Uncovering Hidden Biases in an Investment Portfolio

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Summary

- Understanding potential hidden biases in investment portfolios requires looking beyond historical risk/return metrics.
- A comprehensive analysis reviewing the portfolio's key exposures, performing scenario analysis and a forward-looking assessment is critical to evaluate a portfolio's quality relative to its benchmark and/or an investment alternative.
- Vanguard is able to partner with professional investors to help then uncover potential hidden portfolio biases and help them achieve their investment goals.

A strong investment proposition is critical to the success of any investor. It is the foundation on which good client relationships can develop and flourish. But how can you be sure that you've got it right?

The path to building an optimal portfolio in line with a client's goals and risk tolerance can be fraught with risk and complexity. A portfolio that is simple on the outside can harbour biases, gaps and concentrations that may only become apparent when it fails to behave as expected. Ultimately, that can lead to some uncomfortable conversations.

Suboptimal portfolio construction may result in persistent underperformance relative to a benchmark, failure to behave as expected in given market conditions, or high relative costs. Other issues may be less obvious. For example, the choice of benchmark can distort performance measurement. Approaching portfolio construction by conducting a multi-lens review may result in better client outcomes.

Historical (ex-post) Risk/Return

Let's look at a portfolio, Portfolio ZZZ, as an example of how unintended consequences can impact portfolio performance. Lower current yields can sometimes lead investors to search for yield and take on unintended risks which may not match their risk tolerance. In this instance, the client's objective for Portfolio ZZZ is to generate a sustainable 5% total return, comprised primarily of income, by investing in high dividend equities and high yield fixed income holdings. The portfolio is measured against its blended policy benchmark which has an allocation of 70% to global high dividend equities and 30% to global high yield bonds. The portfolio is comprised of eight actively managed funds, across various sub-asset classes and manager styles. It has outperformed the benchmark over the past five years, with a similar risk profile and a slightly lower max drawdown – a strong track record.

Name	Return	Standard deviation	Sharpe Ratio	Maximum Drawdown	Cost
Portfolio ZZZ	6.15	8.93	0.66	-7.50	0.52
Benchmark	4.09	8.91	0.43	-8.06	N/A

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Portfolio ZZZ appears to be a well-constructed portfolio that is meeting its objective, which is to generate a 5% total return, relying primarily on income over the long-term. But before making a decision on the merits of Portfolio ZZZ, let's see how it compares to an alternative, Portfolio AAA, shown in the table below:

Name	Return	Standard derivation	Sharpe Ratio	Maximum Drawdown	Cost
Portfolio AAA	5.48	7.95	0.65	-6.75	0.28

Portfolio AAA is not a typical "income-focused" portfolio, but rather a broadly diversified portfolio, with a similar strategic asset allocation. The portfolio is comprised of 70% global stocks and 30% global bonds, employing a core-satellite approach using six underlying building blocks. We can see that Portfolio AAA and Portfolio ZZZ are similar in terms of risk and reward, with Portfolio ZZZ having better returns but greater standard deviation and higher drawdowns. From a cost perspective, we note that Portfolio ZZZ has a higher weighted average expense ratio, 0.52% vs. 0.28%. Yet, those fees appear to be reasonable since the returns are net of fees. Before we make a definitive conclusion on the merit of the additional cost, let's look under the hood of the portfolio to better understand the portfolio's construct.

Strategic Asset Allocation

Let's first take a look at the broad asset allocation of the two portfolios and the benchmark:

