CASE STUDY

PGIM QUANTITATIVE SOLUTIONS

50 YEARS CELEBRATION

PRECISION IN MOTION:

Optimizing Portfolio Transitions in Emerging Markets

OVERVIEW

A European client sought an emerging markets strategy that met their risk and return targets while addressing specific ESG and country exposures. The challenge was to transition the client's legacy portfolio to closely mirror PGIM Quant's ideal model portfolio while adhering to strict cost constraints. Using our proprietary transaction cost model and detailed transition planning, we restructured and rebalanced the legacy portfolio into our target portfolio to achieve nearly identical exposures to a model portfolio – which would have started from cash – with minimal cost increases and alignment with the client's ESG, investment, and risk goals.

Through our holistic approach, integrating transaction costs, portfolio design, and market dynamics, we managed a complex transition to deliver an optimized portfolio with minimal slippage, meeting the client's goals with precision and efficiency.

CHALLENGE

Unlike a straightforward transition from an all-cash position, transitioning the client's existing emerging markets portfolio to PGIM Quant's target portfolio introduced significant complexities:

- Transaction Costs: Legacy holdings in emerging markets posed challenges with liquidity and trading volumes, potentially amplifying the cost impact.
- Alignment with ESG Goals: Balancing specific ESG exposures required precision during restructuring to avoid compromising sustainability goals.
- Risk-Return Balance: The transition required maintaining the target portfolio's risk and return profile, demanding careful cost management to ensure alignment with the portfolio's risk and return objectives.

KEY PARTNERS

- European institutional investor
- PGIM Quant investment & trading teams
- PGIM Quant operations team

For professional investors only.
All investments involve risk, including possible loss of capital.

APPROACH

To address these challenges, we leveraged PGIM Quant's proprietary transaction cost model to estimate transaction costs and create a seamless transition strategy that compared various scenarios.

We calculated the realized implementation shortfall using the methodology of Ang et al. 2024[1].

Our Analysis Focused on Two Scenarios:

Portfolio 1: All-cash position => ideal model portfolio (used as a benchmark).

Portfolio 2: Client's legacy portfolio => target portfolio (new portfolio).

We projected the transition costs for both portfolios. Portfolio 1 was our baseline, or benchmark, which we compared against the realized costs of Portfolio 2 (new portfolio). Projected costs for Portfolio 1 were based on starting with an all-cash position and fully investing into our model emerging markets portfolio. For Portfolio 2, our objective was to minimize implementation costs while maintaining close alignment with the exposures in Portfolio 1. Exposures replicated included value, growth, quality, alpha, ESG, and tracking error. This comprehensive approach ensured alignment between the model (Portfolio 1) and the actual (Portfolio 2).

By analyzing Portfolio 2 against the legacy portfolio, we estimated an ex-ante transaction cost of 38 basis points (bps) with an estimated error of 64bps. In fact, when using volume-weighted average price (VWAP) as the benchmark price, which takes into account intraday price fluctuations, the final realized cost was 48bps, comfortably within the estimated range. This alignment validated the accuracy of our proprietary transaction cost model.

The realized 48bps implementation shortfall was moderately higher than the 24bps estimated for an all-cash starting position. This slight variance stemmed from liquidity friction related to legacy holdings and execution differences during actual implementation. However, the cost increase was controlled and well within acceptable parameters.

The proprietary transaction cost model played a critical role in controlling costs, managing risks, and ensuring efficient trading by systematically modeling market dynamics and liquidity. While market conditions can contribute to positive outcomes, the overall execution was consistent with expectations and aligned with cost projections, whether measured against last price or VWAP benchmarks. This disciplined approach minimized reliance on favorable market conditions, proving it's not about luck, but about precision and planning. The model accounted for uncertainty, delivering consistent value while aligning closely with portfolio objectives, even amid inherent market variability.

RESULT

The minimal active exposures (below) of the actual portfolio compared to the model portfolio confirm that the actual portfolio transition closely aligned with the model portfolio:

Factor	Exposure Difference (bps)
PGIM Quant Value Exposure	36
PGIM Quant Growth Exposure	82
PGIM Quant Quality Exposure	144
ESG Exposure	4
ESG E Exposure	0
ESG S Exposure	72
ESG G Exposure	-32
China-A Exposure	56
India Exposure	0
Alpha Exposure	90

[1] Filled and Killed: Forecast and Realized Trading Costs across Horizons from Global Equity and Fixed Income Portfolio Trades.

