Capital Allocators with Ted Seides

Glass box quant at MDT Advisers

Federated Hermes

CAPITAL ALLOCATORS
WITH TED SEIDES

What happens when a love of numbers meets the power of machine learning? Dan Mahr, Head of Federated Hermes MDT Advisers (MDT), was recently interviewed by Ted Seides for his "Capital Allocators" podcast. Mahr shared his journey from flipping IPOs as a Harvard freshman to leading one of the longest-running quant teams in the industry.

Early career and introduction to investing

Dan Mahr's fascination with numbers began in childhood, where he gravitated toward any opportunity to analyze data. Reflecting on this early interest, Mahr shares:

"I was always a kid who loved numbers. I'm old enough that my parents subscribed to a physical newspaper every day, and I would pore through every section that had numbers, whether it was sports or business."

This natural curiosity laid the foundation for his eventual entry into investing. While studying computer science at Harvard during the late 1990s, Mahr encountered the booming IPO market of the dot-com era. With access to a high-speed Internet connection and flexible time as a student, he was able to secure allocations to hot IPOs — often yielding substantial short-term gains.

"I managed to get a number of allocations to those hot IPOs, and you'd get a hundred shares, but as a college student, that seemed like great money," Mahr says.

However, those early wins were tempered by losses that came from overconfidence and straying from his original investment thesis. This experience proved formative, instilling in him a deep appreciation for discipline and rigor in investing. It ultimately led him to pursue a career in quantitative finance, where systematic approaches and data-driven decision-making could replace emotional or speculative choices.

All of these experiences led Mahr to join MDT Advisers — a pioneer in the quant space — in 2002. Federated Hermes acquired MDT in 2006, and Dan took over when the founder retired in 2008.

The evolution of quant strategies

Since entering the quant investing space in 2002, Mahr has witnessed a dramatic transformation in the sophistication and capabilities of quant strategies. Advancements in computing power, data availability and algorithmic design have fundamentally reshaped the landscape.

"The types of strategies and the sophistication of strategies that can be run have really exploded over the years, aided by those tailwinds of processing and data availability," Mahr says.

At MDT, this evolution is exemplified by a strategic shift from traditional factor tilting — where portfolios were constructed by favoring a relatively small set of financial characteristics, such as value or quality — to a more dynamic and adaptive modeling approach that utilizes a larger number of factors.

"There was a formula that used a small number of characteristics, and the portfolios would tilt toward them. Those strategies generated a pretty good outcome, but it was lumpy," Mahr says.

To address the limitations of static factor models, MDT developed and adopted a decision tree framework in 2001. This approach, powered by machine learning, uses a series of binary (yes/no) questions to evaluate company characteristics and generate alpha forecasts. The model adapts its line of questioning based on the context of each company and the response it provokes, allowing for more nuanced and precise stock selection.

Decision trees are used in the insurance industry to help determine the risk factors that best predict an individual's longevity.

"Instead of asking about risk factors for longevity, we're asking about the characteristics of companies and depending on how those questions are answered, the lines of questioning will evolve based on what's relevant for those types of companies," Mahr says.

This decision tree methodology is powered by machine learning, a subset of artificial intelligence that enables MDT's model to learn patterns from historical data and make improvements over time. MDT believes this gives them a significant edge in both experience and refinement.

"At MDT, we've been using machine learning tools since 2001, so we have a 24-year head start on someone who is new to the game," Mahr says. "We have learned a tremendous amount over the last 24 years on what the advantages, but more importantly, what the potential pitfalls are of using these very, very powerful, but also very finicky, algorithms in a very noisy data space like forecasting stock returns."

A look inside the glass box: transparency in quantitative modeling

One of the defining principles of MDT Advisers' investment philosophy is the commitment to transparency in its quantitative models. Mahr refers to this as a 'glass box' approach — an intentional contrast to the opaque 'black box' perception often associated with machine learning in finance.

"We like to position our investment strategies as being a glass box. There's a lot of machinery on the inside, but we can see into it," Mahr says. "We can see how it's working and understand what's driving all of the decision-making on a day-to-day basis."

This transparency is not just philosophical — it's operational. MDT's investment team conducts rigorous research to identify potential alpha-generating factors. These ideas stem from both academic literature and decades of firsthand observation across market cycles. With over 30 years of strategy history, MDT leverages its experience to refine and evolve its models continuously.

