USING EQUAL-WEIGHTING TO ADDRESS MARKET CONCENTRATION

CONSIDERATIONS FOR A DIVERSIFIED ALTERNATIVE TO TRADITIONAL MARKET-CAP WEIGHTED APPROACHES

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EXECUTIVE SUMMARY

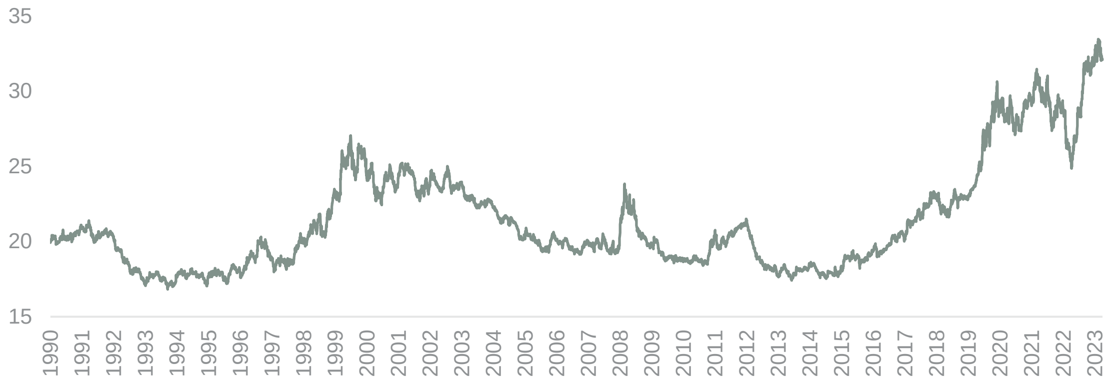
The continued strong relative performance of the "Magnificent Seven[1]" companies within U.S. large cap markets may be creating concerns around concentration risks. This select group of mega-capitalization stocks has been the driving force of recent returns for market weighted indexes, which has led investors to reassess diversification needs for both future return expectations and risk management. Absent a crystal ball, many are considering the merits of equal-weighted indexes as a means to spread the risk and counter concentration. In this paper we look specifically at the S&P 500 and S&P 500 Equal Weight[2] indexes as the basis for our analysis of using an equal-weighted passive approach in mitigating concentration risk.

CONCENTRATION RISK IS ONCE AGAIN TOP OF MIND

While 2023 was a welcomed performance reversal from the prior year for U.S. markets, particularly the S&P 500 index, unchanged was the leadership from a select few companies and continued concerns around concentration risk. As **Exhibit 1** illustrates, the current weight of the top 10 companies make up over 32% of the market capitalization, which is above a recent peak in 2021 and well above the level seen during the dot-com bubble in early 2000.

[1] Group is made up of stocks Alphabet, Amazon, Apple, Microsoft, Meta, NVIDIA, and Tesla.
[2] The S&P 500 Equal Weight Index is the equal-weight version of the widely recognized S&P 500. The index includes the same constituents as the capitalization weighted S&P 500, but each company in this index is allocated a fixed weight or 0.2% of the index total at each quarterly rebalance. Note there are other approaches that investors may consider such as Russell 1000 Equal Weight, which takes a different approach as it first equal weights industries.

Exhibit 1: Percentage Weight of Top 10 S&P 500 Companies



Source: Bloomberg. Data period: 10/1/1990 - 12/31/2023. It is not possible to invest directly in any index. Historical trends are not indicative of future results.

Other market perspectives, such as breadth and sector performance, also reveal a clustering of leadership. While the S&P 500 returned 26.3% in 2023, only 29% of companies outperformed the index, including only 3 of 11 sectors. Despite, or perhaps given this, investors are seeking ways to manage potential downside risk and properly diversify public equity exposure. For example, investors do not have to look far back to find a period when the "Magnificent Seven" all faced challenges and displayed double-digit percentage losses, which occurred in 2022.

