

# Passive investing is a choice, not a default option



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*Many asset allocators regard passive management as a safe harbor where exposure to market sectors can be obtained at low cost and minimal risk. This stance presumes that mimicking public benchmarks ensures that capital is allocated efficiently. If true, this would make the choice of active management harder to justify. However, a more balanced assessment of the benefits and risk of passive investing reveals obvious shortcomings that leave ample room for the thoughtful use of active management.*

## Key takeaways:

- Active and passive strategies both have roles to play in asset allocations. As we explore in this paper, the use of these styles should be tailored to the specific characteristics of each market segment.
- Strategic asset allocation models rely on public market benchmarks as convenient proxies for market sectors, but this should not imply that investors need to favor passive strategies in their real-world portfolios.
- Public benchmarks vary with respect to their suitability as investment models, but among the potential shortcomings facing passive strategies are arbitrary market divisions, incomplete exposure to asset classes, and forced exposure to market inefficiencies.
- Passive investing trades a small amount of after-fee underperformance for a low tracking error to the benchmark—a strategy that is best suited to situations in which the benchmark itself is thoughtfully constructed, readily investable, and aligned with an investor’s broader objectives.
- Active management can avoid the inefficiencies associated with many traditional benchmarks while allowing skilled managers to add excess return, offsetting the impact of higher management fees.
- Identifying skilled active managers requires a disciplined framework for assessing performance across a wide range of metrics; this analysis increases the probability of capturing positive excess returns over an appropriate time horizon.

Passive investing is often seen as safer and less costly than active management. However, that perspective is at best incomplete and perhaps mistaken: passive benchmarks are no strangers to volatility, and the true cost of a strategy involves not just fees but also performance. In the following pages we examine the relative advantages and disadvantages of active and passive investing in public markets and how thoughtful investors can approach this important question.

A first principle in any active-passive discussion: It does not make sense to default to a passive strategy without first asking some questions about the benchmark. How well does it represent the desired opportunity set? To what extent does it embed structural inefficiencies that can diminish performance? Also, are skilled active managers available who have demonstrated the ability to generate meaningful after-fee performance over relevant time horizons? Even in relatively efficient markets, there is typically a subset of active managers who exhibit compelling track records.

It is certainly possible to arrive at a well-founded decision to use passive strategies, but to presume that they are superior based only on low price and low tracking error may be a costly mistake.

### Section one: Active and passive in a strategic asset allocation

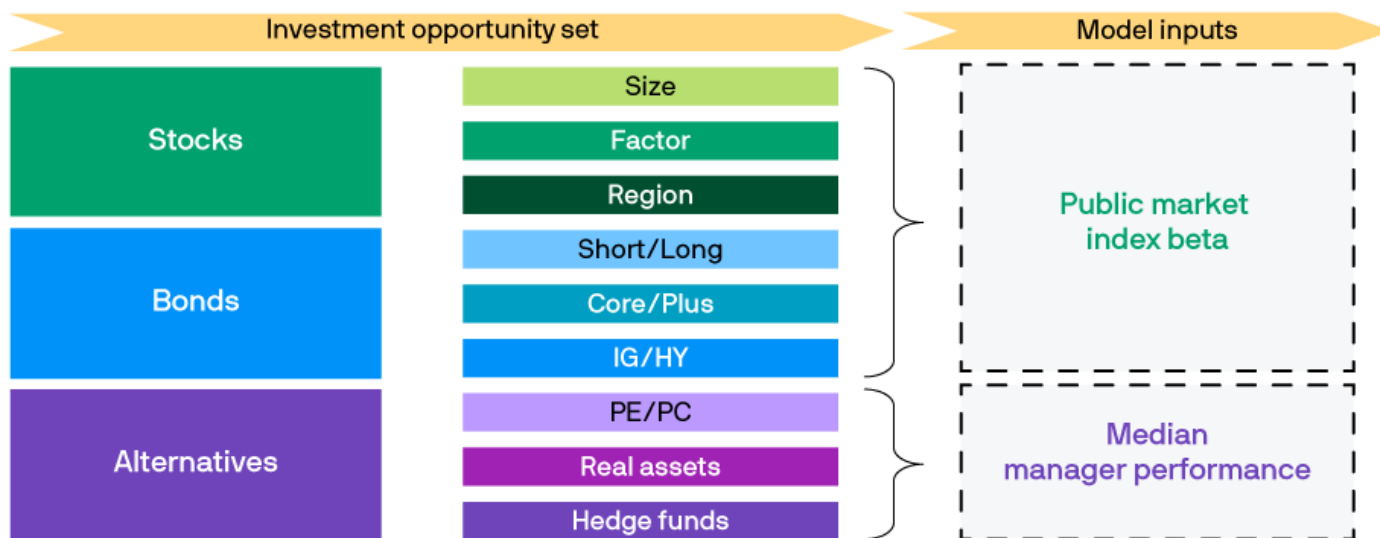
The strategic asset allocation process relies on models whose inputs are the expected returns, volatilities, and correlations for each asset class. For public markets, these inputs are drawn from transparent public benchmarks with clear rules of construction and ample historical data. It is uncommon for manager-level alpha or risk assumptions to inform the process, even in cases where the investor uses active managers exclusively.

