



---

## PRACTITIONER'S DIGEST

---

The “Practitioner’s Digest” emphasizes the practical significance of manuscripts featured in the “Insights” and “Articles” sections of the journal. Readers who are interested in extracting the practical value of an article, or who are simply looking for a summary, may look to this section.



### **A PRACTITIONER'S GUIDE TO ADDRESS FAT TAILS AND DOWNSIDE RISK IN PORTFOLIO CONSTRUCTION**

**PAGE 4**

*Eva A. Xu and Eric L. Tarkin*

In this paper we review the history of modern portfolio theory and recap some of the known limitations of mean-variance optimization (MVO). Using simple examples and visuals, we describe the necessary components and assumptions inherent in most portfolio optimization processes still prevailing in the industry, and advocate for a more realistic and robust methodology beyond MVO. We propose an advanced approach that can address downside risk and empirical realities of serially correlated and fat-tailed return distributions. This approach falls under the umbrella of conditional value-at-risk or expected shortfall optimization (or simply mean-CVaR). We show marked differences in portfolio composition between these two optimizations. Over a 17-year period from January 2005 to December 2021, out of sample, mean-CVaR optimization outperformed MVO in Sharpe ratio, maximum drawdown, and cumulative investment performance. The framework can be easily supplemented with proprietary views for expected returns to further enhance realized portfolio performance. Our hope is that this paper is approachable and intuitive to both quantitative and less technical practitioners and conveys the performance benefits of more advanced approaches to portfolio construction. The paper can serve as a methodological introduction on how to better model increasing correlations and fat-tails, as well as an implementation guide.

### **THE MATH GENDER GAP AND WOMEN'S CAREER OUTCOMES**

**PAGE 21**

*Renée B. Adams, Brad M. Barber and Terrance Odean*

Less than 20% of U.S. investment professionals are women. Several, non-exclusive, reasons have been offered for why there are so few women in the investment industry. Women may avoid careers in professions, such as investments, that have inflexible hours. Cultural values may create barriers to

women who hope to succeed in investments. Women may not be attracted to the competitive environment of the investments industry; they may perceive careers in investments to be less pro-social than other careers; or they may consider careers in investments too risky. Traditional cultural values may discourage women from seeking careers in investments.

In this paper, we analyze the relationship between the math gender gap and the representation of women in investment careers. We find that across countries and across U.S. states, the math gender gap for middle school students predicts the proportion of investment professionals who are women. A one standard deviation decrease in a country's math gender gap is associated with a 4.6 to 6.4 percentage point increase in the proportion of investment professionals in that country who are women. To explore cultural factors that could influence both the gender math gap and women's career choice we consider religion. Since all the world's major religions favor the role of men in society, we focus on cross-country differences in religiosity rather than differences in affiliations. We find that in multivariate analyses, a one standard deviation decrease in a country's religiosity index is associated with a 1.9 to 2.6 percentage point increase in the proportion of investment professionals in that country who are women. However, including religiosity in the analysis does not diminish the relationship between the math gender gap and gender representation in finance.

There are three potential explanations for our results. First, math training may directly affect educational choices and career outcomes. Second, other cultural factors that vary geographically may affect both the math gender gap and women's career outcomes. Third, women with strong career skills may choose to move to and work in regions they perceive to be less culturally biased against women with professional careers.

## **IS INDEX CONCENTRATION AN INEVITABLE CONSEQUENCE OF MARKET-CAPITALIZATION WEIGHTING?**

**PAGE 50**

*Lisa R. Goldberg, Ananth Madhavan, Harrison Selwitz and Alexander Shkolnik*

Market-cap-weighted equity indexes are pervasive and influential, serving as both performance benchmarks and investment objectives. However, some commentators have argued that market-cap-weighted indexes are highly concentrated in a few large stocks, suggesting inadequate diversification. We study the history of concentration in market-cap-weighted equity indexes and explore a plausible economic model for how concentration may arise and grow over time. A model-based simulation facilitates the analysis of alternatives to market-cap weighting, allowing the measurement of turnover due to concentration mitigation schemes and the time it takes for concentration to emerge from an equally weighted starting point.

Historically, concentration has been the norm and not the exception, especially for large-cap indexes. A useful metric is breadth, or effective number of securities, which takes account of the number of securities in an index as well as their weights. Defined as the multiplicative inverse of the Herfindahl-Hirschman Index, the breadth of the S&P 500 Index was 67.5 in December 2021. Its average over the period 1975-2021 was 115.6, and its maximum was 153.8. These values are dwarfed by the maximum possible breadth of roughly 500, which is achieved by equal weighting.

It is tempting to concoct success and failure “concentration narratives” explaining why some firms grow to be mega caps while others shrink. However, a narrative-free mathematical model based on firm growth rates that are random but not too small generates levels of concentration that match empirical levels and frames index construction as a trade-off between concentration and turnover.

**TRADING WITH THE INFORMED AND AGAINST THE UNINFORMED:  
FLOWS AND POSITIONING IN THE GLOBAL CURRENCY MARKET**

**PAGE 72**

*Aldo Barrios, Rob Franolic, Davide Giovanardi and Michael Melvin*

The global currency market is notoriously opaque due to the prevalence of OTC trades relative to exchange traded assets. A useful view into what is traded, how much, and by whom, is provided by the CLS settlement system. CLS is the global settlement system for currency trades and trades are classified by type of counterparty. We develop currency trading strategies using CLS settlement data to construct currency flows trading signals. We use the flows of investment funds and corporates for our study. Importantly, we interpret these two types of signals differently: the former reflects speculative strategies, while the latter trade for liquidity needs. The implication is we should trade with the direction indicated by the funds flows and trade against large corporate flows, which should be followed by price reversals.

Initially we developed a simple prescriptive intraday trading strategy, but turnover was too high and the incorporation of realistic transaction costs revealed losses from such a fast strategy. We then turned to daily trade frequency and the strategy showed attractive alpha was generated during our backtest sample period. While the overall sample alpha was fine, this approach experienced long periods of underperformance that would have tested the patience of many investors.

We then turned to using optimization techniques and combined a simple momentum signal with our currency flows information using a Black-Litterman approach. First we turned off the corporate signal and included only funds flows. The model performance improved relative to the generic momentum model, in terms of both risk-adjusted return and drawdown magnitude and duration. We then added the corporate flows into the model and performance improved further, again for both risk-adjusted return and more dramatically for drawdown magnitude and duration. The addition of the uninformed trades of corporates were quite useful in greatly lowering the tail risk of the model. Overall, it appears that there is value to the investor of using CLS flows data to construct active currency portfolios. Our strategies are all implementable and incorporate realistic transaction costs.