INSIGHTS ON EQUAL WEIGHTING

Equal-weighted indexes aim to provide balanced exposure across index constituents, which can reduce the impact of the largest companies on index returns. In addition to reducing concentration by increasing diversification, equal-weighting may be used for potential outperformance relative to the cap-weighted index. Equal-weighting can provide meaningful exposure to smaller companies, along with undervalued[3] companies due to the contrarian rebalancing efforts to maintain an equal weight distribution: effectively selling the winners and buying the underperformers. **Exhibit 2** shows the performance history of the S&P 500 Equal-Weight index and the standard S&P 500 index.

Exhibit 2: Annualized Total Returns and Risk

As of 12/31/2023	1 Year	5 Year	10 Year	20 Year	30 Year
Returns					
S&P 500	26.4%	15.7%	12.0%	9.7%	10.1%
S&P 500 Equal-Weight	13.9%	13.8%	10.4%	10.1%	10.9%
Risk					
S&P 500	14.1%	18.4%	15.1%	14.9%	15.2%
S&P 500 Equal-Weight	17.8%	20.5%	16.6%	17.4%	16.8%
Sharpe Ratio					
S&P 500	**1.87**	**0.85**	**0.79**	**0.65**	**0.66**
S&P 500 Equal-Weight	**0.78**	**0.67**	**0.63**	**0.58**	**0.65**

Source: Bloomberg. Data as of 12/31/2023. Past performance is not indicative or a guarantee of future results. Index performance returns do not reflect any management fees, transaction costs or expenses. It is not possible to invest directly in any index. Indexes are the property of their respective owners, all rights reserved. Sharpe Ratio calculated as the return divided by risk.

While longer term results appear similar, as shown in **Exhibit 3**, there are periods of significant divergence between the indexes (periods above zero represent outperformance for the Equal-Weight index over a trailing three-year period).

[3] Size and Value are among the compensated style factors discussed in the Northern Trust Asset Management paper, "Foundations In Factors". Note there are other approaches that investors may consider such as Russell 1000 Equal Weight, which takes a different approach as it first equal weights industries.

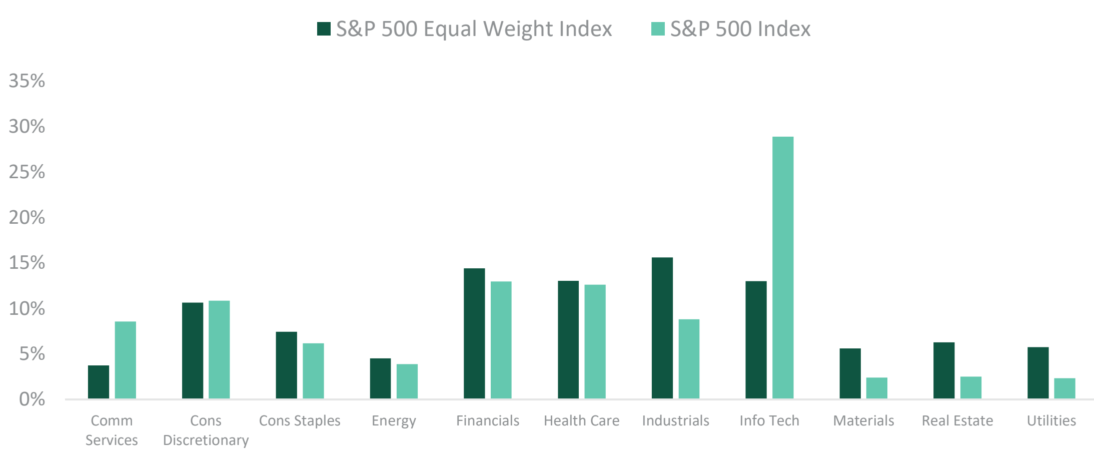
Exhibit 3: Trailing 3 Year Annualized Excess Performance

S&P 500 Equal Weight Index - S&P 500 Index

Source: Bloomberg. Data from 12/31/2003 to 12/31/2023. Past performance is not indicative or a guarantee of future results. Index performance returns do not reflect any management fees, transaction costs or expenses. It is not possible to invest directly in any index. Indexes are the property of their respective owners, all rights reserved.