It is important to separate the parameters of the allocation modeling exercise from the subsequent investment decision-making. The use of transparent public benchmarks to represent subcategories of stocks and bonds in allocation models should not lead investors to prefer passive investments. What is needed is a framework that can discern the suitability of the benchmark as a representation of the asset class, and also evaluate the ability of active management to add meaningful value over time.

For alternative asset classes, there is no “passive” investment option. The “benchmark” consists of the aggregated fund-level performance of active managers operating in a particular market sector – without “looking through” to the individual security or asset prices.<sup>1</sup> For this reason we focus on the relative merits of active and passive strategies in the public markets; the potential shortcomings of private market benchmarking mechanisms are beyond our scope (**Exhibit 1**).

#### A series of choices move from strategic asset allocation to manager selection

EXHIBIT 1: COMMON ALLOCATION CATEGORIES ACROSS STOCKS, BONDS AND ALTERNATIVES



Source: J.P. Morgan Asset Management. For illustrative purposes only.

### Benchmark suitability and investment strategy selection

Broadly, passive investing will be most effective in markets where the benchmark (and therefore the passive portfolio that seeks to mimic it) meets several standards. First, it should be fully representative of the targeted opportunity set. Second, it should follow a logical allocation mechanism that reflects the market’s assessment of value for the individual securities. Third, the market should be free of structural inefficiencies.

When all three of these tests are met, the potential for passive strategies to deliver effective performance is greatest. Conversely, when a benchmark does not represent the full opportunity set, does not reflect a logical market-based valuation mechanism, or retains significant structural inefficiencies – a passive strategy may well prove less effective.

But the characteristics of the benchmark as an investment are only part of the calculus. Investors considering active management have work to do as well. They need to determine if active managers have outperformed, both as a group and individually, and to a sufficient magnitude. Selecting an active manager and paying fees demands some confidence in the manager’s ability to exceed the benchmark

consistently over time; without that confidence, investors may be better off sticking with a low-cost passive strategy.

**Exhibit 2** lays out a series of questions that can help clarify the selection of passive or active management. The first set of questions relates to the qualities of a benchmark that support passive management as a capital allocation mechanism. The second set of questions seeks to identify the degree to which active management has been successful in a particular sector.

Establishing the suitability of passive management in each market sector is a useful starting point, though this does not preclude the use of active. Sectors and benchmarks that are unsuited for passive management—because of incomplete representation, illogical methodology, or structural inefficiencies—will have a lower bar for the use of active management.

### Section two: Benchmark suitability

#### Representation and replication: Equity

Equity benchmarks do an effective job of representing all securities within their particular market segment. The delineation of sectors and their specific boundaries

### Asking a few key questions can clarify the decision of when to use active and passive management

#### EXHIBIT 2: KEY QUESTIONS

Step one: Key questions for PASSIVE		Step two: Key questions for ACTIVE	
1	Does the benchmark fully represent the targeted opportunity set?	1	Can skilled managers can outperform in the aggregate?
2	Is the benchmark methodology a logical basis for capital allocation?	2	Do individual managers consistently outperform?
3	Does the benchmark avoid obvious structural inefficiencies?	3	Is after-fee alpha sufficiently positive to justify manager selection?
If “YES,” then the sector is well-suited to PASSIVE management		If “YES,” then the sector is well-suited to ACTIVE management	

Source: J.P. Morgan Asset Management. For illustrative purposes only.

<sup>1</sup> Among the chief concerns with this approach is the extent of survivorship bias in the population of managers included in the benchmark sample. Commonly, poorly performing managers are dropped over time, leaving the benchmark with a positive bias relative to actual historical experience.

by round numbers may be somewhat arbitrary, but investors can have confidence that the benchmark is fully representative. To cite an obvious example: the S&P 500 will include the 500 largest U.S. public companies by market capitalization at any point in time (with the exception of the marginal firms that will be entering or exiting this cohort at the next quarterly index rebalancing).<sup>2</sup>

From an implementation standpoint, public equity markets are well suited to benchmark replication. Public companies have only one type of common equity that trades on an exchange, and the depth, liquidity and price transparency of exchange-traded markets ensure that asset managers can access the securities they need in real time.

This process does become more difficult as the number of securities expands, or when the benchmark includes markets (such as small cap or international) that may not offer the same high levels of depth and liquidity. In such cases, managers often use a sampling approach that seeks to closely match the broad characteristics of the benchmark without the need to own all of the individual underlying securities at their precise benchmark weights.

Studies indicate that replication generally produces lower tracking error in all but the largest benchmarks by number of constituents.<sup>3</sup> Therefore, investors may want to determine the extent to which sampling is used before committing to a passive strategy.

### **Index methodology: Equity**

Most widely used equity benchmarks are capitalization weighted at the security level. That is, the total market value of each firm's common equity is used as the basis for determining its index weight. Also, boundaries between market sectors use capitalization thresholds as the determining factor for large cap, mid cap, small cap, etc.

Conceptually, the use of market capitalization to weight individual firms in the benchmark follows from the notion that markets quickly and efficiently incorporate all available information into security prices. A passive strategy will benefit from that process by always owning more of the most valuable firms and less of the least valuable.

The counterargument, which also has some merit, is that cap weighting is inherently a momentum-driven strategy that forces investors to hold more exposure to a firm as its price rises and to reduce exposure as the firm's value declines—an approach that comes dangerously close to systematically buying high and selling low.