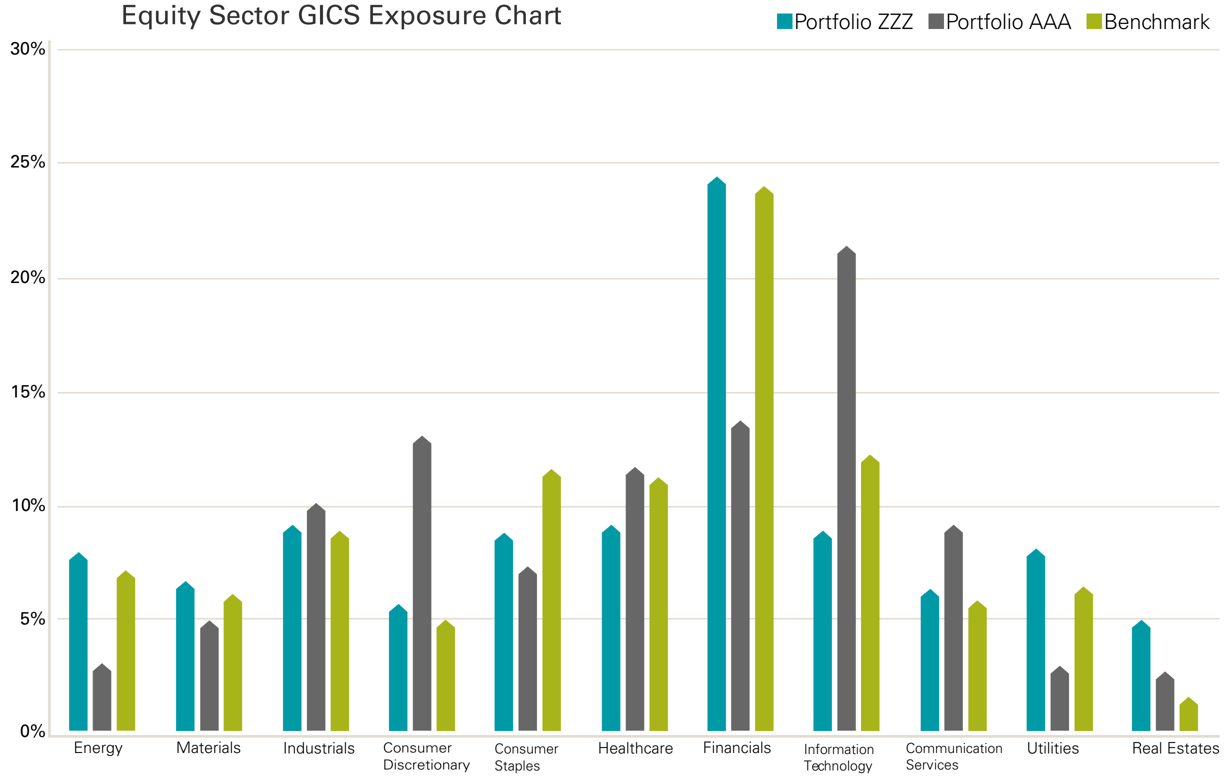
Asset Class	Portfolio ZZZ	Portfolio AAA	Benchmark
Stocks	74.22%	69.75%	70%
Bonds (including cash)	25.78%	30.25%	30%