Exhibit 4 compares the sector composition of the two indexes, which begins to support the reasoning for the performance deviations that occur in the short to medium term time horizons. Unsurprisingly, the S&P 500 Equal Weight index has a meaningful underweight to Information Technology, funding overweights to virtually all sectors, largely Industrials, Financials, Materials, Real Estate, and Utilities.

Exhibit 4: Sector Differences

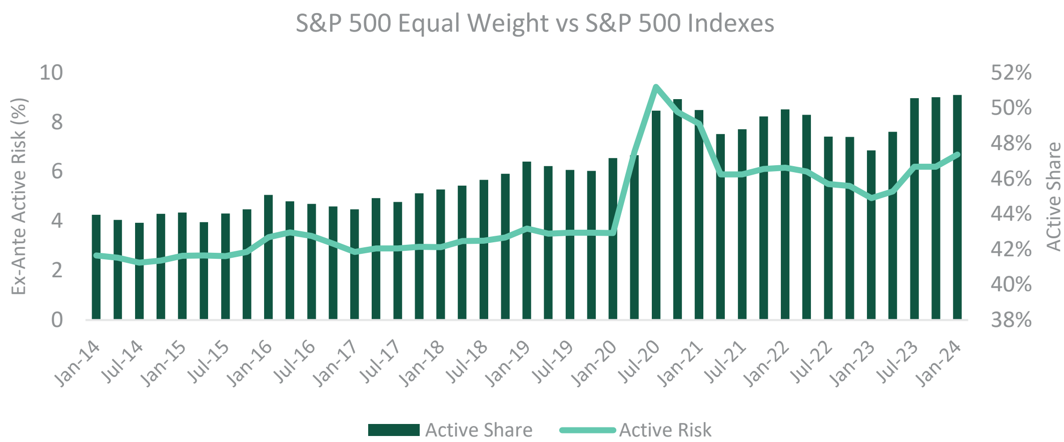


Source: Northern Trust Asset Management, Factset. Data as of 12/31/2023. Information is provided to illustrate typical sectors in which the portfolio may invest. It should not be considered investment advice or a recommendation to buy or sell any security. There is no guarantee that securities remain in the portfolio or that securities sold have not been repurchased. It should not be assumed that any investments were profitable or will prove to be profitable. Past performance is not indicative or a guarantee of future results. Index performance returns do not reflect any management fees, transaction costs or expenses. It is not possible to invest directly in any index. Indexes are the property of their respective owners, all rights reserved.

Looking deeper into the differences from a risk perspective, the S&P 500 Equal-Weight index, relative to the S&P 500 index as of 12/31/2023, has approximately 6.7% of estimated active risk (ex-ante) as shown in **Exhibit 5**. This level of active risk may exceed many actively managed funds and can soak up a large amount of the overall active risk budget for investors.

Additionally, active share, which is a measure of how different the holdings are between two portfolios and quantified between 0% – 100%, currently hovers around 51%, putting both active risk and active share at elevated levels presently. However, even when we view the long-term averages of active risk and active share, with the 20 year average of each at 4.6% and 46.7%, respectively, both are representative of a healthy amount of relative risk undertaking with an equal-weighted approach.