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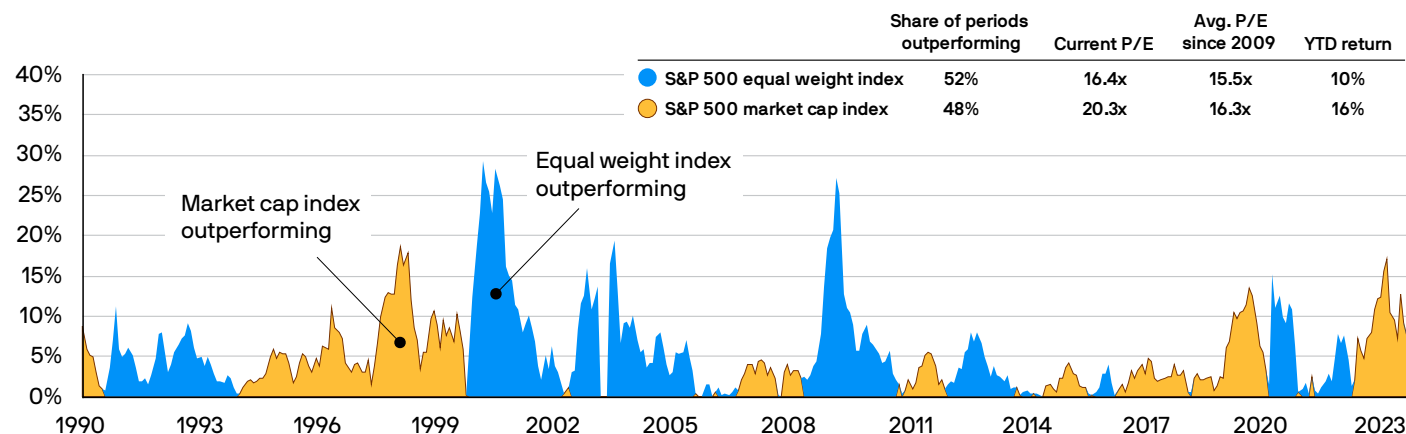
<sup>2</sup> S&P has other criteria for initial inclusion, including profitability, liquidity and float (% of shares trading). Once a company has become a member of the index, however, the sole criteria for rebalancing out of the index is market capitalization.

<sup>3</sup> Dyer and Guest, 2022, *A Tale of Two Index Funds: Full Replication vs Representative Sampling*

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Cap weighting generally outperforms in bull markets

EXHIBIT 3: ROLLING MONTHLY Y/Y TOTAL RETURNS, OUTPERFORMANCE = HIGH - LOW



Source: FactSet, J.P. Morgan Asset Management; data as of August 30, 2024.

Cap weighting is not the only model for building a passive benchmark, however, and alternative approaches do offer some interesting contrasts. One common variation is simply holding an equal weighting to all names in the index, independent of their capitalization, valuation, or any other metric. **Exhibit 3** shows the relative historical performance of cap weighting vs. equal weighting since the 1990s. What is instantly clear is that cap weighting does not outperform consistently, which calls into question passive strategies that use it as the exclusive mechanism for allocating capital.

Broadly, cap weighting outperforms in bull markets, and when a particular subsector (like technology) exhibits disproportionately strong performance. Conversely, equal weighting is a more defensive strategy that reduces single stock concentration within the benchmark and tends to do better in down markets, or when returns are broadly distributed across all sectors and firms. Since neither option is clearly superior, and since it may be difficult for allocators to identify the right moments to switch between different styles, it's fair to consider whether active management might be a better approach.

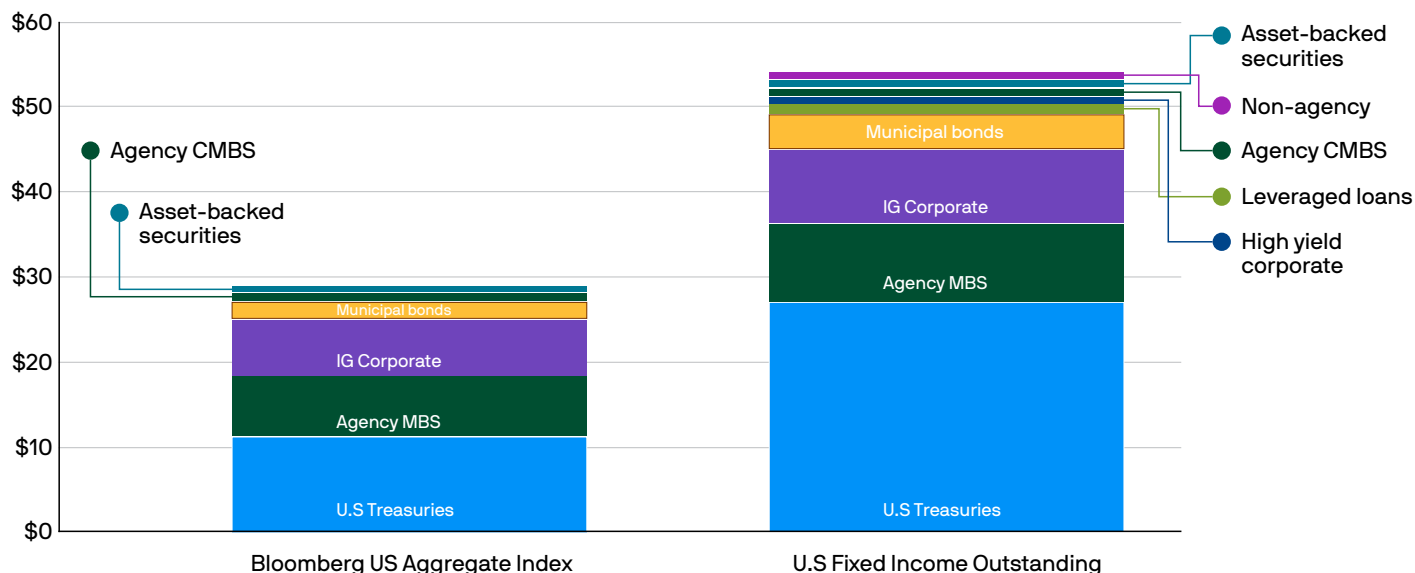
**Representation and replication: Fixed income**

