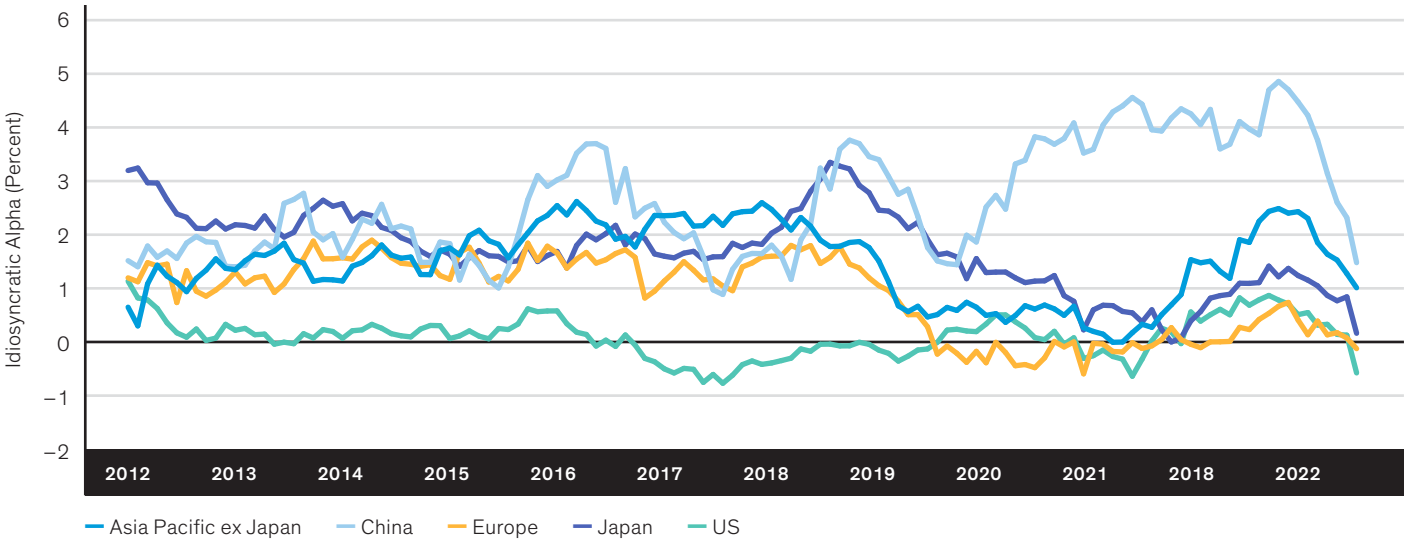
It's easy for people employed in the industry to be blinkered by labels—after all, they're a fixture of our world, with "active" and "passive" regularly used by asset allocators and those responsible for running investment funds. Passive might carry connotations that it's a default approach to investing—one that has obviated the need for decision-making. However, it's actually no such thing.

To adapt an expression of noted economist Milton Friedman, investing is always and everywhere an active phenomenon. There are two ways to come to the notion that there's no such thing as passive investing, and if they weren't apparent before, they should

99 "Index Consultations," MSCI, https://www.msci.com/index-consultations.
100 See *Alphalytics: China—the Nirvana for Active?*, Bernstein Research, October 28, 2020, for more details.

DISPLAY 187: CHINA STANDS OUT IN TERMS OF IDIOSYNCRATIC ALPHA OPPORTUNITY

Idiosyncratic Alpha by Region, Three-Year Trailing, USD, Gross of Fees



Historical analysis and current forecasts do not guarantee future results.

Through July 31, 2022 | **Source:** eVestment, FactSet, Morningstar, MSCI, S&P and AB

be now: changes in the macro backdrop and changes within the investment industry itself.

