Blending alpha-seeking, factor and indexing strategies: a new framework

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Blending alpha-seeking and index products has become more challenging as the number of indices has increased and factor strategies have emerged to replicate what was previously alpha. We present a framework that helps investors look past product labels, determine a better blend of return sources to meet their individual needs and maximise the efficiency of a portfolio's risk budget – a priority in a low-return environment.

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Authors

Jean Boivin

Global Head of Research, BlackRock Investment Institute

Lisa O'Connor

Investment Head, BlackRock Model Portfolio Solutions

Simona Paravani-Mellinghoff

Global Head of Investments, BlackRock Client Portfolio Solutions

Key contributors

Christopher Downing

BlackRock Model Portfolio Solutions

Paul Henderson

Portfolio Research, BlackRock Investment Institute

Stuart Jarvis

Portfolio Research, BlackRock Investment Institute

Michael Pensky

BlackRock Global Tactical Asset Allocation

Summary

- It's time for investors to stop thinking in 'active versus passive' terms. Every investment decision is an active one, including the use of indexing strategies and defining a portfolio's strategic asset allocation. The real question is how best to blend alpha-seeking, broad market and factor strategies. This decision should be taken at the initial design stage of portfolio construction and include views on factors and alpha, we believe.
- Active returns – those that can be earned beyond a portfolio benchmark – cut across asset class boundaries. As a result, a holistic portfolio perspective is needed. This implies there is no one-size-fits-all answer to key portfolio construction questions: The answer will depend on an investor's objectives and constraints.
- Investors need to assess what mix of return sources they are buying to properly identify alpha opportunities, see the broader portfolio impact and evaluate costs. A portion of active return is tied to static exposures to factors – macro and style factors – that can be acquired in a cost-efficient way with factor strategies. Alpha, in our view, is the return an investment manager can deliver beyond the factor exposures.
- We confirm the results from academic literature: The average alpha-seeking manager does not deliver alpha net of fees. We want to document what alpha looks like and focus on top-quartile managers because alpha generally is a zero-sum game: one manager's gain is another's loss.
- Our empirical work shows why it is important to have visibility into sources of return. We identify varying alpha opportunities across asset classes. We believe investors can be deceived by looking at active returns alone and need to uncover the factor exposures embedded in them. Investors can then decide whether to maintain the factor exposures or correct for them. Our work clarifies the returns being bought across the portfolio and maximises the efficiency of the risk budget – a priority in a low-return environment.
- What matters are returns net of costs. Product fees cut into returns and can reduce or, in some cases, eliminate the alpha an investor receives. Yet these fees vary widely and change over time. Governance costs – those required to find and manage alpha-seeking managers – are also a key consideration. Because costs are negotiable and client specific, our framework for blending alpha and index looks at returns and costs separately.
- To build better portfolios, investors should look at alpha opportunities, including tactical asset allocation, that go beyond specific asset classes, in our view. The blend of alpha-seeking managers with indexing and factor strategies can be constructed to deliver the desired mix of broad market and factor exposures – and as cost-effectively as possible.
- We illustrate how alpha and factor adjustments can improve the risk and return profile of a portfolio through a series of examples.

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Every decision is an active one

We believe it's time for investors to stop thinking in 'active versus passive' terms. Every investment decision is an active one, including the use of indexing strategies and defining a portfolio's strategic asset allocation. The decisions to blend different return sources should begin at the first stages of setting up an investment programme and include views on factors and alpha, we believe. The standard portfolio construction practice of making allocations within asset class silos can cause investors to stray unintentionally from their risk and return objectives. The solution: better understanding and blending all sources of returns.

The blending decision requires a more holistic perspective because the drivers of portfolio returns cut across asset classes. This calls for a new framework for strategic asset allocation (SAA). Our new framework encompasses investors' strategic allocation to broad market exposures – the beta SAA – and the allocation to active returns, or those returns beyond the beta SAA. The broad market exposures will usually explain the vast majority of an investor's total returns. We are looking at how best to blend indexing strategies with factor and alpha-seeking strategies. Our focus is on active returns – those earned beyond a benchmark.

We build on BlackRock's portfolio construction and factor research (Grinold and Kahn 2000, Ang 2014) and the accumulated insights from academic literature. Finding alpha – the returns a manager delivers beyond market and factor-driven returns – is an important step. A portion of returns is due to persistent tilts to factors – the broad drivers of returns within and across all asset classes. This includes some of what was considered alpha in the past: A vast array of indices now allow investors to more cheaply tilt to sectors, regions and factors. Our work helps identify alpha opportunities while also uncovering the factor exposures of alpha-seeking managers. The investor can then decide whether to keep the factor exposures or adjust them to maintain the SAA. This clarifies the returns being bought across the portfolio and allows the investor to maximise the efficiency of the risk budget, or the budget allocated to earning active returns – a bigger priority in a low-return environment.

Cost is an important part of this holistic portfolio view. Investors only care about risk-adjusted return net of cost. Yet product fees are not set in stone: They are negotiable, change over time and vary greatly across different investors, making it hard to generalise. For these reasons, our framework looks at performance gross of fees. Yet cost also goes beyond product fees. Governance costs include the time and effort to monitor alpha-seeking managers: the constant search, selection, performance assessment and reselection. These can even become opportunity costs for investors who spend a lot of time overseeing alpha-seeking decisions without earning much alpha in return. Because costs can change and are client specific, our framework for blending alpha and index looks at returns and cost separately. We do not consider manager fees in assessing alpha opportunities across asset classes, but apply an estimated management fee in the portfolio construction examples beginning on page 11. The examples show how fees can reduce or eliminate how much alpha an investor receives.

We show our framework below and flesh it out on page 9. It embodies a holistic approach to SAA decisions. We split the portfolio construction process into two phases: **design** and **implementation**. We believe the design phase should determine the mix of returns – index, factors, alpha and overall costs – that will set the target SAA and help achieve an investor's specific objectives. In the implementation phase, the portfolio is built from products and strategies to reflect the target SAA. An asset-class by asset-class approach to alpha cannot achieve this because the exposures to individual managers can push the net exposures away from the target mix of market and factor returns as well as lead to an inefficient use of the alpha risk budget. Incorporating alpha-seeking managers means an investor needs to understand how managers generate returns via factors and alpha.

A new framework

Portfolio construction blending alpha-seeking, factor and indexing strategies

Source: BlackRock Investment Institute, July 2018. Notes: This graphic depicts BlackRock's view of how to best blend alpha and indexing strategies in a portfolio. It is for illustrative purposes only.

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A factor-aware portfolio

The understanding of returns within the investment landscape has evolved over the years. Most of the returns in any SAA stem from swings in broad market indices. Factors are the latest evolution in the understanding of return drivers. Exposure to factors can offer returns that straddle both indexing and alpha-seeking strategies: Factors are the broad, persistent drivers of returns that can be captured in a systematic and cost-efficient manner through indexing or factor strategies. Factors clearly need to be integrated into any investment framework, we believe.