If equity markets offer a benign habitat for passive strategies, fixed income markets are quite the opposite. We note two primary concerns with fixed income benchmarks serving as a proxy for the investable opportunity set and thus as the basis for a passive portfolio:

1. Index construction rules knowingly exclude meaningful portions of the underlying sectors via guidelines that govern the inclusion of individual securities by maturity, coupon type and issue size (see Appendix A for additional detail).
2. Limited trading activity—both in bonds with small amounts outstanding and in “legacy” issues that have been outstanding for many years—renders the construction and ongoing maintenance of a real-world portfolio that closely resembles the benchmark difficult and costly.

Roughly half of the U.S. fixed income market is captured by the Bloomberg US Aggregate Index

EXHIBIT 4: COMPOSITION OF THE BLOOMBERG US AGGREGATE INDEX VS. THE FULL U.S. BOND MARKET, USD TRILLIONS



Source: Bloomberg, BofA Global Research, SIFMA, J.P. Morgan Asset Management; data as of March 31, 2024.

If the benchmarks are incomplete representations of the opportunity set, then the passive portfolios that track them are more likely to be inefficient. **Exhibit 4** looks at the sectors included within the Bloomberg US Aggregate Index compared to the sectors within the broader U.S. fixed income market. While there may be conceptually valid reasons to exclude certain portions of each sector, the net result is that a large pool of broadly similar securities exists outside the boundaries of the benchmark. For passive investors, this is an inefficiency; for active investors it is a huge opportunity.

The inefficiency extends to the ability of a passive manager to replicate a chosen fixed income benchmark. Unlike the shares of a public company, which represent permanent capital and do not change over time, bonds have a finite time horizon and must be regularly reissued. At any point in time there may be thousands of individual securities that meet the criteria for inclusion in broad fixed income benchmarks.

However, many of these bonds experience only a brief period of liquidity at or near the time of their original issuance. Over time these securities tend to find a home in portfolios and secondary trading declines; but their status as benchmark constituents is unaffected. The ongoing cost of trading in and out of these securities can be a headwind to potential performance.

**Index methodology: Fixed income**

Common fixed income benchmark construction methodologies are clearly problematic. Most bond benchmarks are weighted by each issuer’s amount of debt outstanding, which leads to a somewhat perverse outcome: The most heavily indebted borrowers have the largest weights in the benchmark. Although the amount of debt outstanding is not a perfect proxy for lower credit quality and therefore higher risk (after all, there are other financial metrics such as leverage ratio and cash flow to consider), there is no compelling rationale to allocate capital on such a basis.

Also potentially problematic is the role played by formal credit ratings in the segmentation of fixed income markets, where small incremental changes in a firm’s credit rating can cause it to move from being fully included in a benchmark, to being fully excluded (and vice versa). Many investors—including both passive strategies and investors with strict regulatory or guideline constraints—simultaneously become forced sellers or buyers at these moments, leading to inefficient clustering of transactions. Active investors can take the “other side” of these transactions to potentially benefit from the inefficiency.

To be fair, rating agencies have been broadly successful at aligning credit ratings with credit risk across time, but rating actions tend to be both backward-looking and somewhat self-fulfilling. Ratings changes are often catching up to credit fundamentals that have already shifted. And the movement in a firm’s credit rating influences its subsequent cost of capital and financial health. This creates a consistent supply of opportunities for active managers who can use fundamental credit research to anticipate rating agency actions and position their portfolios in advance.

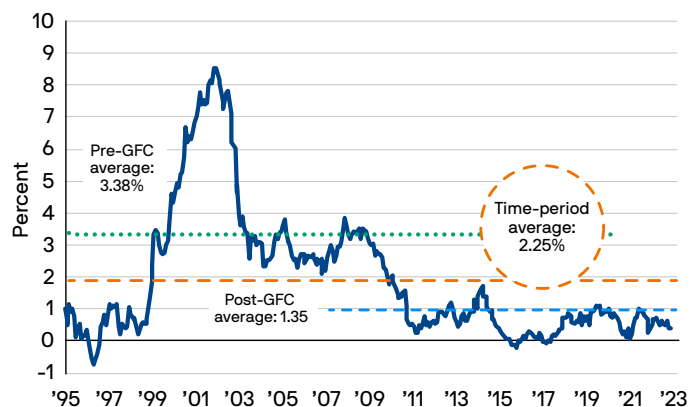
### Section three: Metrics-based evaluation of active managers

Exhibit 5 describes several metrics that can inform the decision to employ a particular active manager. Most or all of these metrics apply equally to the equity or fixed income markets, and to all managers operating within them.

