Three Horizons Capital

Accelerating Portfolio Innovation

Leveraging Diversification through Strategic Use of Leverage

Executive Summary

A US Public Pension Fund (USPPF), managing over $160 billion as of December 31, 2024, responsible for securing the financial futures of over 692,000 participants within their state Retirement System. Like many institutional investors, the USPPF faces the challenge of meeting long-term obligations in an environment characterized by volatile markets, low interest rates, and increasing longevity. These obligations include pension payments, healthcare benefits, and other long-term liabilities that require consistent, predictable returns.

To address these challenges, the USPPF's CIO pioneered an innovative philosophy incorporating modest leverage to optimize risk-adjusted returns. The goal was to enhance diversification without raising overall portfolio risk—a critical objective for a fund with significant long-term liabilities. This approach reflects a growing recognition that traditional asset allocation may not be sufficient to meet future obligations, necessitating a more dynamic and sophisticated approach to portfolio construction.

Three Horizons Capital partnered with the USPPF to design and implement a strategy that leverages modest leverage to optimize risk-adjusted returns.

This collaboration involved

1.) Designing a new portfolio construction framework,
2.) Educating stakeholders,
3.) Piloting the strategy with external managers, and
4.) Creating a risk analytics and reporting framework for real-time oversight.

The result was a successful deployment of a new portfolio sleeve, increased stakeholder trust, and **a blueprint for internal scaling**—demonstrating how a risk-managed, sandbox approach can drive front-office transformation and data-driven confidence.

Introduction: About Three Horizons Capital

Three Horizons Capital is not a conventional consultant or another asset manager. We are practitioners—people who have built, led, and transformed investment businesses from the inside. Our guidance is rooted in lived experience, not theory.

We partner with clients, working shoulder to shoulder to address the realities of growth. Our focus is unwavering: we help organizations unlock and drive revenue, not through generic advice, but through a process that is adaptive, cost-conscious, and always tailored to the client's unique environment.

Our core pillars are:

- **Sales Enablement and Client Onboarding (Distribution):** Leveraging advanced data and AI-driven insights to help clients anticipate investor needs and maximize distribution impact.
- **Investment Management:** Designing and implementing scalable, cost-effective portfolio solutions, from customized indexing to automated reporting.
- **Product Design (& Operating Platform Development):** Identifying market gaps and designing products that meet real investor needs, using a collaborative, data-driven, and risk-minimizing "sandbox" approach.

We embed within client teams, guiding them from minimum viable product to scalable success, always with transparency, collaboration, and a deep respect for each client's journey.

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The Three Horizons Capital Approach & Mandate

Three Horizons Capital's approach was grounded in rigorous analysis, stakeholder engagement, and a commitment to building a scalable, sustainable solution.

Our mandate was clear: to help the USPPF explore and implement a strategy that could enhance diversification and improve risk-adjusted returns through the strategic use of modest leverage, while ensuring alignment with their long-term objectives and risk tolerance.

1. Portfolio Construction Framework

We designed a strategy utilizing modest leverage to enhance diversification. Backtesting and scenario analysis validated the approach's risk-reduction potential.

In today's market environment, traditional portfolio construction often falls short of delivering the returns needed to meet long-term obligations. By incorporating modest leverage, we can amplify the benefits of diversification, accessing a broader range of asset classes and strategies without increasing overall portfolio risk. Our backtesting and scenario analysis demonstrated that this approach not only enhances returns but also reduces downside risk during periods of market stress—a critical consideration for a fund like USPPF.

2. Stakeholder Education

We co-developed explanatory materials to communicate the strategy's benefits to the board and broader stakeholder groups, securing buy-in for implementation.

Effective stakeholder communication is paramount when implementing innovative investment strategies. We worked closely with USPPF to develop clear, concise materials that explained the rationale behind the leverage-enhanced diversification strategy, addressing any concerns and building confidence in the approach. This collaborative effort ensured that all stakeholders understood the potential benefits and risks, paving the way for successful implementation.

3. Pilot Implementation

We executed the framework with three external asset managers to prove operational viability and build trust via a phased rollout.