Exhibit 5: Ex-Ante Risk and Active Share



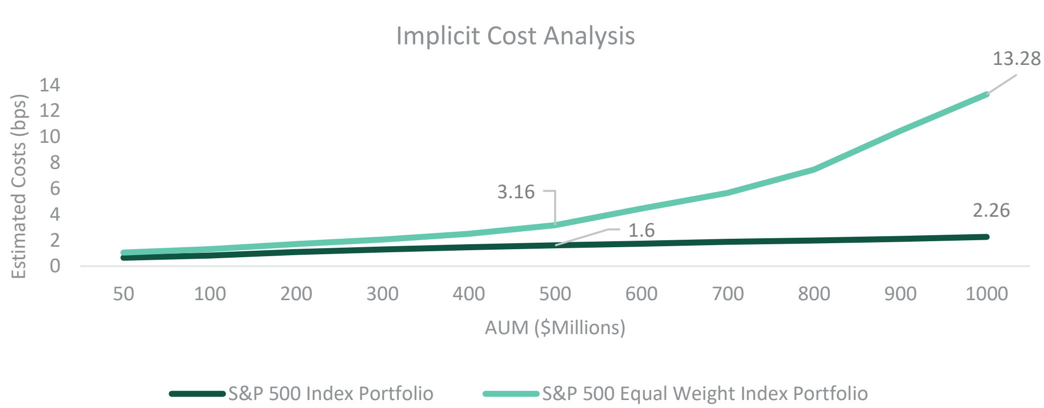
Source: Northern Trust Asset Management, Factset. Data from 12/31/2013 to 12/31/2023. It is not possible to invest directly in any index. Past performance is no guarantee of future results.

Taking these considerations together, equal-weighted indexes may provide diversification benefits within a U.S. large cap portfolio allocation, but how these exposures make their way into portfolios will be important for investors who need to maintain low or controlled tracking error and active risk relative to a policy benchmark. Along with the aforementioned risk assessment, important to this potential integration, are the differences in trading costs and liquidity, which is where we turn next.

EQUAL-WEIGHTING IMPLEMENTATION

Given the allocation away from the top end of the capitalization spectrum to the smaller, and therefore relatively less liquid, securities, the total trading impact costs are higher for the equal-weighted index. Additionally, this cost impact scales up at a faster pace relative to the cap-weighted index when analyzing trade sizes larger than $500 million.

Exhibit 6: S&P 500 vs S&P 500 Equal-Weight Trade Impact Costs



Source: Northern Trust Asset Management, Citi Velocity. Analysis as of 1/24/2024 utilizing the cost of trading in the closing auction, which is a common execution benchmark for passive funds.. For illustrative purposes only. It is not possible to invest directly in any index. Past performance is no guarantee of future performance.

Exhibit 6 estimates the implicit costs on various trade sizes within a hypothetical S&P 500 index portfolio and S&P 500 Equal Weight index portfolio. Note that explicit costs, such as commissions per share, are not represented in this exhibit, however, at the time of our analysis, the average price per share is considerably lower for the equal-weighted index ($75.2 vs $127.9) which would result in more shares per market value traded, therefore more commission costs may be expected.

Further, the equal-weighted index has higher turnover as it stays disciplined to the evenly allocated exposure upon each index rebalance. Over the last 10 years, the average annual turnover of the S&P 500 Equal-Weighted index was approximately 22%, compared to 3.6% for the cap-weighted counterpart. From a tax perspective, the increase and nature of the turnover will likely impact a tax-exempt investor less, but that may not be the case for the taxable investor[4]. The design of equal-weighted indexes can make the tax impact even greater, meaning that stocks that have performed well will become the securities that will be reduced (sold) at each index rebalance date, while the stocks that have underperformed, will be increased (purchased) at each rebalance date. This methodology does conflict with the idea of holding onto appreciated securities (gain deferral) or selling securities at a loss (loss harvesting).

ALLOCATING TO EQUAL-WEIGHT

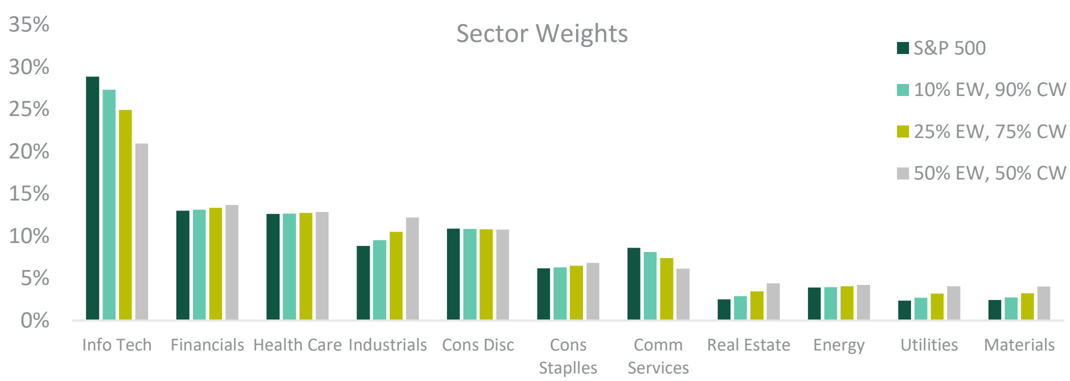
For most investors, this is less an either-or question and more a question of degree. Therefore, we turn next to evaluate the effects of adding a partial allocation at various levels and the impact that has on an active risk and concentration. **Exhibit 7** and **Exhibit 8** below show hypothetical portfolios beginning with a 100% allocation to the S&P 500 index, moving towards a 50/50 percentage split with the equal-weight variant.