It is common for investors to focus search activity only in market sectors where active managers have been successful in the aggregate. While seemingly logical, this ignores the possibility of locating a skilled active manager in sectors that appear to be less promising. But the rewards of capturing active performance are equally valuable anywhere in the portfolio. Investors should not default to passive simply because skilled managers may be less common.

### A subset of managers has delivered above benchmark performance

EXHIBIT 6: AVERAGE TOP QUARTILE LARGE CAP CORE MANAGER EXCESS RETURNS VS. S&P 500 BASED ON ROLLING 3-YEAR PERIODS



Source: eVestment, J.P. Morgan Asset Management; data as of June 30, 2024. Shown for illustrative purposes only. Past performance is not a guarantee or future results. Based on annualized returns. Excess return calculated against the S&P 500 Index.

Consider large cap core equity, which is generally regarded as one of the most efficient sectors of the equity market and thus one of the most challenging for active managers. Virtually all securities are covered by numerous analysts, making it harder for a particular manager to achieve a meaningful information advantage. On average, active managers may fail to beat the benchmark – but not all managers are average. The top quartile of large cap core managers has delivered positive performance over time (Exhibit 6).

### Assessing performance requires a comprehensive framework

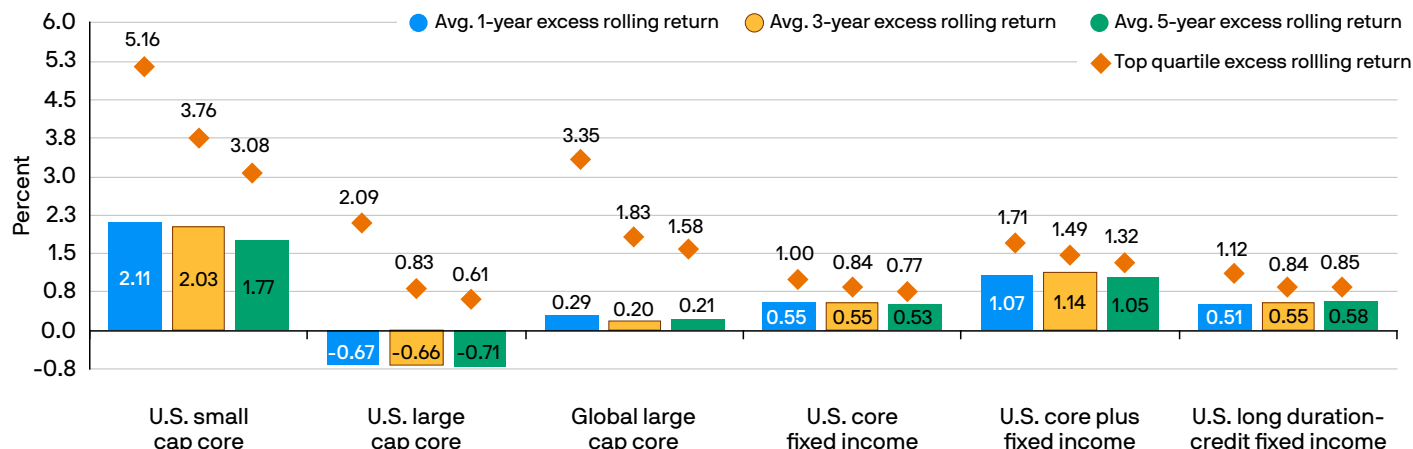
EXHIBIT 5: PERFORMANCE METRICS TO ASSESS ACTIVE MANAGERS

Performance metric	Explanation
Historical outperformance versus benchmark (alpha)	Short-term performance is noisy. Longer horizons (3, 5 and 10-year – or longer) are most relevant
Information ratio (alpha/tracking error)	Higher IR is better, but it can be misleading in cases where low alpha and very low tracking error are present
Upside/downside capture	The ability to tilt performance in a favorable direction is a good signal of consistent fundamental skill rather than good timing
Calendar year performance	12-month windows have limited value, except when they show strong rebounds following negative periods - indicating conviction
Fees as a percentage of alpha	A useful metric for assessing the distribution of value between the investor and the active manager
Diversification versus other managers	Often a secondary consideration, but can provide a valuable layer of risk management over time

Source: J.P. Morgan Asset Management. For illustrative purposes only.

The opportunity for enhanced returns still exists with active managers, especially those within the top quartile of their universe

EXHIBIT 7: AVG. 1-, 3-, AND 5-YEAR ROLLING EXCESS RETURNS AND TOP QUARTILE RETURNS, JULY 2014 – JUNE 2024



Source: eVestment, J.P. Morgan Asset Management; data as of June 30, 2024.

Large cap equity may present challenges that only a limited number of managers can consistently overcome. But across the broader markets there are sectors where the performance of active management has been positive over various horizons. Global equity, small cap equity, and most fixed income sectors are examples (Exhibit 7).

Active management features a range of styles

The presence of active manager alpha in a given sector is an important signal, but not the only one. The magnitude of alpha, and the degree of tracking error needed to achieve it, are also important. In this respect, the style and strategy of a given manager are important to understand.