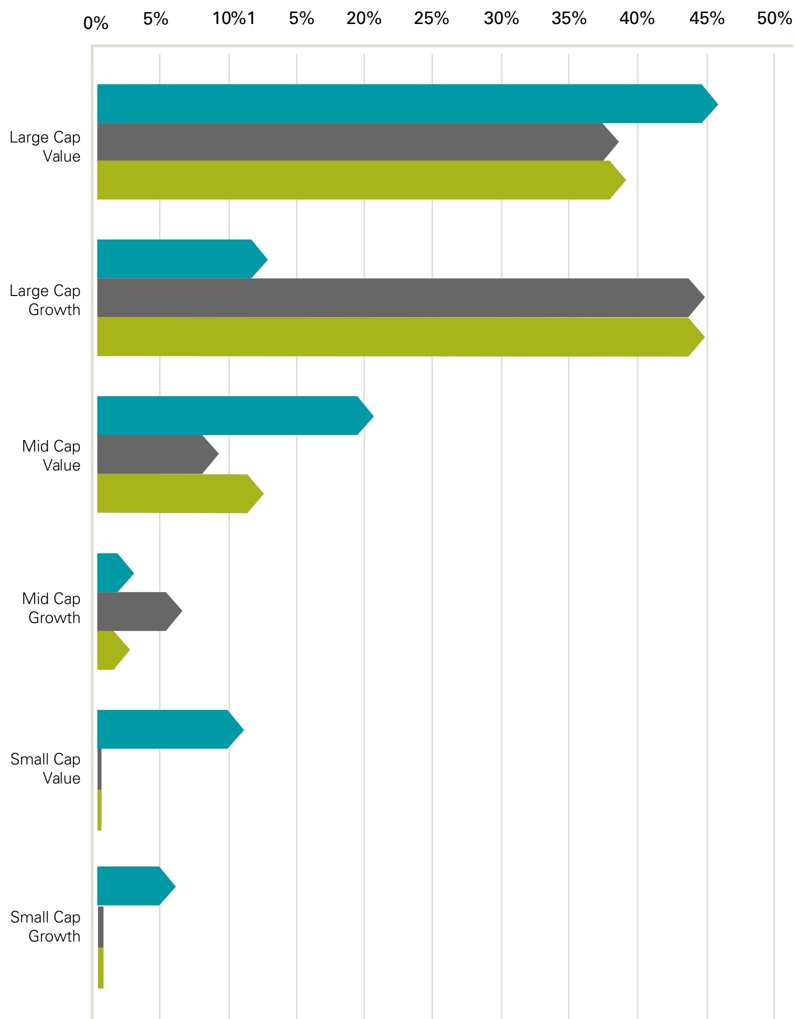
Once we look at the broad asset class exposure, we can see that Portfolio ZZZ might be generating higher returns due to higher allocation to equities. Since asset allocation is typically responsible for ~90% of the variability of returns, according to Vanguard research, this may be a key driver of the outperformance versus its benchmark. Also, this raises an important question about benchmarking. Given that Portfolio ZZZ's mandate is to have a strategic asset allocation of 30% to bonds, is there a possible additional source of risk if the portfolio is consistently tilted towards equities?

Sector and Style

We dig deeper and look at the equity exposures, beginning with its sector allocation. Since Portfolio ZZZ is invested in mostly high dividend equities, it is concentrated in fewer sectors. Relative to its benchmark it is fairly aligned, with some small deviations mainly a result of the sub-asset allocation and stock picking. Relative to Portfolio AAA, however, Portfolio ZZZ exhibits a strong relative overweight to financials, real estate, utilities and the highly volatile energy sector. Since high dividend payers are typically concentrated in a few sectors which exhibit a value tilt, Portfolio ZZZ also exhibits a strong value bias relative to Portfolio AAA. Also, since value stocks are typically more cyclical, Portfolio ZZZ also has higher beta (market risk) and the higher sector portfolio concentration has also resulted in a higher volatility, as measured by its standard deviation.