A phased rollout with external managers allowed us to validate the operational viability of the strategy in a real-world setting. This approach not only built trust among stakeholders but also provided valuable insights into the practical challenges of implementing a leverage-enhanced portfolio. By working closely with the external managers, we were able to refine the strategy and ensure that it could be scaled effectively.

4. Monitoring & Reporting

We created a risk analytics and reporting framework to monitor leverage, liquidity, attribution, and tracking error, enabling real-time oversight and governance.

Real-time monitoring and reporting are essential for managing the risks associated with leverage. We developed a comprehensive risk analytics framework that provides USPPF with a clear view of leverage levels, liquidity positions, performance attribution, and tracking error. This framework enables proactive risk management and ensures that the strategy remains aligned with USPPF's objectives and risk tolerance.

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Strategic Outcomes

This project exemplifies the power of a "sandbox" approach to portfolio innovation—a strategy that allows institutions to experiment with new ideas in a controlled environment, build trust among stakeholders, and create the infrastructure needed for long-term success.

By starting small, building trust, and fostering a culture of continuous learning, the USPPF was able to:

- Deploy a new portfolio sleeve across external managers
- Build stakeholder trust and education for long-term adoption
- Create infrastructure for internal scaling
- Enable a transition from experimentation to institutional practice

This approach not only mitigated career risk for key decision-makers but also fostered a culture of innovation and continuous improvement—essential ingredients for long-term success in today's rapidly changing investment landscape.

Strategic Outcomes

This project exemplifies Three Horizons Capital's **Accelerated Evolution** philosophy:

- ✅ Risk-managed innovation via sandbox pilots
- ✅ Front-office transformation without operational disruption
- ✅ Data-driven stakeholder confidence

It provided the USPPF with a blueprint to internalize an innovative framework that balances enhanced diversification with operational feasibility. By combining our practitioner expertise, technical rigor, and collaborative approach, we helped USPPF unlock new sources of value and position itself for long-term success.

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TEAM BIOGRAPHIES

Dr. Jay Raol focuses on providing customized direct indices and analytics to help asset managers and wealth advisors to efficiently manage portfolios to specific outcomes through innovative technology.

Previously, Dr. Raol was head of fixed income within the Systematic and Factor Investing (SFI) Group at Invesco and a member of the SFI leadership team. His team researched and managed strategies in global fixed income including investment grade, high yield and treasures. The group managed $2 bill ion in strategies across active ETFS, mutual funds and separately managed accounts. In addition, he worked with clients to develop bespoke multi-asset solutions across equities, fixed income, managed futures and options.

Before joining SFI, he was director of quantitative research within Invesco Fixed Income with responsibilities in quantitative macroeconomic strategy, portfolio construction and risk management. Mr. Raol has been in the industry since 2010. He has numerous publications covering macro economic, systematic and multi-asset subjects. Mr. Raol earned a BA degree and a PhD in computational and applied mathematics from Rice University in Houston, Texas.

Bin Yang leads the research initiatives and oversees the technology platforms that drive the firm's innovative products. Previously, Mr. Yang was a Senior Quantitative Researcher at Invesco, where he specialized in fixed income quant research, multi-asset factor strategies, and portfolio construction. Mr. Yang earned a M.S. degree in financial engineering from Columbia University and B.A. degrees in Applied Mathematics, Economics, and Statistics from Rice University. He is a Chartered Financial Analyst® (CFA) charter holder.

Andrew Gardner focuses on innovative implementation of investment strategies and distribution strategies partnering with asset managers globally to effectively and efficiently increase long term sustainable organic growth.

Andrew has over 25 years in the asset management industry working across all three regions where he helped to build and establish Invesco's presence in Asia Pacific with key Merger and Acquisition while developing Invesco's Global Sovereign Wealth Program. Over the last 10 years Andrew has worked alongside Dr. Raol at Invesco where they helped to grow Invesco Systematic and Factor Investing Group across Equity, Fixed Income and Multi Asset to $40billion.

Andrew is a chartered certified Accountant with a Master's degree in Renewable Energy and Environmental Finance from University College Dublin.