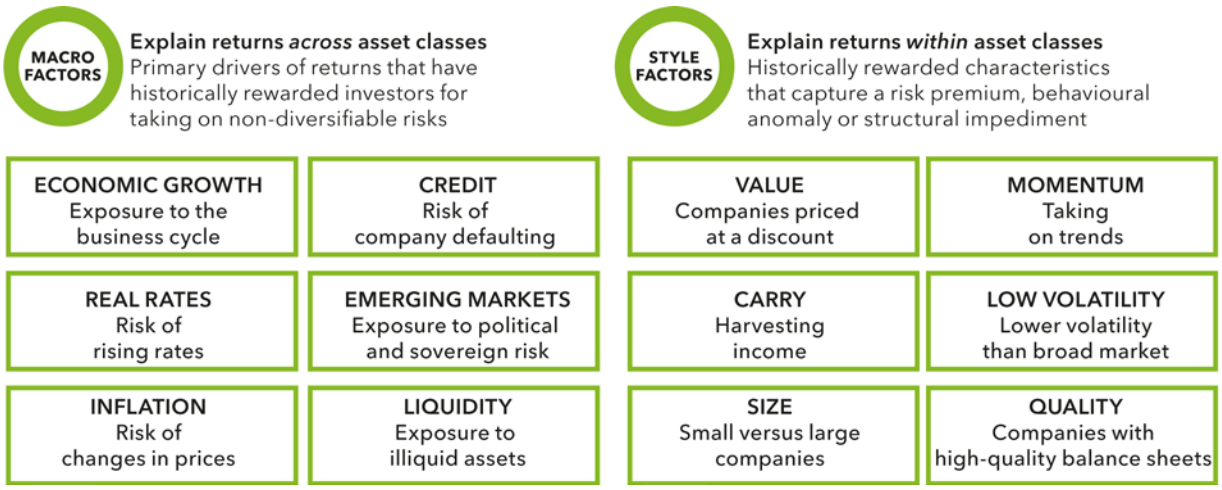
Factors are the latest chapter in how perceptions of alpha have progressed over the years. A few decades ago, alpha and total returns were seen as the same. But the insights of academia have gradually permeated investment practice. In the 1990s and 2000s, William Sharpe and others changed the view of alpha. The idea of alpha as the return earned beyond beta – the return of the broad market – gained prominence and widespread adoption. Beta was something different – and could be achieved through low-cost index products. This view evolved further in the 2000s and 2010s as factors started to be adopted and turned into investable strategies. Academics and investors have historically demonstrated that active returns over a benchmark can be achieved with persistent tilts to factors (see Ross 1976, Basu 1977, Rosenberg et al. 1985, Fama and French 1993). Historically, these factor returns were bundled within indexing and active strategies and could not be accessed as separate return components. Yet in the last decade, the exchange traded fund (ETF) world has seen a proliferation of new indices based on factors. Broad index and factor returns can often be accessed using relatively low-cost index products.

At BlackRock, we focus on two major factor groupings: macro and style. Macro factors offer returns *across* asset classes and describe movements of whole markets. We recognise six distinct macro factors: *economic growth, real rates, inflation, credit, emerging markets* and *liquidity*. Style factors offer returns *within* asset classes, capturing the relative movements of securities within markets. Style factors stem from a risk premium, structural impediment or behavioural bias. We also recognise six style factors: *value, momentum, carry, low volatility, quality* and *size*. See the *Understanding factors* box for short definitions of each. These factor returns are often driven by different phenomena and can be cyclical in nature: For example, the momentum style factor typically performs well during expansions while the quality style factor tends to do better during slowdowns and recessions.

The bulk of a portfolio's returns will stem from macro and style factors. That is why indexing solutions are so core to portfolio construction, in our view. Factor insights are a key component of our holistic portfolio view and framework. Portfolios that may look diversified from an asset class perspective may be less diversified than investors think: Risk is often concentrated in a few macro factors. Our bottom line: Investors need to know how factors are affecting their portfolio.

Understanding factors

BlackRock's definitions of macro and style factors



Source: BlackRock Investment Institute, July 2018. Notes: This graphic shows BlackRock's definitions of macro and style factors. It is for illustrative purposes only.

What is alpha?

Our framework is based on better understanding return sources. This requires an awareness of whether returns are coming from the broad market or factor exposures – and clarity on where alpha opportunities might exist. Seeking alpha ultimately comes down to security selection within an asset class, tactical asset allocation (TAA) across asset classes, and timing broad market and factor moves.

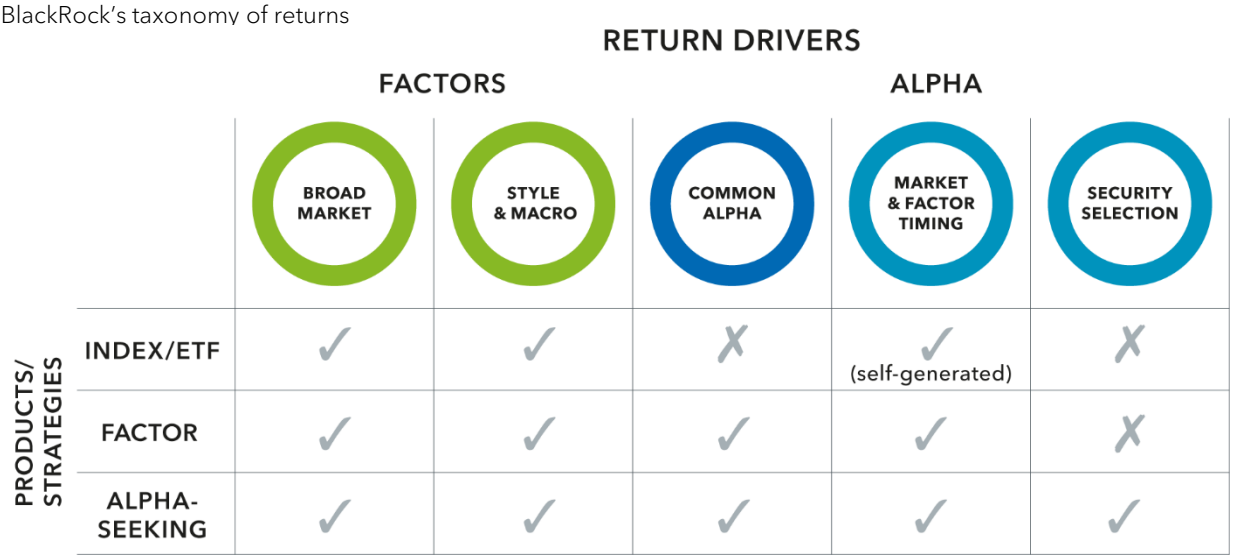
Alpha needs to be distinguished from active returns. Active returns are driven in part by static exposures to factors. Alpha, by our definition, is the return above static factor exposures that cannot be replicated through broad market or factor indices. Yet we also find some static factor exposures in active returns are not currently represented by indices. This underscores the role factor-driven returns play in some asset classes. Existing factor indices, for example, may not fully represent the style exposures managers can capture in fixed income.

We aim to gauge this factor-driven return by introducing the concept of common alpha – alpha that is common across managers and could reflect systematic strategies not yet captured by existing indices. Common alpha could also reflect factor-driven returns not fully captured through index definitions, or a manager's nuanced use of factor strategies. We treat common alpha as part of alpha for the blending of returns. See the dark blue circle in the *Classifying returns* graphic. Yet common alpha could be another chapter in alpha's evolution: It may morph into new factors and indices in the future. The active return that cannot be attributed to broad market, factor exposures or common alpha is what we call pure alpha. See the light blue circles in the graphic. Pure alpha is driven by investment skill and commands a higher price for that reason. If you can uncover pure alpha, it makes a meaningful difference to a portfolio's performance.

Our work shows average alpha returns are near zero and negative net of fees.[1] This is consistent with William Sharpe's well-known paper from 1991 that showed active managers, overall, achieve near zero active returns – so net returns are negative after accounting for costs. An investor needs to maintain top-performing managers over time, otherwise alpha will be elusive. Our work also suggests that individual managers rarely stay in the top quartile.[2] Since alpha performance is not persistent, investors need to have the ability to consistently pick top managers. We believe it is reasonable to assume that investors in alpha-seeking funds expect above-average performance and should focus on how best to blend such returns with others in the portfolio. For these reasons, our analysis of alpha is based on the returns to be expected from top-performing alpha-seeking managers.

Classifying returns

BlackRock's taxonomy of returns



Source: BlackRock Investment Institute, July 2018. Notes: This box shows different sources of return and whether they can be currently acquired with an indexing, factor or alpha-seeking strategy. 'Self-generated' refers to alpha investors can generate themselves using index/ETF products.