Equity Sector GICS Exposure Chart





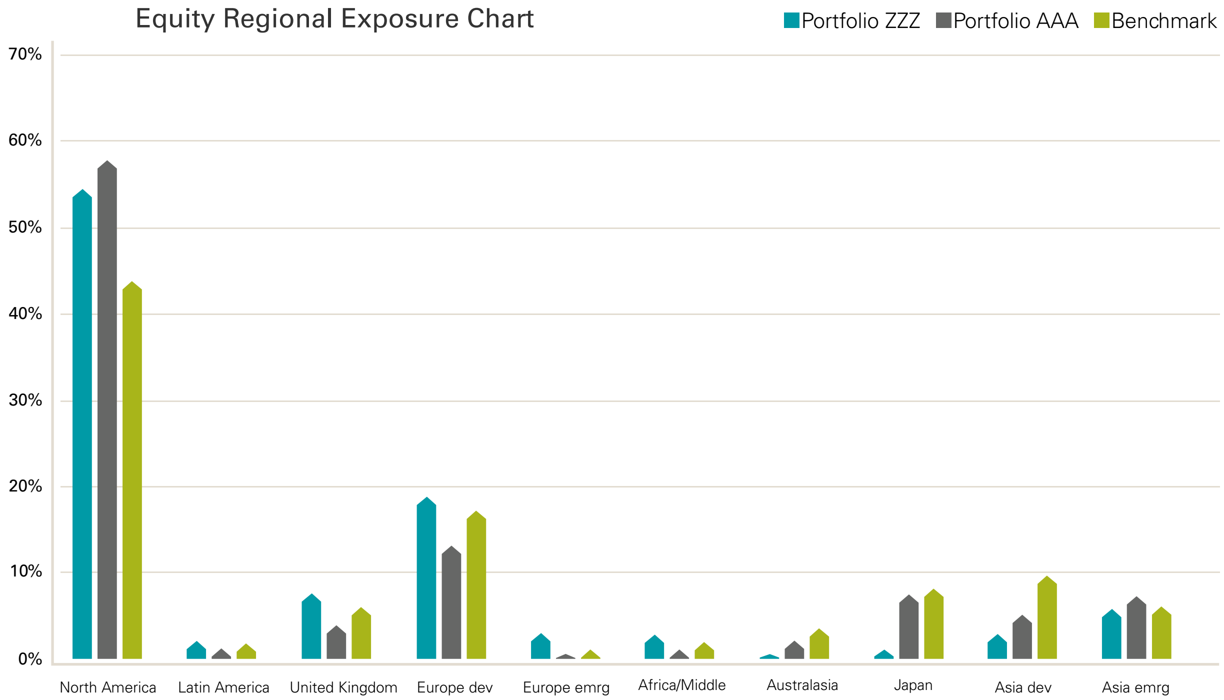
Equity Style Exposures

Portfolio ZZZ Portfolio AAA Benchmark

Portfolio ZZZ has a strong value tilt relative to Portfolio AAA

Geographic Allocation

Next, we look at the equity exposures on a regional basis. Relative to its benchmark, we see that Portfolio ZZZ has an overweight to North America and a underweight to Japan and Asia. Relative to the Portfolio AAA, it is underweight North America, Japan and Developed Asia, while having a greater overweight to Developed Europe, UK and Emerging Europe. There is nothing inherently wrong with these positions, if they reflect the investor's intentions. What we should also understand, however, is that there is likely to be a cascade of further consequences that may or may not be intended. The cause of the high relative European equity exposures in Portfolio ZZZ should be explored further to understand if this is the result of the client's sub-asset allocation or the fund manager's stock picking.



Fixed Income Credit Quality

Within the fixed income exposure of Portfolio ZZZ, we note that approximately half of the fixed income assets are below investment grade. Some of these relatively riskier fixed income holdings exhibit a high correlation to equities, providing little diversification benefits to clients and limited downside protection in bear markets. Since markets have generally been rising over the last decade, would it be reasonable to conclude that the portfolio has outperformed Portfolio AAA not due to security selection but partly due to a tilt towards riskier fixed income securities? In contrast, Portfolio AAA has no exposure to non-investment grade fixed income, typically generating stronger portfolio diversification in times of high market volatility, which is likely why the portfolio exhibits lower overall risk.

