IAQF Student Problem 2025

Over the past several years there has been a significant increase in the concentration of a limited number of stocks in both the S&P 500 index and the NASDAQ 100 index.

Because the S&P 500 is weighted based on market capitalization, larger companies represent a larger percentage of the index. While the exact concentrations change as market caps fluctuate, the Magnificent 7 composed 31.5% of the S&P 500 as of June 7 of 2024. The large share of these firms in the index are, of course, reflected in the performance of the index, and that effect can be significant. Consider that the S&P 500 increased by 24.2% in 2023. As a group, the Magnificent 7 generated a 75.7% return.

This is how the Magnificent 7 stocks performed in 2023:

- Nvidia (NVDA): +239%
- Meta Platforms (META): +194%
- Tesla (TSLA): +102%
- Amazon (AMZN): +81%
- Alphabet (GOOG, GOOGL): +58%
- Microsoft (MSFT): +57%
- Apple (AAPL): +48%

For the tech-heavy Nasdaq 100, as of June 6, 2024, the Magnificent 7 accounted for 42.3% of the index. Further, the current combined market cap of the seven at around $12.3 trillion is more than four times the size of the nearly $3 trillion market cap of the Russell 2000 Index, which consists of 2,000 small-cap stocks.

While the impact of these seven stocks is especially profound in the US, the group's influence is worldwide. For 2023, they contributed 39.8% to the total return of 22.8% of the MSCI ACWI Index, the global equity index with large- and mid-cap representation across developed and emerging markets. Moreover, the group has become larger than the equity markets of entire countries– together, the Magnificent Seven has nearly the same market capitalization of the stock markets in the UK, Canada and Japan combined.

Many investors hold the broad stock market via low-cost index ETFs, such as the SPDR S&P 500 ETF Trust, which tracks the S&P 500, or the Invesco QQQ ETF, which mirrors the composition of the Nasdaq 100 index. Because the Magnificent 7 are overweight in both the indices and the ETFs that passively track them, there are major implications for financial theory and how investors should think about markets. Your task is to explore some of those implications both analytically and empirically.

1. Start with the most basic: beta. Explore the implications of the concentration of the seven in the S&P 500 (which is often used as the proxy for the market). How much of the beta is driven by the seven verses the 493 other stocks (*i.e.* they probably have different betas – think three)? How does this affect the use of beta for evaluating/forecasting returns and the use of beta for investment decisions? What happens if there is a significant change in the price of one or more of those securities (especially since there may be significant interdependence due to the growth of AI investment by many of those firms)? Does the 2024 drop in Tesla reveal anything? Is that dispositive?
2. Options on the index are amongst the most actively traded. If the index is so highly concentrated, what are the implications for the pricing of the option (if any) or the implications for the volatility of the option (remember that options are basically a means for trading volatility)? What happens to the option is there is a significant increase in the volatility of one or several of the underlying securities?
3. Long small-cap and short large-cap stocks is a common strategy employed by equity hedge funds and institutional investors. What are the implications of the noted concentration for that strategy? How would you modify the trading strategy to correct for any implication you may have found? Can you provide a backtest comparison between the standard strategy and the modified strategy?