Successful active management is frequently described as a “top-down, bottom-up” exercise in which the manager applies broad sector or factor tilts relative to a benchmark, while using fundamental securities research to build the best possible portfolio reflecting

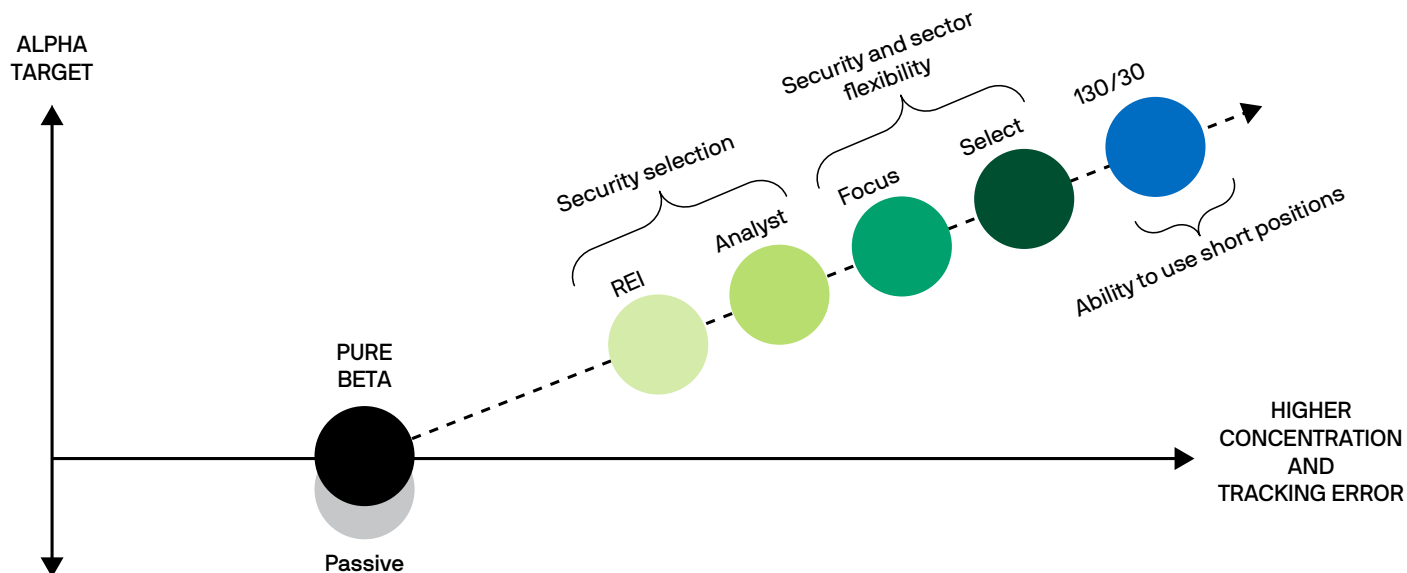
those top-down views. Our experience suggests that, while macro or sector tilts can add significant value at times, bottom-up fundamental security selection can be a more consistent driver of long-term outperformance.

Diversification and concentration are critical differentiators in how fundamental research is deployed within an active portfolio. Broadly diversified strategies can deliver lower tracking error by spreading overweights and underweights across a larger number of individual securities, targeting positive alpha while maintaining the risk characteristics of the benchmark. More concentrated active strategies seek to maximize exposure to high conviction best ideas and generally place less importance on benchmark alignment; as a result these portfolios seek to deliver higher alpha and accept higher tracking error as a consequence. Any point on this continuum is capable of producing positive outcomes.



Long/short strategies can fully express a negative view on a security

EXHIBIT 8: THE ACTIVE MANAGEMENT CONTINUUM IN EQUITY MARKETS



Source: J.P. Morgan Asset Management. For illustrative purposes only.

Exhibit 8 provides a stylized illustration of the relationship between the benchmark, a passive strategy, and various active styles with the J.P. Morgan Asset Management equity platform. The Research Enhanced Index (REI) and Analyst strategies express views on many individual securities while making a priority of maintaining benchmark alignment. More concentrated Focus and Select strategies use only a narrower set of “best ideas,” in the process accepting greater drift in terms of sectors or regions.

Also at the higher end of the alpha spectrum are the long/short “130/30” strategies, which are designed to solve a common limitation of traditional long only strategies. Whereas long only strategies can express a negative view on an individual security only to the extent of the security’s weight in the benchmark (by reducing its weight in the portfolio, potentially to zero), active strategies that utilize shorting (such as “130/30”) allow the manager to fully express negative views without regard to index weights. This can potentially maximize the value of fundamental research.

Mapping active fixed income styles

Fixed income markets are far more complex and less transparent with respect to pricing; they also have a wider range of liquidity at the security level. This makes true passive index replication difficult (if not impossible), as it can require the costly acquisition of securities in the secondary market.

The result is that passive fixed income strategies face an unpleasant trade-off: accept the persistent negative alpha needed to replicate the benchmark at the security level or accept the higher tracking error needed to limit structural underperformance. Also, by virtue of maintaining exposure to all issuers in the benchmark, a passive credit strategy will be fully exposed to any losses from downgrades and defaults across time. Low fees, while helpful, are a small consolation.