Once a new factor is proposed and implemented, it is integrated into the decision tree model, which then evaluates its usefulness purely on a mechanical basis. The team determines whether the factor contributes meaningfully to forecasting returns based on that information. If not, it is discarded without bias.

This process ensures that only data-driven, empirically validated inputs are used in portfolio construction. But the glass box approach also enables MDT to monitor the ongoing relevance of existing factors. If a factor appears to be losing its predictive power, the team initiates a research project to test its continued value. They assess whether removing the factor affects portfolio performance, risk, or return consistency.

"When we have that intuition that a factor has decreased in efficiency... we'll run that research project and ask, 'What if we made zero use of it?'... If we see that we can remove a factor from the model and have very little or no impact on portfolio outcomes over the course of decades, that gives us a lot of confidence that that's a factor that no longer needs to be utilized," Mahr says.

This iterative, data-driven refinement process is central to MDT's success. They believe it allows the firm to maintain a high level of model integrity while adapting to changing market dynamics, without sacrificing interpretability or control.

A day in the life: portfolio construction at MDT

At MDT Advisers, portfolio construction is a daily, data-driven process. Each night, the team downloads updated data from vendors, recalculates company characteristics and runs every stock in the domestic equity universe through their decision tree model to generate fresh forecasts. These forecasts are fed into a portfolio optimizer, alongside a variety of risk controls, trading cost estimates and diversification constraints.

"We use a set of hard risk constraints that are consistent across all of our portfolios as well as a statistical risk model predicting the volatility and the tracking error...all else equal, we prefer portfolios that have more consistent outcomes," says Mahr. "We also take into account trading costs, so we want to make sure that we're not repositioning the portfolio unless we think that the improvement that we're getting from an alpha and risk perspective will compensate us for not only the very visible cost of trading of spreads and commission, but the less visible cost of market impact."

This daily optimization and rebalancing produces a list of proposed trades for review, which is where human oversight plays a critical role. While MDT's models operate mechanically, the team seeks to ensure that the data driving the trades is accurate and that no material news has emerged that the model may not yet have captured. This step is not about subjective overrides, but rather validating inputs and understanding the model's behavior.

"We're not doing trade review from the perspective of interjecting our own subjective behavior... what we're after is making sure, number one, that the data is correct, and number two, to understand the dynamics of the model and what's driving our trading," Mahr says.

Beyond daily operations, the majority of the team's time is spent on research and model enhancement. Idea generation is central to MDT's process, and the firm's commitment to building tools in-house — from back-testing engines to risk models — they believe gives them exceptional flexibility and control.

"Everything that we use is built in-house," Mahr says. "That gives us a lot of flexibility and also breadth in terms of the idea generation and what we can consider doing in terms of making enhancements to the process."

The evolution of markets and looking to the future

Mahr has observed notable shifts in market structure over the past few years — changes that have impacted how quantitative strategies are implemented. Compared to a decade ago, today's markets feel fundamentally different, though the exact causes remain complex and multifaceted.

"Something feels like it's snapped in the last couple of years. I wish I knew specifically what it was," Mahr says. "It could be the rise of pod shops for all I know. It could be that we've hit a tipping point in terms of passive management in the equity space. It could be the rise of retail trading, meme stocks or Robinhood. It could be all of those things wrapped up in one."

Rather than attempting to pinpoint a single cause, Mahr emphasizes the importance of maintaining active strategies that are designed to capitalize on inefficiencies regardless of their origin.

Capital Allocators with Ted Seides

"The good news is that we don't need to know what's driving it. The important thing is having strategies that are active and that are able to take advantage of inefficiencies when they present themselves."

Looking ahead, Mahr sees artificial intelligence as a promising frontier, particularly in its potential to enhance productivity and idea generation. While MDT does not currently use large language models like ChatGPT for stock selection, Mahr can't rule it out.

"It's probably still a ways off before we're asking large language models to suggest stocks for the portfolio, but it's important to be open-minded about the possibilities. Computers are just [going to] keep getting faster," Mahr says.

Despite the challenges and uncertainties, Mahr remains energized by the dynamic nature of the markets. The constant inflow of data, unexpected macroeconomic developments and evolving investor behavior make quantitative investing continuously engaging.

"There's always new information out there. There are always curveballs coming from a macro perspective, risks that you had never seen before that all of a sudden manifest themselves," Mahr says. "From my perspective, it's a great place to be and a really exciting place to be applying my technical background."

To listen to Dan Mahr's full interview with Ted Seides, click here.

52115 (12/25)
Federated Securities Corp.