Exhibit 7: Hypothetical Allocations of S&P 500 Equal-Weight ("EW") and S&P 500 (Cap-Weighted, "CW") Indexes

Scenarios	*S&P 500*	10% EW 90% CW	25% EW 75% CW	50% EW 50% CW	*S&P 500 Equal-Weight*
Weight of Top 10 Companies	**32.1%**	**29.1%**	**24.6%**	**17.0%**	**2.3%**
Active Risk (vs S&P 500)	--	**0.67%**	**1.67%**	**3.34%**	**6.69%**
Stock Specific Risk		*0.07%*	*0.18%*	*0.35%*	*0.71%*
Industry Risk		*0.11%*	*0.27%*	*0.53%*	*1.07%*
Style Factor Risk		*0.49%*	*1.22%*	*2.46%*	*4.91%*

Source: Northern Trust Asset Management, Factset. Data as of 12/31/2023. It is not possible to invest directly in any index. Past performance is no guarantee of future results.

Exhibit 8: Sector Weights of Hypothetical Allocations of S&P 500 Equal-Weighted ("EW") and S&P 500 (Cap-Weighted, "CW") Indexes



Source: Northern Trust Asset Management, Factset. Data as of 12/31/2023. It is not possible to invest directly in any index. Past performance is no guarantee of future results.

[4] This information is general in nature and should not be construed as tax advice. Please consult a tax advisor or professional as to how this information may affect your particular circumstance.

The above comparisons provide several interesting takeaways, notably the directional impacts on sectors by allocating more or less to the equal-weighted index. Simply put, more equal-weighting results in less exposure to Information Technology and Communication Services. Secondly, the concentration, as measured by the weight of the top 10 companies, has a direct expected trade-off with active risk and the components of active risk.

CONCLUSION

There is little doubt that the equal-weighting approach can provide relief to portfolio concentration, which is by design. Ultimately, each investor has a unique balance of what matters most and a need to balance active risk, seeking outperformance, or reducing concentrated contribution to risk or returns, among others. Each of these may lead to different portfolio allocations, including the use of equal-weighted indexes, which can be a simple, low cost rules-based means to diversify equity portfolios.

FURTHER COMMENTS ON EQUAL WEIGHTING

The scope of this paper was only on the S&P 500 Equal Weight index, and its respective S&P Dow Jones index calculation methodology. It is important to note that other index providers have different methodologies to arrive at what they deem the equal-weighted market index. For example, rather than simply assigning an equal weight to each index constituent, the FTSE Russell Equal Weight Index series evenly weights each industry within the parent index first and then equally weights the companies within each industry. Outcomes can vary by methodology, so it is always important to know how the index is constructed pre-investment.

Lastly, while equal-weighting can be a direct solution (all considerations aside) to concentration risk embedded in a cap-weighted index, investors do have other tools that can mitigate unwanted exposures that are currently present in their passive or active equity allocations. For example, style factors, such as quality, value, low volatility, and dividend yield, can be utilized to counter a growth concentrated equity portfolio. Efficiency in portfolio construction is key, as these factor strategies would need to carefully manage unintended sources of risk in order to be effective at solving the challenge across the total equity portfolio.

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