But investors need not accept the limitations of passive fixed income. The very inefficiencies that pose a challenge to passive strategies offer attractive opportunities to active managers, allowing them to outperform with greater consistency across time. Using fundamental research to build a portfolio that targets the best opportunities and avoids unattractive components of the benchmark, while simultaneously maintaining overall portfolio risk exposures close to the benchmark, is a highly efficient approach for investors. The evidence is clear: After-fee alpha has been consistently positive in aggregate and for individual active fixed income managers across time.

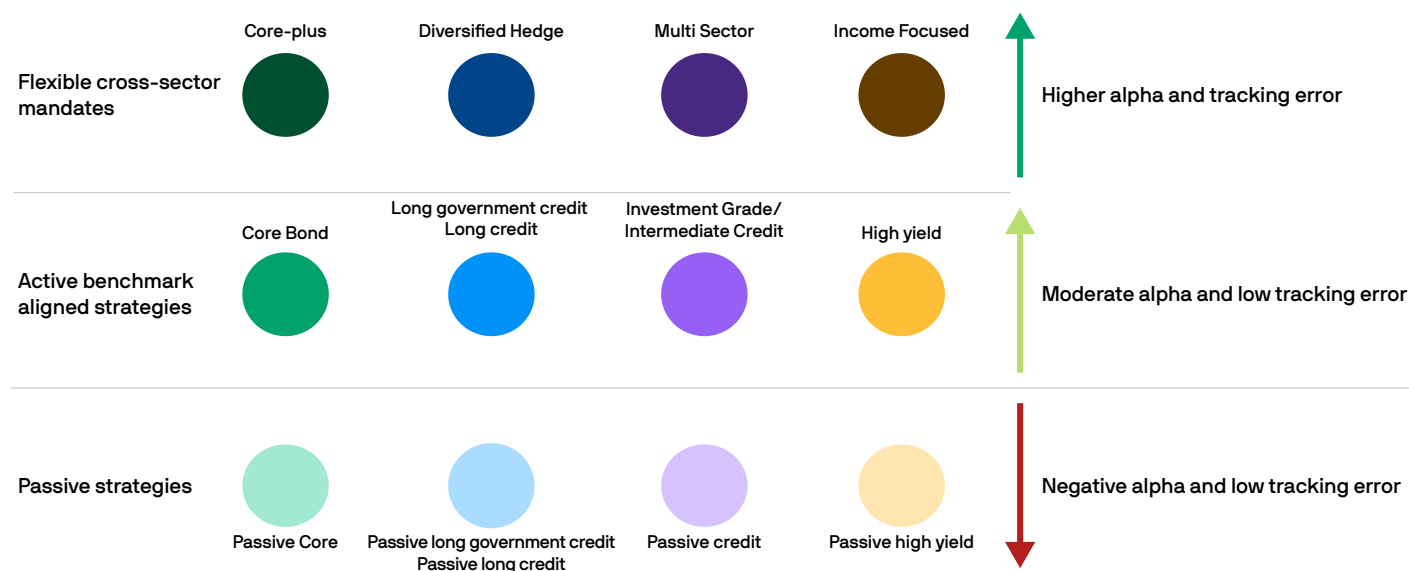
While equity managers often find performance advantages in greater concentration, fixed income strategies targeting higher alpha often benefit from a wider opportunity set. Freeing up managers to move outside the narrow boundaries of their specific subsector and benchmark facilitates bottom-up security selection without necessarily making it more difficult to track critical top-down risk factors, such as duration or credit quality.

**Exhibit 9** segments common fixed income strategies into four broad groups: core, long duration, credit and income. While this does not capture the full breadth of the fixed income opportunity set, it represents many of the most widely used sectors. Within each broad category, investors can select their preferred style: passive approaches that deliver a combination of negative alpha and low tracking error; active benchmark-aligned strategies that prioritize both alpha and tracking error; and finally, more flexible cross sector mandates that prioritize alpha generation.

Both multi-sector and income focused strategies operate in a relatively unconstrained manner compared with traditional benchmarks, making tracking error less relevant as a concern and absolute performance/income generation a more important objective. Alpha to a benchmark is not as useful in evaluating success, while relative performance vs. other managers will become a more important consideration.

**Within any given fixed income sector, investors can find a suitable active strategy**

EXHIBIT 9: THE ACTIVE MANAGEMENT SPECTRUM WITHIN FIXED INCOME



Source: J.P. Morgan Asset Management. For illustrative purposes only.

## Conclusion

The assumption that passive investing is inherently safer, whereas active management involves adding risk to the investment process, falls well short of reality. Passive can certainly be a useful tool for investors, but balancing the potential excess returns of active management against the cost and tracking error needed to achieve those returns, often results in a favorable outcome for active.

Investors must consider that passive strategies are only ever as good as their benchmarks, which can be incomplete or inefficient capital allocation mechanisms. Further, implementing a passive strategy in the real world often involves accepting an array of market inefficiencies that rarely improve the final outcome.

In contrast, active management can frequently improve on passive by focusing on the quality of the actual portfolio and its broad risk characteristics, not the simple replication of an arbitrary portfolio construction methodology. A purposeful evaluation of manager skill is required, but investors have both the data and the judgment to conduct this analysis successfully.

