QUANT EQUITIES

Active Quant unboxed: Inside the engine of quantitative investing

ROBECO
The Investment Engineers

- Active Quant strategies built on transparent, evidence-based models
- Economic rationale meets constant model refinement
- Customizable solutions: flexible, scalable, and client-aligned

Quant investing is all about evidence-based decision making. But behind the mathematics and the models lies a very human discipline. Robeco's quant strategies are shaped not only by algorithms but also by the people who build them – those who continuously test ideas, evaluate outcomes, challenge assumptions, and interpret shifting market dynamics.

This year, as part of our focus on one such strategy – Active Quant – we launched a dedicated podcast series called 'A random talk down Quant Street'[1]. In this article, we continue that focus with a closer look at how Robeco's Active Quant investing engine works: from the first research idea to the construction of real-world portfolios.

Quant in a nutshell

Quant investing is often described in terms that can feel cold or inaccessible: algorithms, models, datasets. Yet, at Robeco, quant is not a black box. Our proprietary portfolio construction tools provide clear visibility into every investment decision — whether driven by risk, return, and/or sustainability — while our comprehensive performance reports ensure results are explained with full transparency. It's a craft that blends systematic discipline with intellectual creativity. Our approach is deeply rooted in the belief that the best strategies come from an ongoing dialogue between theory and practice, economic rationale and evidence.

So what makes a strategy 'quant', and why does it matter? Quant investing starts with the premise that certain patterns in financial markets are repeatable. These patterns are often rooted in behavioral biases, like overconfidence or herding, that cause market inefficiencies. Quant strategies seek to exploit these using data, statistical techniques, and rigorous testing.

Our Active Quant strategies are based on factors, such as value, momentum, quality, or analyst revisions but also short-term signals. All of these are validated through decades of academic and proprietary research, and they have shown persistent performance across time and geographies.

[1] Listen to all 11 episodes of 'A random talk down Quant Street' on the Robeco website or your preferred podcast platform.

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The term 'Active Quant' not only refers to the higher activeness of these strategies but also hints at the continuous refinement of the models. Our quant team is continuously re-evaluating model inputs, checking assumptions, and responding to market evolution, thus keeping our quant investing proposition relevant.

We are constantly monitoring the efficacy of our models and the driving factors including the underlying investment signals. While we seek to learn from market developments such as recent adverse performance episodes, we are keenly aware of the dangers of overfitting. The key is to find a meaningful balance between a strong economic rationale and letting the data speak. This key philosophy drives us to constantly challenge the investment model, innovate factors and signals and strike the right diversification.

From hypothesis to model

Every quant signal and subsequent adjustment begins with a question. For example, could analyst revisions offer predictive power beyond price momentum? Can sustainability metrics be used to enhance traditional alpha factors or is there always a tradeoff with performance? These ideas are tested through a multi-stage research process that combines historical data analysis, robustness checks, and simulations.

The goal is not just to find predictive patterns, but to ensure they are rooted in causal logic. If a signal works historically, researchers must understand *why* and whether that *why* is likely to persist. This prevents chasing statistical anomalies and ensures that every model is grounded in a sound economic rationale.

Once a signal is validated, it becomes part of a broader model only if it demonstrates added value on top of the existing multi-signal model. These models are built to be modular, allowing researchers to test improvements without disrupting the entire framework. This approach ensures flexibility while maintaining the integrity of the overall investment process.

From model to market

Models do not exist in a vacuum and must translate into real portfolios that meet investor needs. This is where the portfolio managers come in, ensuring that the application of our proprietary stock selection model and portfolio construction algorithm result in portfolios that align with the expected outcomes in terms of risk, return and sustainability.

Portfolio construction is not simply a mechanical output. While optimization tools are essential, human judgment plays a crucial role in setting the parameters and reviewing the outcomes. The process includes ongoing dialogue between researchers and PMs to ensure that models perform as expected; not only in backtests but in real markets. Portfolio construction must also account for transaction costs, liquidity, and sustainability considerations. For example, if a trade is predicted to have a significant market impact, it may be scaled down or avoided.

Managing concentration risk elegantly

These considerations are particularly relevant in today's markets, where benchmark concentration is one of the key risks portfolio managers must navigate. With just a handful of mega-cap stocks dominating global indices, underweighting them too aggressively can create significant tracking error and the risk of underperformance versus the benchmark.

Our portfolio construction algorithm is designed to balance these exposures carefully, constraining over- and underweights while spreading the active risk budget across hundreds of positions. This way, alpha doesn't hinge on a few big calls, but on the small, consistent contributions of a highly diversified portfolio. Recent refinements to our portfolio construction process have also made it less susceptible to index concentration, allowing us to pursue alpha opportunities while keeping risk tightly managed.

Quant's role in your portfolio: Versatile, scalable, and strategic

Institutional clients use Robeco's Active Quant strategies in a range of ways. Some use them as core building blocks, especially in regions where stock selection is challenging. Others deploy them as diversifying allocations to counterbalance their exposure to fundamental strategies.