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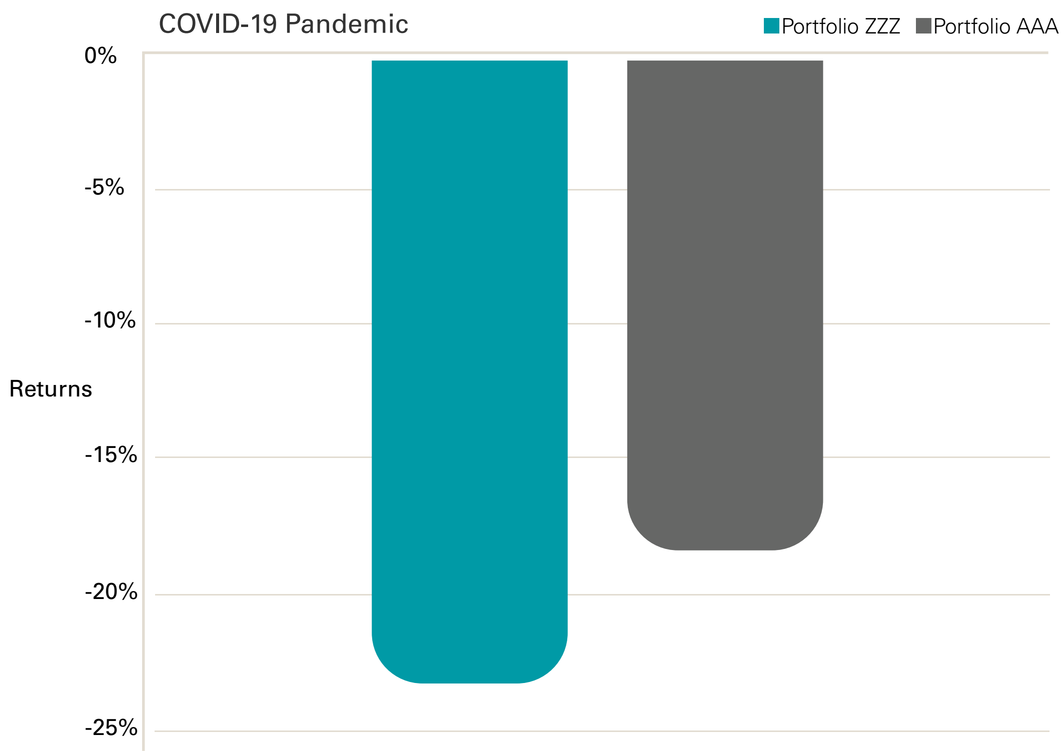
Implementation Considerations

There is also the issue of complexity, due diligence and costs to consider when evaluating Portfolio ZZZ and Portfolio AAA. Portfolio ZZZ has eight active managers within the portfolio whereas Portfolio AAA employs a core-satellite approach, using three passive and three active managers. By having exposure to only three active strategies, across different asset classes, Portfolio AAA is fairly easy to monitor and control for unintended risk exposures. On the other hand, Portfolio ZZZ has numerous active managers for similar asset classes and styles, leading to overlap and duplication in some instances. This can be problematic if, for example, two active managers both make a significant active bet on overweighting energy stocks. This action could increase risk exposures at an inopportune moment and result in an unintended outcome for the end investor. For clients using multiple active managers in a portfolio, it is critical to invest the time to perform proper due diligence and intimately understand their investment process in order to reduce portfolio concentration risks. Active managers also generally have higher costs thus in order to outperform they have to overcome a hurdle rate that may or may not be sustainable in the long run. Portfolio ZZZ's hurdle rate in terms of costs is 0.52% compared to Portfolio AAA's 0.28%.