## Appendix

### Passive strategies inherently limit the fixed income investment universe

#### EXHIBIT A: ELIGIBILITY REQUIREMENTS FOR BLOOMBERG INDICES

	US Treasury	US Government-Related	US Credit	US Aggregate	US Corporate High Yield
<b>Sector Exposure</b>	Treasury → Treasury bonds	Government-related → Foreign agencies, sovereign, supranational and local authority, incl. taxable municipals	Corporate → Industrial, financial institutions, utility  → Government-Related Foreign agencies, sovereign, supranational and local authority, incl. taxable municipals	Treasury → Treasury bonds  Corporate → Industrial, financial institutions, utility  → Government-Related Foreign agencies, sovereign, supranational and local authority, incl. taxable municipals  Securitized → MBS, ABS, CMBS, covered	Corporate → Industrial, financial institutions, utility
<b>Credit Rating</b>	Investment grade or better	Investment grade or better	Investment grade or better	Investment grade or better	Below investment grade
<b>Minimum Liquidity</b>	Must have \$300mn minimum par outstanding.  US Treasuries held in SOMA account are deducted from total amount outstanding. → New issuance bought at auction by the Fed is not in the index.	Must have \$300mn minimum par outstanding.	Must have \$300mn minimum par outstanding.	Treasury, Government-Related, & Corporate: \$300mn par outstanding MBS: \$1bn par outstanding  ABS: \$500mn deal size and \$25mn tranche size  CMBS: \$500mn deal size and \$300mn par outstanding	Must have \$150mn minimum par outstanding.
<b>Maturity</b>	At least one year until final maturity	At least one year until final maturity  Fix-to-Float converts must exit one year prior to conversion.	Sub-indices based on maturity are inclusive of lower bounds.  → Intermediate maturity bands include bonds with maturities of 1 to 9.9999 years.  → Long maturity bands include maturities of 10 years or greater.  Fix-to-Float converts must exit one year prior to conversion.	At least one year until final maturity  MBS: Weighted average maturity of at least one year  CMBS & ABS: Remaining average life of at least one year  Fix-to-Float converts must exit one year prior to conversion.	At least one year until final maturity  Fix-to-Float converts must exit one year prior to conversion.
<b>Excluded Securities</b>	Inflation-linked bonds, floating-rate bonds  STRIPS, Treasury bills  State and local government series (SLGS) bonds	Contingent capital securities, incl. traditional CoCos and contingent write-down securities  Bonds with equity type features (e.g., warrants, convertibles, preferreds, DRD/QDI-eligible issues)  Tax-exempt municipal securities  Inflation-linked bonds, floating-rate issues, STRIPS  Private placements, retail bonds  USD25/USD50 par bonds  Structured notes, pass-through certificates  Illiquid securities with no available internal or third-party pricing source	Contingent capital securities, incl. traditional CoCos and contingent write-down securities  Bonds with equity type features (eg, warrants, convertibles, preferreds, DRD/QDI-eligible issues)  Tax-exempt municipal securities  Inflation-linked bonds, floating-rate issues  Private placements, retail bonds  USD25/USD50 par bonds  Structured notes, pass-through certificates  Illiquid securities with no available internal or third-party pricing source	Contingent capital securities, incl. traditional CoCos and contingent write-down securities  Bonds with equity type features (eg, warrants, convertibles, preferreds, DRD/QDI-eligible issues)  Tax-exempt municipal securities  Inflation-linked bonds, floating-rate issues  Private placements, retail bonds  USD25/USD50 par bonds  Structured notes, pass-through certificates  Illiquid securities with no available internal or third-party pricing source  Non-ERISA eligible CMBS issues  CMBS A1A tranches	Contingent capital securities, incl. traditional CoCos and contingent write-down securities, with explicit capital ratio or solvency/balance sheet-based triggers  Bonds with equity type features (eg, warrants, convertibles, preferreds, DRD/QDI-eligible issues)  Inflation-linked bonds, floating-rate issues  Private placements, retail bonds  Structured notes, pass-through certificates  Illiquid securities with no available pricing  Debt issued by emerging markets corporate issuers  Defaulted bonds  Partial pay-in-kind (PIK) bonds  Eurodollar issues

Source: Bloomberg, J.P. Morgan Asset Management; information as of December 15, 2023.

Investors have their pick when it comes to the equity investment universe

EXHIBIT B: CHARACTERISTICS OF COMMON EQUITY BENCHMARKS

	S&P Small Cap 600	S&P MidCap 400	S&P 500	S&P Composite 1500 Index
Market cap eligibility	Unadjusted market cap between \$1.0bn and \$6.7bn	Unadjusted market cap between \$6.7bn and \$18bn	Unadjusted market cap of \$18bn or greater	Unadjusted market capitalization greater than \$1.0bn
Average market cap (\$bn)	\$2.34	\$7.57	\$98.17	\$35.74
Median market cap (\$bn)	\$2.01	\$6.96	\$36.00	\$6.08
% of investment universe	2.50%	5%	80%	90%
P/B ratio	1.92	2.6	5.02	4.6
Dividend yield	1.72%	1.72%	1.36%	1.40%
Financial viability	Must have positive as-reported earnings over the most recent quarter as well as over the most recent four quarters (summed together) to be an eligible addition to the index (i.e., stocks who no longer meet addition criteria are not automatically deleted from the index).			
Liquidity	Ratio of annual dollar value traded to float-adjusted market cap must be at least 0.75 and the stock should trade a minimum of 250,000 shares in each of the six months leading up to evaluation date.			

Source: S&P Dow Jones, J.P. Morgan Asset Management; data as of September 20, 2024.

## J.P. Morgan Asset Management

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