Quant strategies are particularly attractive for clients seeking consistency. Because the investment process is systematic, it avoids the style drift or emotional decision-making. This makes quant a strong fit for mandates where transparency, replicability, and cost-efficiency are priorities.

Moreover, Active Quant is inherently scalable. The same proprietary stock selection model and portfolio construction algorithm can be applied to different geographies and align with varying investment guidelines. This adaptability means we can tailor strategies to the risk, return and sustainability objectives of a variety of client groups including pension funds, insurers, endowments, and sovereign wealth funds.

Why models still need humans

With so much automation, it's natural to ask: do we still need humans in the loop? The answer, unequivocally, is yes. Our researchers play a vital role in generating research ideas, validating results, and monitoring performance. Beyond the technical skills such as math, coding, and data wrangling, what defines the quant team is curiosity.

This drives researchers to explore new signals, challenge consensus views, and refine existing models. It also fosters collaboration across teams, especially between quant and fundamental investors – an area where Robeco is notably strong. While many asset managers might opt to keep these groups siloed, we encourage cross-pollination, sharing insights and perspectives to improve investment outcomes while staying true to the genuine investment philosophies.

The human element is also essential in oversight. Our quant investors constantly review whether models are performing as expected, both statistically and economically. When anomalies arise, they don't just accept the data, but instead investigate, question, and explain. This transparency is crucial for maintaining trust.

Communicating the complex and building trust

Rather than treating the quant process as a secret sauce, we see transparency as a differentiator. Clients can look under the hood, understand the rationale behind portfolio decisions, and ask tough questions. This openness builds confidence, especially for clients allocating significant assets based on models they cannot see or touch directly.

Our client portfolio managers and investment specialists play a vital role in this. Beyond their technical expertise, they act as translators: connecting the mechanics of quantitative models and portfolio construction to real-world portfolio needs. They explain strategies in a way that is as straightforward as possible and as detailed as necessary, conduct portfolio reviews, and co-create customized solutions with clients. In doing so, they bridge research and practice, ensuring that complex ideas are communicated clearly and trust is built over time.

Indeed, we've learned that institutional clients value clarity above all when it comes to systematic strategies: how they work, what drives returns, and how risks are managed. For example, sustainability is an area where client needs can differ widely. Some are primarily return-focused, while others want sustainability to play a central role in their portfolios. Our approach is designed to accommodate this spectrum in a clear and transparent way.

With the help of our proprietary customization software, we can tailor strategies along dimensions of risk, return, and sustainability; whether the objective is purely performance-driven, predominantly sustainability-oriented, or somewhere in between. This flexibility, supported by robust tools and analytics, allows us to meet clients where they are while staying consistent in our process.

Moreover, some investors prefer to consider sustainability as an additional dimension alongside risk and return for decision-making purposes instead of integrating it purely through constraints. To this end we have developed a proprietary 3D investing approach, applied through an algorithm, that explicitly optimizes portfolios across these three dimensions simultaneously. This means that certain sustainability dimensions are treated as distinct objectives alongside traditional risk and return goals, allowing for more nuanced portfolio construction; capable of making dynamic trade-offs in order to meet those clients' long-term financial and sustainability goals.

Behavioral finance in action

One of the most powerful advantages of quant investing is its immunity to emotion. Markets are filled with noise: panic selling, overconfident buying, and herd behavior. Human investors are prone to biases, and even the best fundamental managers can fall victim to fear or greed.

Quant models, by contrast, follow the evidence. They act consistently, even when markets are volatile. This discipline helps avoid poor decisions driven by short-term sentiment, and it often positions quant strategies to take advantage of market inefficiencies caused by investor behavior.

However, quant investors themselves may be prone to bias as well, just think of confirmation bias; that is, favoring evidence that supports existing beliefs while ignoring contradictory data. Another bias is known as the 'Ikea effect', where someone might attach more value to a model simply by virtue of having built it themselves.

Risk is mitigated through rigorous peer review and performance attribution. The quant process itself, with its constant feedback loop between predictions and outcomes, naturally keeps researchers humble. Furthermore, our independent governance bodies critically evaluate and decide on any investment process improvement, thus also safeguarding against biases.

Quant, clarified

Quant investing can seem complex, but at its heart it's a disciplined and transparent process. Our approach shows that the best strategies are not only backed by data; they are built on a foundation of intellectual integrity, critical thinking, and purposeful design.

For institutional investors, quant offers more than return potential. It offers a way to invest with a consistent approach that leads to predictable risk, return and sustainability characteristics in a transparent manner. Whether as a core strategy, or diversifying sleeve, Robeco's Active Quant solutions are designed to align with the real-world needs of clients.

Interested in hearing the voices behind the models? Listen to all 11 episodes of ‘A random talk down Quant Street’ on the Robeco website or your preferred podcast platform.

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