The actual portfolio achieved a tracking error of 0.57%, reflecting remarkable precision in replicating the model portfolio. While minor deviations arose due to cost considerations, the actual portfolio closely mirrored target exposures and maintained consistent active positioning. To put this into context, the 0.57% tracking error is well below the target tracking error range of 2.5%-3.5% of our emerging markets equity strategies relative to benchmarks. This low tracking error underscores the strength of our approach in preserving portfolio integrity with minimal deviation. Notably, both the actual and model portfolios maintained similar risk profiles, demonstrating our ability to transition from a legacy portfolio smoothly. We successfully preserved the intended factor exposures without incurring significantly higher transaction costs, even when compared to an all-cash starting position.

The aggregate portfolio percentage changes represent adjustments to the legacy portfolio, correcting prior weight deviations relative to target exposures. ESG exposures saw significant increases, aligning with the client's ESG preference. Meanwhile, value, growth, and quality exposures shifted toward neutrality, consistent with the objectives of achieving index-like exposures. In addition, country allocations were refined to better align with the client's mandates, with reduced exposure to China-A and increased exposure to India.

To illustrate more clearly, we compare the active exposures of both the legacy and target portfolios to the MSCI Emerging Markets Index, the benchmark for both:

Factor	Pre-Transition Exposure to MSCI EM (bps)	Post-Transition Exposure to MSCI EM (bps)	Aggregate Portfolio % Change
PGIM Quant Value Exposure	-829	87	9.99%
PGIM Quant Growth Exposure	-402	56	4.77%
PGIM Quant Quality Exposure	-1304	-16	14.81%
ESG Exposure	-163	267	4.37%
ESG E Exposure	-351	262	6.35%
ESG S Exposure	-281	87	3.79%
ESG G Exposure	-484	203	7.22%
China-A Exposure	-434	-172	2.74%
India Exposure	188	372	1.81%
Alpha Exposure	-783	62	9.17%

SOLUTION

PGIM Quant successfully transitioned the client's legacy portfolio by carefully managing the trading process to balance the client's risk, return, and ESG-specific objectives and restrictions while adhering to strict cost constraints.

Our holistic approach to portfolio construction integrated all factors – transaction costs, portfolio characteristics, and market dynamics – into a unified process. Our model anticipated and predicted changes in supply and demand caused by market entry and also accounted for the uncertainty inherent in such transitions. This comprehensive approach helped minimize transaction costs and delivered a portfolio that adhered to the client's design criteria with exceptional efficiency.

Key Outcomes:

- **Advanced portfolio transition management and implementation:** Utilizing our proprietary transaction cost model tailored to our execution style and market dynamics – a reflection of the quant DNA embedded in our team – we transitioned the client's legacy portfolio with the precision and accuracy only a quantitative approach can achieve.

- **Integrated execution:** Fusion of cost and exposure management, modeling expertise, and tailored execution within a quantitative systematic framework to deliver an optimal outcome that fundamental managers cannot replicate without risking higher costs and performance drag.

- **Alignment with target exposures:** The actual portfolio transition achieved minimal active exposures to the model portfolio, ensuring close alignment with anticipated factor representations.

- **Controlled risk profiles:** A tracking error of 0.57% confirmed that the risk profiles of the legacy-start and cash-start portfolios remained comparable, underscoring effective risk management during the transition.

- **Efficient cost management:** The realized transaction cost of 48bps, comfortably within the estimated range, validated the accuracy of our proprietary transaction cost model. This outcome highlighted cost efficiency, even under the complexities of transitioning from a legacy portfolio.

- **ESG implementation:** The process successfully balanced the client's low-risk mandate with stringent ESG and country-specific objectives, maintaining the intended strategic alignment.

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Today, we manage systematic equity and multi-asset portfolios against a wide range of benchmarks. PGIM Quant's global client base includes corporate and public pension plans, endowments and foundations, sovereign wealth funds, multi-employer pension plans, and sub-advisory accounts for leading financial services companies. As of December 31, 2024, PGIM Quant managed, advised on, or administered approximately $111 billion of client assets*.

FOR MORE INFORMATION

To learn more about our capabilities, please visit www.pgimquantitativesolutions.com.

*PGIM Quant provides model portfolios for certain accounts, the assets of which (Assets Under Administration) are included in the total AUM/AUA figure of $111.3 billion, (AUM $108.5 billion and AUA $2.8 billion) as of December 31, 2024.

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