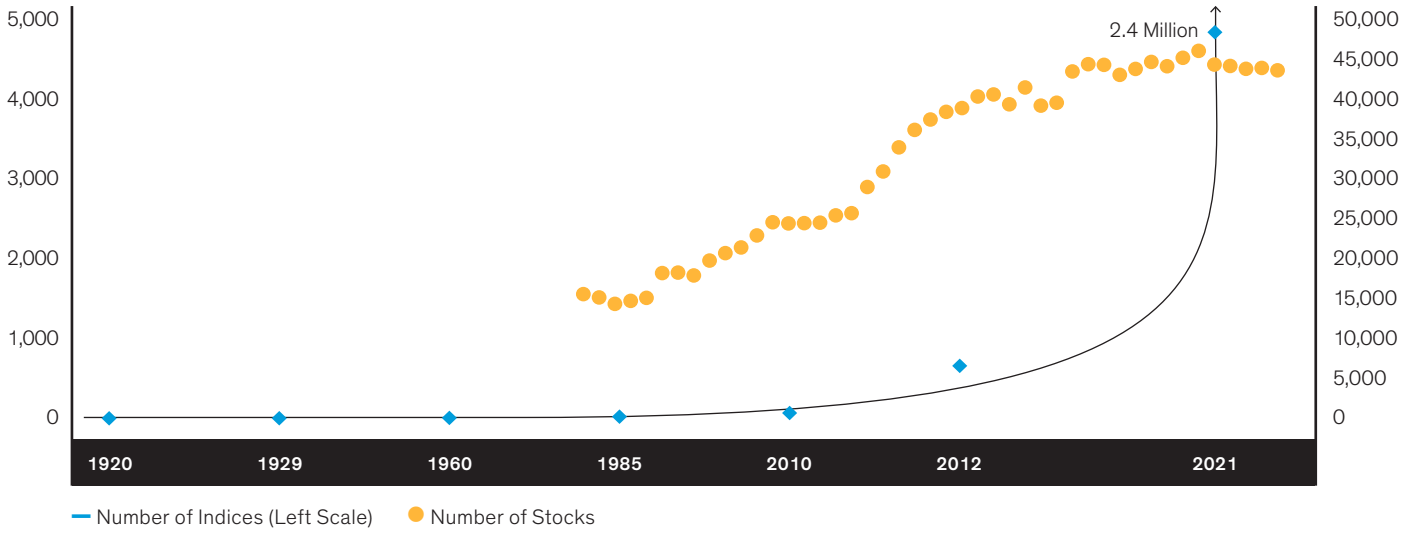
From a macro perspective, persistently higher-than-average inflation will make it much harder to achieve positive real returns. For many investors, the ultimate benchmark they should care about is meeting "liabilities" set in the real economy, such as meeting the cost of retirement. That means inflation should be the benchmark. Seen in this light, any deviation from that benchmark would be an active decision.

As for industry changes, we've previously highlighted the explosion in the number of indices over the past decade, producing a paradoxical situation where there are many more indices than stocks. Based on recent estimates from the Index Industry Association, there are now around 2.4 million equity indices and about 43,000 listed stocks globally (*Display 188, page 202*). That's roughly 55 times as many indices as stocks! Clearly, investors still must make an active decision even when choosing a "passive" index.

The investment industry has become benchmark-obsessed, but this section can also be thought of as a reminder to investors: don't lose sight of what benchmarks are actually for. They can be used to hold active managers to account, ensuring they're delivering on their mandates and worth their fees. We argue that the benchmark, in that sense, is now a multivariate entity that needs to include cheaply attainable factor exposures.

A benchmark can also be seen as the reference level that needs to be met, which, for many investors, should be set in the real economy rather than by a weighted selection of financial assets. These two approaches have been confounded in an era when financial assets have outperformed real assets; a reversal of this dynamic drives a need to revisit this distinction.

DISPLAY 188: THE NUMBER OF INDICES DWARFS THE NUMBER OF STOCKS



Historical analysis and current forecasts do not guarantee future results.

For the number of indices, the first five data points are based on Jeffrey Wurgler, "On the Economics Consequences of Index-Linked Investing," in *Challenges to Business in the Twenty-First Century: The Way Forward*, ed. W.T. Allen, R. Khurana, J. Lorsch and G. Rosenfeld (Cambridge, MA: American Academy of Arts and Sciences, 2011). The last two data points refer to the cumulative number of factor indices (4,274 per Scientific Beta) and ETFs (673 per Morningstar). We have fitted an exponential curve, although we have left the scale on the x axis nonlinear on purpose, as in fact the recent rate of index creation exceeds that fitted by an exponential curve. The overall figure of 2.4 million equity indices comes from the 5th annual survey by Index Industry Association.

Through August 8, 2022 | **Source:** Bernstein Research, Index Industry Association, Morningstar, Scientific Beta, World Bank and Jeffrey Wurgler

Conclusion

One of the things that keeps investing intellectually interesting is that the rules keep changing (one of the many reasons there will never be a "science" of investing). The narrative on active versus passive allocations, which has dominated flows and organizational structures in the industry for the last decade, needs to be updated for a new regime.

We once wrote a fictional note on the hunt for the ultimate index.[101] It's occasionally easier to express important points fictionally rather than within the staid confines of a financial-services publication. Passive investing has been an important force for change that has lowered the fees paid by investors—an advance that should be recognized as a social good. This process will continue, but the rules need to change.

A lower inflation-adjusted return on financial assets, a shift in portfolios to permanently hold more illiquid assets, the question of the role of China in investment portfolios and the evolution in the meaning of ESG investing all point to a need to revisit the active-passive distinction.

This position should not be mistaken for a defense of all active management—a position that was never tenable anyway. The hurdle for demonstrating added value in active management is idiosyncratic alpha, not just excess returns. That hurdle is necessarily harder to achieve, but idiosyncratic alpha makes it easier for asset owners to discern where active exposure benefits their allocations.

The active versus passive allocation question must be seen through cross-asset and cross-public-private-asset lenses—the only way to focus on the true goal of maximizing net-of-fee returns. The new investment regime we face requires a rethinking of the role of active management in portfolios.

101 *Fund Management Strategy: The Man Who Created the Last Index*, Bernstein Research, November 23, 2018.

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