1 The methodology of our empirical work on manager returns is in the appendix. Here we refer to the gross returns of the median alpha-seeking manager.
2 Our sample was about 4,500 managers in the Morningstar database across 21 asset classes between 1997 and 2017. We looked at the probability of managers staying in the top and bottom quartiles in subsequent five-year periods if they were in that quartile in the previous period. The threshold for showing persistence is a probability above 25%. Persistence was only meaningfully above 25% in a few places based on our confidence bands. Our sample might include managers who generate alpha through both skill and luck. Ideally, we would only look at skilful managers. This underscores the high governance cost if an investor is to capture alpha.

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Separating factor returns

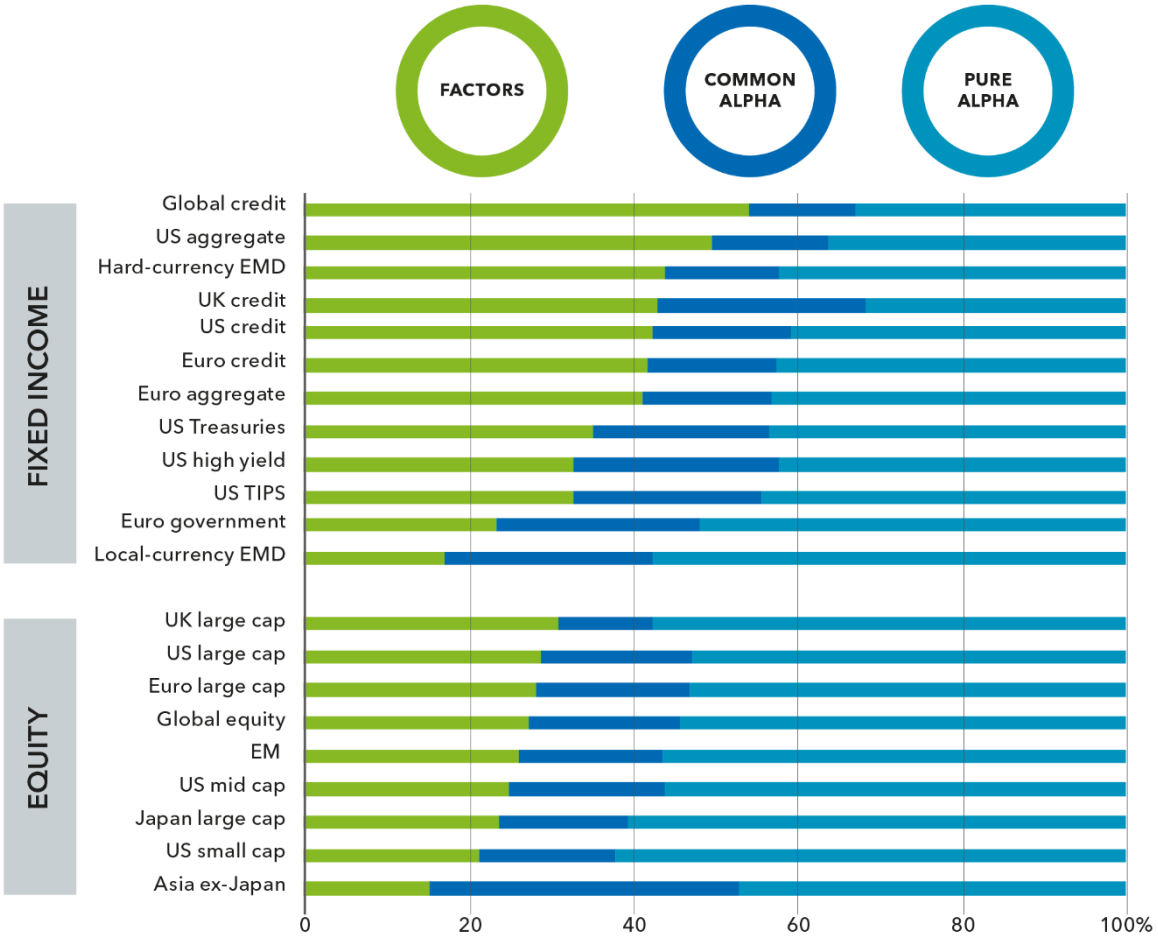
We now tease out factors from active returns. We separate active returns using the Morningstar database of historic returns for about 4,500 managers across 21 asset classes in public markets. We use MSCI indices for equity style factors and market benchmark indices as a proxy for macro factors across asset classes. Factors assessed are those that make up the typical SAA. We first separate the parts of active returns that are due to factors from alpha.[3] We then identify common and pure alpha. See the *Explaining active return variance* chart.

Alpha is a meaningful source of active return fluctuation across asset classes – positive or negative. Factor returns also play an important role in how alpha-seeking managers produce active returns.[4] For example, factors explain about half of active return fluctuations in the global credit and US aggregate fixed income indices but only a small portion of those in US inflation-indexed securities (TIPS). Asset classes are ranked by the active return variance explained by factors. See the green bars below. We also find that some factor tilts are persistent and can hold over multi-year periods – even decades.[5]

This breakdown of active returns and our empirical work on alpha are important pillars of our framework, allowing us to answer two key questions: how to allocate the risk budget to alpha – common and pure alpha combined – and how to account for the factor influence on the target SAA. This is just one piece of information needed to understand the genuine alpha opportunities within asset classes. We also need to look at risk-adjusted alpha and alpha itself with a view on fees. We will explore these other parts of the alpha story in the next pages.

Explaining active return variance

Annualised average active return variance of all managers across asset classes, 2012-2017



The figures shown relate to past performance. Past performance is not a reliable indicator of current or future results.

Sources: BlackRock Investment Institute, with data from Morningstar, MSCI, Bloomberg Barclays, JPMorgan, FTSE, S&P, IBoxx and Thomson Reuters, July 2018.

Notes: The chart breaks active return variance into factors, common alpha and alpha as explained above. All returns throughout are in US dollars.

3 The methodology and indices used for assessing style and macro factors are in the appendix.

4 Some sample sizes are small and prone to sampling error. Samples range from 33 for global credit to 821 for US large cap equities. We removed some asset classes with small samples. These include global high yield, US bank loans, UK gilts, UK small caps and both euro and UK inflation-linked bonds.

5 To look at whether factor tilts were persistent over time, we broke the full 20-year sample of data into five-year buckets. We then looked at the median factor exposure of top-quartile managers across asset classes, based on the style and macro factors assessed above. The median factor exposures showed persistent factor tilts, suggesting that such are not just tactical (short-term) in nature.