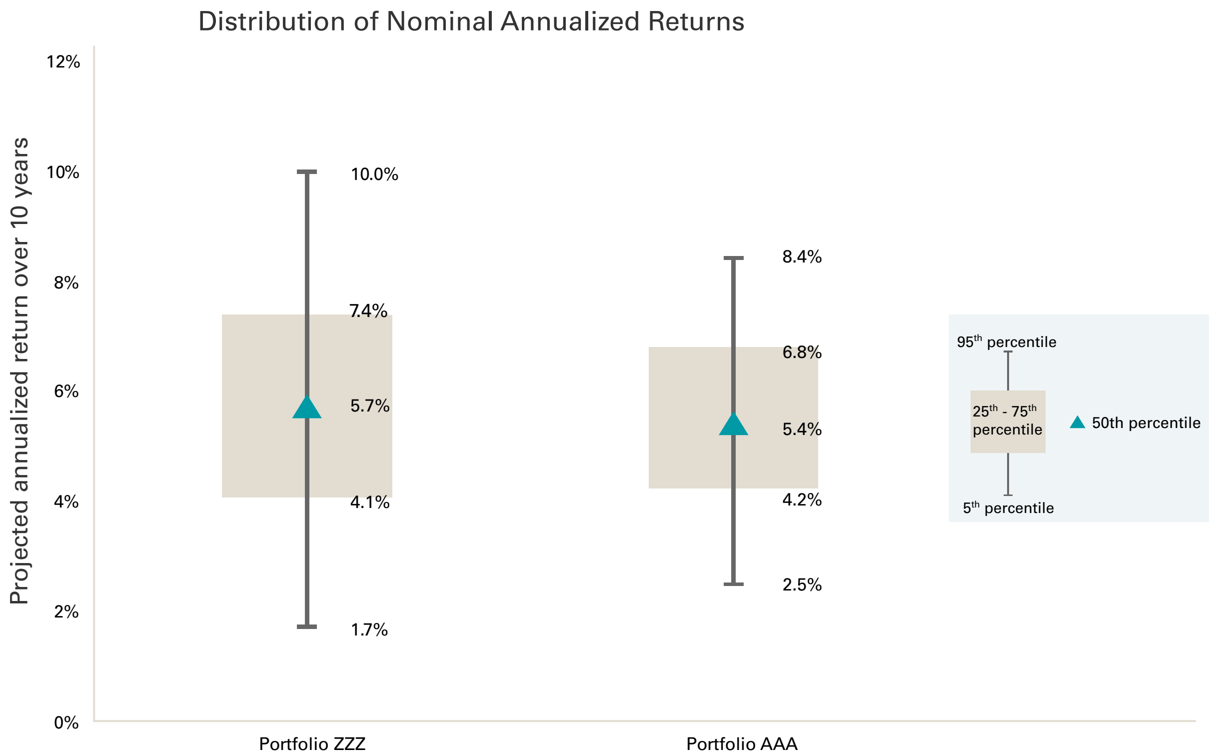
Scenario Analysis

We can also compare Portfolio ZZZ to benchmark using scenario analysis. This will assist the client in understanding potential factor risk exposures relative to historical or simulated scenarios. During historical events such as the COVID-19 pandemic, we see that the Portfolio ZZZ had a drawdown of -23.49%, while Portfolio AAA had a drawdown of only -18.56%. This could indicate that there may be significant tail risk with Portfolio ZZZ. Tail risk are events that are improbable and ones which can be highly impactful. Are clients able to handle this much risk in a 70/30 portfolio?



Forward Looking (ex-ante) Analysis

Finally, the portfolio can also be evaluated using Vanguard's Capital Market Model to generate a forecast of long-term asset-returns, using a probabilistic framework. The Vanguard Capital Markets Model accounts for non-normal distributions (that is, fatter distribution tails), serial correlation and cross-asset correlation, overcoming some of the inherent flaws with ex-post analysis. As we can see from the graph below, the forward-looking return estimate for Portfolio ZZZ at the 50th percentile is 5.7%, with a potential range of outcomes falling between 1.7% and 10.0% at the 5% and 95% percentiles. However, looking at Portfolio AAA, the 50th percentile return estimate is 5.4%, with a 5th and 95th percentile return estimate of 2.5% and 8.4% percent respectively. Portfolio AAA shows a smaller distribution of outcomes, leading to a higher likelihood to meet the client's objectives. Equally important is to analyze forward-looking estimates for other risk/return metrics, both on a real and nominal basis. The Vanguard Capital Markets Model allows for these capabilities and can help inform portfolio construction decisions.



Conclusion

To conclude the analysis, let's revisit the performance of the Portfolio ZZZ and Portfolio AAA. At a cursory glance, it appeared that Portfolio ZZZ was delivering on its intended outcomes, even after accounting for its relatively higher cost. After careful analysis, we have uncovered some hidden biases. Portfolio ZZZ has greater sector concentration, more exposure to non-investment grade fixed income, performs worse on key scenario analysis and has relatively higher distribution of return outcomes based on our forward looking estimates.
Ex-post or historical performance analysis only told us part of the story. Now, after incorporating a multi-lens view to portfolio construction, we can better understand potential portfolio risks and make a better determination as to which portfolio would help deliver on our intended client outcome.

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