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Finding alpha

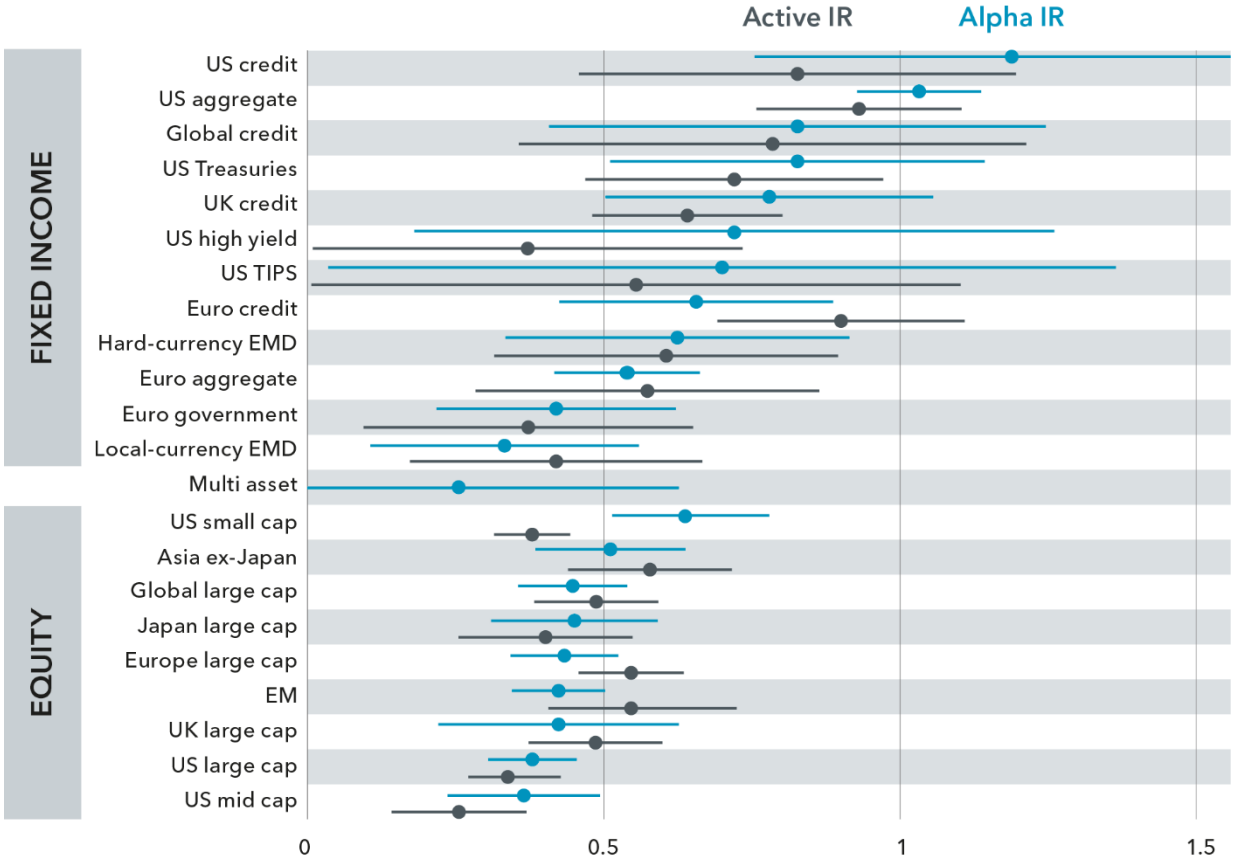
Alpha exists in every asset class and can provide diversification: Alpha is uncorrelated across asset classes, we find, and has little impact on overall portfolio risk. This means there is a case for choosing an alpha-seeking product everywhere – at least before considering fees. Yet risk-adjusted alpha varies widely across asset classes. Our work informs decisions on choosing alpha by looking at top-quartile managers – the natural place to describe alpha because there is no average alpha.[6] Private markets are excluded from this analysis.

The *Picking your spots* chart shows the information ratios (IRs) for alpha (blue) and active returns (dark grey) based on the performance of top-quartile managers over a 20-year period. The results are gross of fees: We are looking for true alpha skill, and we apply investor-specific fees in our examples. We find notable differences between the mostly higher alpha IRs and active IRs. Active returns give an incorrect picture and can lead an investor to spend the budget dedicated to alpha inappropriately and inefficiently. For example, the euro credit active IR looks appealing but could lead an investor to prefer more of that asset class than might otherwise be desired in the context of the alpha IR.

Other results should be intuitive. Small cap equity managers generate higher IRs than large cap managers, consistent with the view that small caps are less researched and offer more alpha opportunities.[7] Most fixed income active IRs are lower than our alpha IRs: Factors can play a big role in the active returns of fixed income managers, especially high yield. We have a few takeaways. First, decent alpha can be found in all asset classes and multi-asset strategies. Second, these alpha IRs help inform the target SAA and budget allocation to alpha. Again, we believe investors should not jump to conclusions about alpha based on our results alone. We still need more information to assess the relative attractiveness of alpha across asset classes – especially on fees and the risk capital constraints that can limit the extractable alpha from our IRs. The confidence bands help show where uncertainty in our estimates is greater.

Picking your spots

Annualised IRs of top-quartile managers, gross of fees, with confidence bands, 1997-2017



The figures shown relate to past performance. Past performance is not a reliable indicator of current or future results. Sources: BlackRock Investment Institute, with data from Morningstar, MSCI, Bloomberg Barclays, JPMorgan, FTSE, S&P, IBoxx and Thomson Reuters, July 2018. Notes: The estimate is based on active and alpha information ratios (IRs) over five-year periods between 1997 and 2017. Each five-year period begins in October of the start year and ends in September of the end year. The size of the confidence bands can reflect the sample size by asset class – smaller samples can lead to larger confidence bands. The volatility of the IR over the sample period can also lead to larger confidence bands. The IRs are gross of management fees. If fees were included, IRs to the investor would be lower.

6 Our methodology is in the appendix. We add multi-asset as an asset class in this data and describe how we did so in the appendix.
7 We present no evidence to support this commonly held view.

Alpha depends on risk-taking

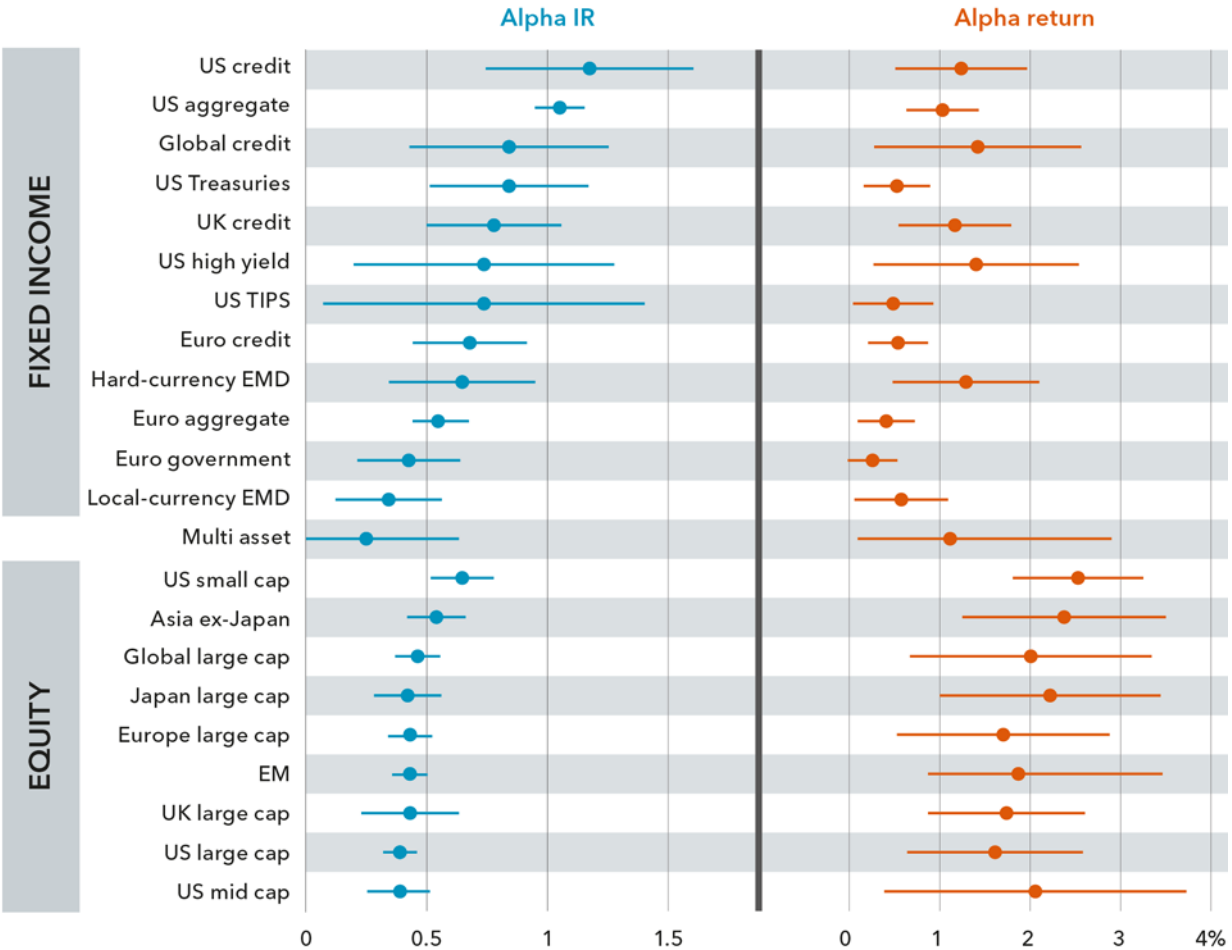
The information ratio is only part of the alpha picture: In practice, the alpha opportunities suggested by our alpha IRs might not be achievable – on top of accounting for costs. Most investors face limits on how much capital they can devote to managers to reach an alpha return target. Returns and manager fees are based on the share of capital invested alike, affecting the net alpha earned. Even with high alpha IRs, an investor may not be able to earn targeted alpha levels if alpha risk-taking is too low.

The *Risk and return* chart compares our alpha IRs (blue dots) and the alpha return levels (orange) for top-quartile managers across asset classes (again gross of fees). The relative rankings of different asset classes stand out. Fixed income alpha-seeking managers feature relatively high IRs but low levels of alpha – they are taking much less risk than equity managers (their asset classes are typically lower risk by nature) but earn higher returns per unit of risk.

So what? When allocating alpha, the alpha return *levels* also matter. An investor needing lots of alpha might allocate to a slightly less efficient market. For example, top-quartile managers in US Treasuries deliver efficient alpha – just not much of it. An investor with a higher alpha target might need to move to asset classes where manager alpha is larger but less efficient, such as emerging market (EM) debt. Of course, fees in some of these asset classes will be higher than others: EM equities usually cost more than large cap US equities. This is where assumptions on fees and governance costs come in. Our empirical work on alpha can help inform where an investor should look for expected alpha returns – these show what skilled managers might be able to deliver by asset class. This is alpha in action within our framework: first in the design phase when assumed governance costs are built into the target SAA, then in the implementation phase when individual managers and actual fees are incorporated.

Risk and return

Annualised gross alpha IRs and returns of top-quartile managers with confidence bands, 1997-2017



The figures shown relate to past performance. Past performance is not a reliable indicator of current or future results. Sources: BlackRock Investment Institute, with data from Morningstar, MSCI, Bloomberg Barclays, JPMorgan, FTSE, S&P, IBoxx and Thomson Reuters, July 2018. Note: The alpha IRs and returns are derived using the same methodology as on the previous page and presented in the appendix. The alpha IRs and returns are gross of management fees. If fees were included, alpha IRs and returns to the investor would be lower.

Blending alpha, factors and index

Our empirical work can be applied in a variety of contexts, no matter the investor's portfolio construction preference. A few key factors will shape the alpha-seeking decision. We present examples to show how our framework helps make this happen:

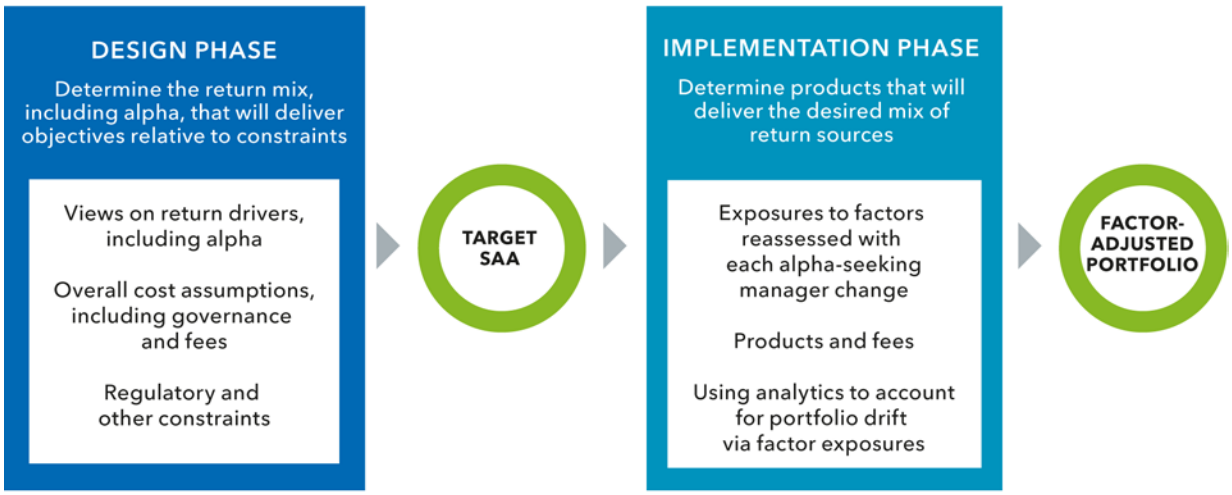
- **Allocating the alpha risk budget:** Investors often determine their broad market allocation in a first step. The second step seeks to generate active returns while sticking to the overall beta structure. The active returns will come from a combination of factors and alpha. How much capital should be allocated to different alpha sources? Our alpha estimates can help investors allocate efficiently by highlighting what alpha and IR the different alpha sources might deliver.
- **Achieving the desired mix of returns:** Once the alpha budget is allocated to alpha-seeking managers, the additional returns from manager static tilts could disturb the targeted mix of macro and style factors. Our framework makes clear that the implementation phase is more than just a decision to allocate to managers. The overall blend of alpha-seeking, factor and indexing strategies should be constructed to respect the target SAA. A holistic perspective is needed.
- **Maximising the governance budget:** The process of searching for alpha-seeking managers, assessing their performance and reshuffling these exposures takes time and money. Many investors have limited resources for these activities. That is why investor beliefs matter – whether they have the research and resources to oversee alpha-seeking managers and consistently achieve alpha. Investors with a limited governance budget may opt to oversee just a few alpha-seeking managers – or even to keep the entire portfolio in index products.

The design phase of our framework demands managers who provide alpha, while the implementation phase accounts for any factor exposures managers bring along. Alpha-seeking strategies with higher expected alpha, net of fees, should be part of a portfolio regardless of the market and factor exposures within their active returns. Investors should not simply filter out managers with high factor exposures.

Our framework is closest in spirit to Waring et al. (2000). As we have shown, our holistic portfolio approach focuses on the major asset classes in blending alpha-seeking, factor and indexing strategies. We show our framework again below and now demonstrate its application, starting with a fixed income portfolio.

BlackRock's portfolio construction framework

Portfolio construction blending alpha-seeking, factor and indexing strategies



Source: BlackRock Investment Institute, July 2018. Notes: This graphic depicts BlackRock's view of how to best blend alpha and indexing strategies in a portfolio. It is for illustrative purposes only.

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Example 1: How fixed income managers run static factor tilts

Consider a portfolio is benchmarked to the Bloomberg Barclays US Aggregate Index. About half of the variance of a typical alpha-seeking manager's active return relative to the US aggregate benchmark comes from macro factors, as we showed on page 6. A representative manager benchmarked to the US aggregate index generally has an overweight to US credit and inflation-linked bonds, as well as an underweight to US Treasuries. See the impact in the *Factoring in factor exposures* chart. The aim of an alpha budget is to generate additional returns that cannot be easily generated elsewhere, not to add more credit risk to the portfolio. An allocation to such a manager adds not just alpha but also tilts the target SAA towards credit and away from Treasuries.

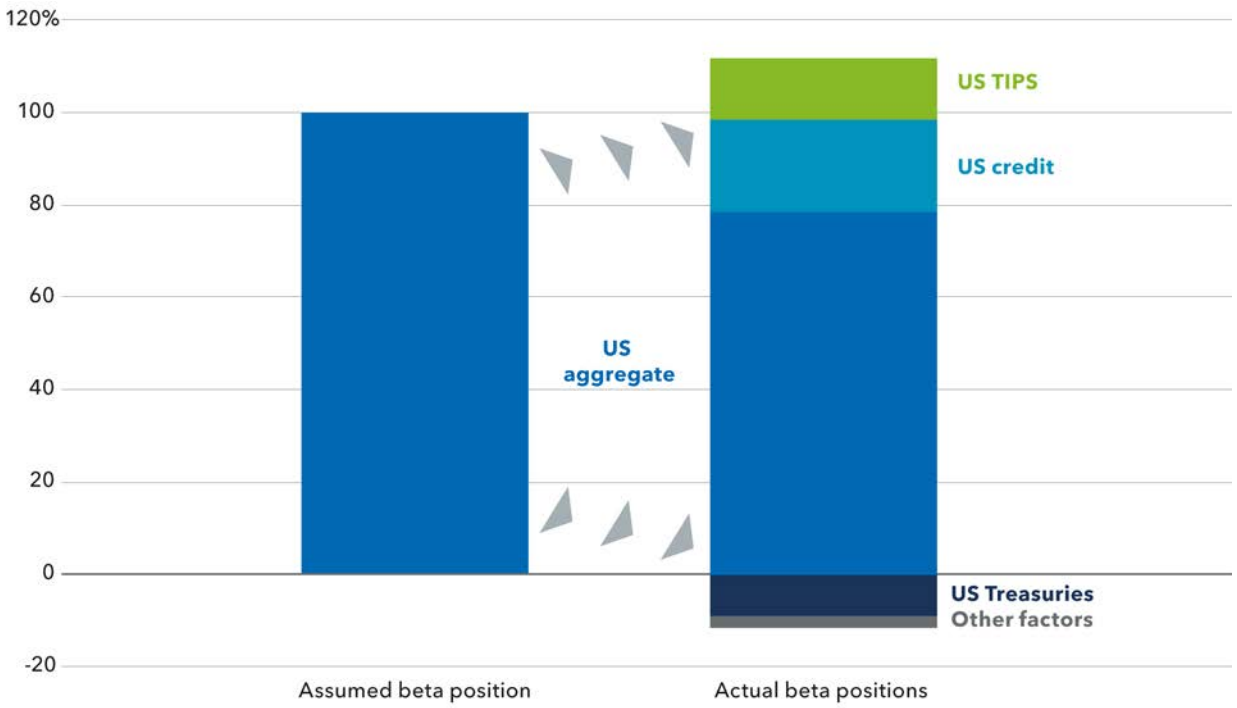
The investor can keep these tilts in the portfolio or correct for them – in any case, the investor is aware of the factor tilts. The good news? Any unintended drift in the portfolio is easy to correct. This is achieved in the implementation phase of our framework. We can reduce allocations to credit and increase those to Treasuries in the rest of the portfolio. Yet this reallocation cannot happen in an asset class silo – it needs to be done holistically at the portfolio level.

This also has implications for how we select managers. We need to look at whether managers are delivering a high risk-adjusted alpha (alpha IR), not a high risk-adjusted active return (factors and alpha IR). Even though factors explain about half the variance of active returns delivered by US aggregate bond managers, the remainder – the alpha – has one of the highest IRs across asset classes. This underscores why an investor should not necessarily filter out managers with high factor exposures.

Is this just about fixed income and macro factors? No. The design phase of our framework might have an allocation to style factors, and we could implement this using an index or factor strategy. If a particular alpha-seeking equity manager brings static style factor exposures along with high alpha – say long small size or short momentum – we can account for these factors. Trimming or adding indexing strategies can keep the portfolio on track with the target beta SAA.

Factoring in factor exposures

How a typical US aggregate fixed income manager uses factor tilts, 2012-2017



The figures shown relate to past performance. Past performance is not a reliable indicator of current or future results. Sources: BlackRock Investment Institute, with data from Morningstar, Bloomberg Barclays, JPMorgan and Thomson Reuters, July 2018. Notes: The chart shows the impact of adding a hypothetical alpha-seeking manager to a base SAA benchmarked to the Barclays Bloomberg US Aggregate Index. We use the factor exposures of an anonymous, representative manager whose factor exposures are near the median of the entire US aggregate benchmarked sample to derive the impact.
Other factors represent small allocations to other macro factors.

Example 2: Maximising the alpha decision on a multi-asset portfolio

We consider a large institutional investor overseeing a multi-asset portfolio. The traditional approach is to treat strategic and tactical asset allocation sequentially. The SAA is set at the portfolio level, with alpha decisions made within asset class silos. Yet this immediately becomes problematic for two reasons: 1) the allocation of the alpha risk budget will likely be inefficient, and 2) extra active risk is likely taken in the portfolio because the market and factor exposures are not being properly managed. Our framework's holistic approach to portfolio construction avoids these traps and results in a more efficient use of the alpha risk budget. Of course, alpha can be costly. Costs affect the risk/return trade-off. An investor needs to find and reshuffle top-performing managers who deliver alpha: This is the governance cost that goes beyond product fees. Then there are the management fees. If the cost is high, indexing strategies should make up a greater share of the portfolio.

Large institutional investors often have less need to worry about the marginal cost of researching a new alpha-seeking manager. In this example, we assume a small, incremental governance cost – a research team is already in place – and fees for index and alpha-seeking products that are typical for very large investors. These fees can be well below those faced by other investors with less negotiating capacity. On page 13 we discuss what this means for constrained investors. This investor starts with a beta SAA in the bar on the left in the chart below. This allocation is the result of optimising risk against return using the long-term returns in BlackRock's *Capital market assumptions* from a US-dollar perspective – now net of the index fees this investor will likely pay. This results in an expected return of 4.8% annualised net of fees.

Traditional silo-based approach: The 4.8% annualised return falls short of the investor's 5.3% target, so an additional 0.5% is sought through alpha-seeking strategies. The traditional approach would rely on making the alpha decision in asset class silos using expected IRs and views on the relative efficiency of each market. The result? A decision to seek alpha in developed market equities outside the US, US credit, hard currency EM debt and US high yield. See the right hand bars below. Management fees go up only modestly because this investor has pricing power. See the assumed fees below. The expected active return boost is achieved, but with active risk being triple the expected return. This unappealing outcome happens for two reasons: a 1.4% alpha risk is being taken to generate the alpha return while adding 0.5% of extra beta risk from the managers' factor exposures.[8] The IR for this portfolio is a meagre 0.3. How can this be fixed? This is where our framework comes in.

A traditional approach to the alpha risk budget

How alpha-seeking managers' factor exposures affect a multi-asset portfolio

4.8%	Beta portfolio return	4.8%
7.0%	Beta portfolio risk	6.6%
–	Alpha return	0.6%
–	Alpha risk	**1.4%**
–	Unwanted factor return	-0.1%
–	Unwanted factor risk	**0.5%**
–	Active return	0.5%
–	Active risk	1.5%
–	Information ratio	**0.3**
4.8%	Total portfolio return	5.3%
7.0%	Total portfolio risk	6.7%

The figures shown relate to past performance. Past performance is not a reliable indicator of current or future results. Sources: BlackRock Investment Institute, with data from Morningstar, Mercer, MSCI, Bloomberg Barclays, JPMorgan and Thomson Reuters, July 2018. Notes: The results are based on our previous analysis on factor returns and IRs on pages 6 to 8. The returns have been reduced to reflect fees that large investors typically pay. Fee data is from the Mercer Global Asset Manager Fee Survey 2017. Large investor fees used here and on pages 12 and 13 are based on investments of $500 million in the Mercer survey. The assumed fees range from 4-6 basis points for fixed income and DM equities to 75 basis points for EM equities. Different fees will have different results on performance.

8 Here we use anonymous, representative managers across the alpha asset classes from our Morningstar sample.

Design phase – allocating the alpha return sources: The design phase starts with views on alpha risk and returns based on our alpha IRs. See page 8. Assumptions about the fees this investor expects to pay are also needed – in this case, the lower fees typically paid by very large institutions. To achieve this 0.5% active return target, the alpha risk budget can be spent across several alpha sources. The resulting holistic alpha-seeking mix is in the outer ring of the left hand *Making the adjustments* chart. The risk budget is spread across all asset classes and is maximised to the alpha IR, pulling it up to 1.0 from 0.3 in the silo-based allocation. Once this is done, our framework's target SAA is formed – incorporating the beta mix from the previous page with an alpha allocation.

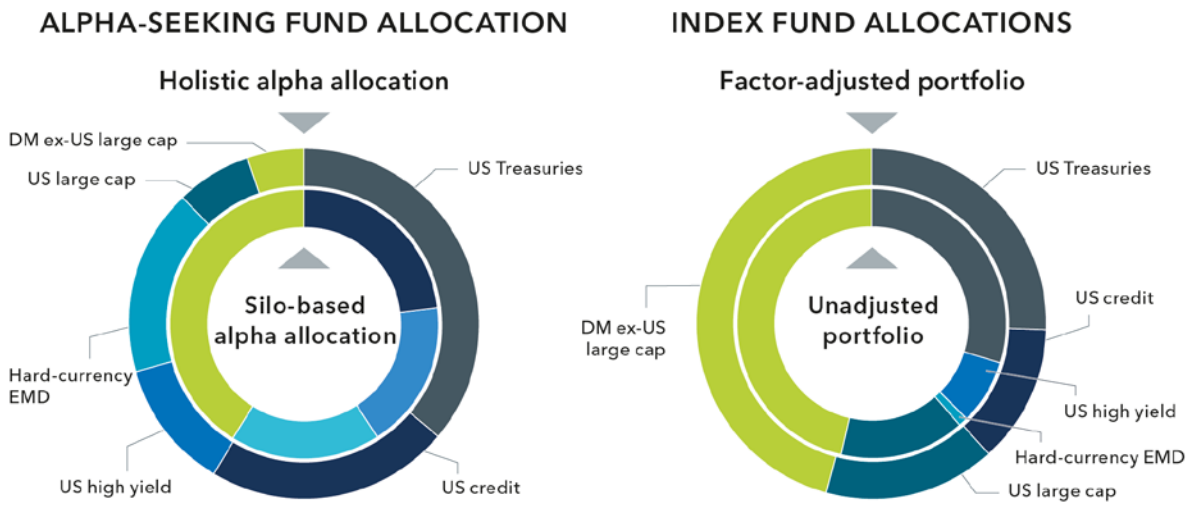
There are other ways to allocate the alpha risk budget to achieve similar results, such as splitting it equally among alpha sources. The alpha and beta risk budgets could be allocated together in a single step. A multi-asset product could have been included but was not to more easily compare our approach with the traditional one. Importantly, doing so would have led to a further improvement in the active IR, based on our data.

Implementation phase – adding managers: Now the investor selects managers to deliver these alpha returns across asset classes. If there were no extra factor exposures, the investor would be done: The difference between the target beta and alpha allocations in each asset class would match the allocation achieved in the design phase. Yet this is not the case. Our analysis helps discover the unwanted duplication of factor exposures. As the table shows, the unadjusted portfolio drags down the active IR to 0.8 from 1.0.

Implementation phase – adjusting allocations for factor exposures: Rather than allocating to managers and correcting for factor exposures after the fact, we can run our analysis on individual managers and correct with index allocations at the same time as allocating to the alpha-seeking manager. This makes for a much more efficient portfolio. See the chart at right below. To neutralise the factor exposures and reduce unwanted risk to zero, Treasuries are reduced, US large cap equities are increased slightly and US high yield and hard currency EM debt are converted into a new allocation to US credit. That lifts the IR back up to our target of 1.0. Our framework has been fully implemented: The investor is now maximising the alpha risk budget to achieve a factor-adjusted portfolio that realises the target SAA.

Making the adjustments

Holistically allocating alpha and factor-adjusting a multi-asset portfolio



	Silo-based alpha allocation	Holistic alpha allocation	Unadjusted portfolio	Factor-adjusted portfolio
Unwanted factor risk	0.5%	–	0.3%	0.0%
Active return	0.5%	0.5%	0.5%	0.5%
Active risk	1.5%	0.5%	0.6%	0.5%
Active information ratio	0.3	1.0	0.8	1.0

The figures shown relate to past performance. Past performance is not a reliable indicator of current or future results. Sources: BlackRock Investment Institute, with data from Morningstar, Mercer, MSCI, Bloomberg Barclays, JPMorgan, FTSE, S&P and Thomson Reuters, July 2018. Notes: The results are based on our previous analysis on factor returns and IRs on pages 6 to 8. The returns have been reduced to reflect fees that large investors typically pay for index and alpha-seeking strategies. Fee data is from the 2017 Mercer Global Asset Manager Fee Survey. Different fees will have different results on performance.

The chart below shows the final allocations to alpha-seeking and index funds. We also see the notable improvements made relative to allocations determined by asset class silos. The investor achieves a much more efficient active return by allocating holistically – first to a broad range of alpha-seeking strategies, and then by offsetting factors that are included within managers' active returns that spill across asset class boundaries. We emphasise the following:

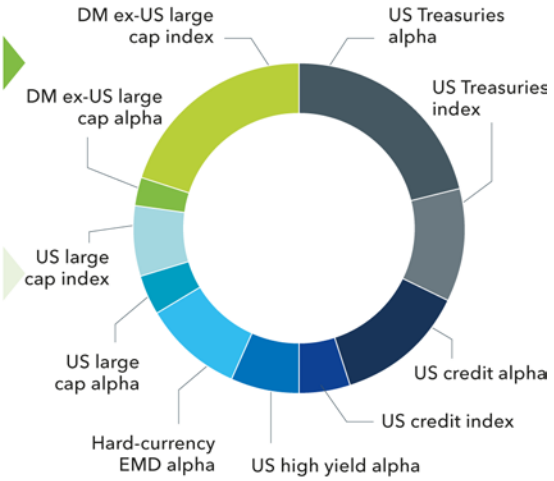
Alpha-seeking decisions are investor-specific: It depends on how much extra return they need and where they have target beta allocations: Reducing unintended beta exposures is difficult if there is no target index allocation in the first place.[9] The breadth of the investment universe will also help determine the extent to which multi-asset and/or TAA can play a role. There is no one-size-fits-all answer.

A portfolio-wide asset perspective reaps rewards: Selecting alpha-seeking managers is hard and will soak up material governance resources. Yet managing the overall portfolio needs to be front and centre in every decision. We know the beta allocation determines the bulk of total returns, making the beta SAA so crucial. Less well appreciated: The active risk budget interacts with the beta SAA and also should be managed at the portfolio level.

The fully implemented portfolio

A fully implemented factor-adjusted portfolio incorporating alpha-seeking managers

	DESIGN		IMPLEMENTATION	
	Silo-based alpha allocation	Holistic alpha allocation	Unadjusted portfolio	Factor-adjusted portfolio
Total portfolio return	5.3%	5.4%	5.4%	5.4%
Total portfolio risk	6.7%	7.0%	7.1%	7.0%
Alpha return	0.6%	0.5%	0.5%	0.5%
Alpha risk	1.4%	0.5%	0.5%	0.5%
Unwanted factor return	-0.1%	–	0.0%	0.0%
Unwanted factor risk	0.5%	–	0.3%	0.0%
Active return	0.5%	0.5%	0.5%	0.5%
Active risk	1.5%	0.5%	0.6%	0.5%
Active IR	0.3	1.0	0.8	1.0
Total portfolio changes				12%



The figures shown relate to past performance. Past performance is not a reliable indicator of current or future results. Sources: BlackRock Investment Institute, with data from Morningstar, Mercer, MSCI, Bloomberg Barclays, JPMorgan, FTSE, S&P and Thomson Reuters, July 2018. Notes: The results are based on our previous analysis on factor returns and IRs on pages 6 to 8, and include the impact of fees for large investors from the 2017 Mercer Global Asset Manager Fee Survey.

What about investors with limited governance resources? They will likely not have the same investment infrastructure and will have a harder time picking a top manager while facing higher management costs. That makes alpha net of cost harder to come by unless they seek third-party solutions. These constrained investors can still achieve an improved trade-off. Yet they face limitations – paying higher fees for alpha means fewer alpha options.[10] In this case, we assume the investor can only search for alpha in DM ex-US equities and US credit.

Capturing alpha in an efficient way is harder: Costs are higher, active returns are limited and the tracking error cannot be reduced to the same extent as for the large investor. The IR drops from a meagre 0.3 at the design phase to just 0.1, using the same assumptions. Even adjusting for factors, the IR only recovers to 0.2. This highlights the drawbacks that are important for informing the view on alpha at the design stage and considering whether index products should make up most – if not all – of the portfolio.

9 This is possible but requires a negative offsetting exposure through the use of derivatives, such as total return swaps. Such techniques allow investors to separately manage their alpha and beta allocations – known as portable alpha. These can expand the alpha universe but require careful risk and liquidity management.

10 The returns have been reduced to reflect fees that both a large and small investor may typically be able to pay for index and alpha-seeking strategies. Fee data are from the 2017 Mercer Global Asset Manager Fee Survey. Constrained investor fees are based on investments of $25 million and range from 8-10 basis points for indexing strategies to 60-75 basis points for alpha-seeking managers in DM equities.

Conclusion

We have laid out a new framework for how to think about implementing and maintaining a strategic asset allocation. We have found that taking a holistic portfolio view means looking beyond specific asset classes when making allocation decisions. We believe investors should look for alpha among top-quartile managers – alpha that is factor-adjusted – and not simply pay for top-quartile active returns. The decision to pick an alpha-seeking manager should not be based on their factor exposures: Managers who generate alpha should be included in the factor-adjusted portfolio and the factor exposures neutralised to prevent drift in the SAA. We recognise that returns from private markets also play an important role in portfolio construction and plan to follow up with work on this topic in the near future.

Appendix and references

Methodology

Pages 5-6: We first use Lasso regression (Tibshirani 1996) to calculate how much of the active return of an individual manager over a given five-year period can be explained by the exposures to macro and style factors. Lasso regression helps identify the most important factors underlying active returns. Any active return that cannot be explained by these factors is then defined as alpha. We next perform principal component analysis on the alpha to define the part which is systematic – common alpha – for which we take the first three principal components. From these data we can calculate the variance of the separate parts as well as levels of alpha, alpha volatility and the information ratio (volatility-adjusted alpha). We chose a five-year snapshot of the average result across all managers in our sample to get a medium-term view of this breakdown, and results would differ across different snapshots.

Page 7: We use quantile regression – a method for slicing the entire distribution of managers into quartiles so we focus on the IRs of the top-performing managers. (Koenker et al. 1978). The quantile regression gives us 95% confidence intervals that we use to assess the statistical significance of the results. We use a gamma distribution as a means of standardising and combining the estimates from each five-year bucket. For multi-asset funds, we use the Morningstar category US Fund Tactical Allocation. Multi-asset is not an asset class, and our sample may include funds that aim to deliver a range of outcomes. Without a common benchmark for these funds, we use total return rather than active return to derive alpha. Due to this potential range of fund objectives, it is hard to use a single IR or alpha expectation for this idiosyncratic class of funds. Our examples further discuss the role of multi-asset products.

Broad market indices

Benchmark indices used: **Global credit =** Bloomberg Barclays Global Aggregate Corporate Index; **US TIPS** = Bloomberg Barclays US Government Inflation-Linked Index; **UK credit** = IBoxx sterling non-gilts index; **US credit** = Bloomberg Barclays US Corporate Total Return Index; **US broad fixed income** = Bloomberg Barclays US Aggregate Total Return Index; **Global high yield** = Bloomberg Barclays Global High Yield Total Return Index; **US Treasuries** = Bloomberg Barclays US Treasury Total Return Index; **Euro government** = Bloomberg Barclays EU Govt All Bonds Total Return Index; **Euro broad fixed income** = Bloomberg Barclays Euro Aggregate Index; **US high yield** = Bloomberg Barclays US Corporate High Yield Total Return Index; **EM debt, hard currency** = J.P. Morgan EMBI Global Diversified Total Return Index; **EM debt, local** = J.P. Morgan GBI-EM Global Diversified Total Return Index; **Euro credit** = Bloomberg Barclays euro aggregate credit index; **Global equity** = MSCI ACWI; **Asia ex-Japan** = MSCI AC Asia ex-Japan Index; **EM equity =** MSCI Emerging Markets Index; **Europe equity** = MSCI Europe Index; **Japan equity** = MSCI Japan Index; **Cash indices** = one-month LIBOR across major currencies: EUR, JPY, GBP and USD.

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MSCI style indices

Global large cap value = MSCI ACWI Large Cap Value Index; **Global large cap growth** = MSCI ACWI Large Cap Growth Index; **Global mid cap value** = MSCI ACWI Mid Cap Value Index; **Global mid cap growth** = MSCI ACWI Mid Cap Growth Index; **Global small cap value** = MSCI ACWI Small Cap Value Index; **Global small cap growth** = MSCI ACWI Small Cap Growth Index; **Global momentum** = MSCI ACWI Momentum Index; **Global min vol** = MSCI ACWI Minimum Volatility Index; **Global quality** = MSCI ACWI Quality Index; **US large cap value** = MSCI USA Large Cap Value; **US large cap growth** = MSCI USA Large Cap Growth; **US mid cap value** = MSCI USA Mid Cap Value; **US mid cap growth** = MSCI USA Mid Cap Growth; **US small cap value =** MSCI USA Small Cap Value; **US small cap growth** = MSCI USA Small Cap Growth; **US momentum** = MSCI USA Momentum Index; **US min vol** = MSCI USA Minimum Volatility (USD) Index; **US quality** = MSCI USA Quality; **EM value** = MSCI Emerging Markets Value Index; **EM growth** = MSCI Emerging Markets Growth Index; **EM momentum** = MSCI Emerging Markets Momentum Index; **EM min vol** = MSCI Emerging Markets Min Volatility (USD) Index; **EM quality** = MSCI Emerging Markets Quality Index; **EM mid cap** = MSCI Emerging Markets Mid Cap Index; **EM small cap** = MSCI Emerging Markets Small Cap Index; **Europe large cap value**= MSCI Europe Large Cap Value Index; **Europe large cap growth** = MSCI Europe Large Cap Growth Index; **Europe momentum** = MSCI Europe Momentum Index; **Europe min vol** = MSCI Europe Minimum Volatility (EUR) Index; **Europe quality** = MSCI Europe Quality Index; **Japan value** = MSCI Japan Value Index; **Japan growth =** MSCI Japan Growth Index; **Japan mid cap =** MSCI Japan Mid Cap Index; **Japan small cap** = MSCI Japan Small Cap Index; **Japan momentum** = MSCI Japan Momentum Index; **Japan min vol** = MSCI Japan Minimum Volatility (JPY) Index; **Japan quality** = MSCI Japan Quality Index; **Asia ex-Japan value =** MSCI AC Asia ex Japan Value/Growth Index; **Asia ex-Japan growth =** MSCI AC Asia ex Japan Growth Index; **Asia ex-Japan min vol** = MSCI AC Asia ex Japan Minimum Volatility (USD) Index; **Asia ex-Japan quality** = MSCI AC Asia Ex Japan Quality Index; **MSCI Asia ex-Japan mid cap** = MSCI AC Asia ex Japan Mid Cap Index; **MSCI Asia ex-Japan small cap =** MSCI AC Asia ex Japan Small Cap Index.

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