Three Horizons Capital

Transforming Performance Attribution

A Case Study on Exposure-Based Attribution at Three Horizons Capital

Executive Summary

This case study details how Three Horizons Capital, has implemented an exposure-based performance attribution framework that provides a clear, intuitive alternative to traditional Brinson attribution. By focusing on replicating key economic exposures—interest rate duration, foreign exchange (FX) exposure, and credit beta—this methodology delivers a more transparent, risk-aligned, and actionable view of portfolio performance.

The result is a framework that aligns with how institutional consultants and asset allocators evaluate results, supporting better decision-making and more effective communication with stakeholders.

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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Overview: Exposure-Based Attribution — A Technical Alternative to Brinson

Traditional Brinson attribution, which decomposes returns by sector or security selection, has long been the industry standard. However, as institutional portfolios have grown more complex—spanning fixed income, multi-asset, and factor-based strategies—its limitations have become increasingly apparent. Brinson's sector-based approach often fails to capture the true economic drivers of performance, can obscure unintended risk exposures, and is less effective for portfolios where macro factors dominate.

Three Horizons Capital's exposure-based attribution framework addresses these challenges by focusing on replicating the portfolio's key economic exposures:

- Interest Rate Duration
- Foreign Exchange (FX) Exposure
- Credit Beta (Spread Duration × OAS)

This approach is supported by leading research, which highlights that decomposing returns by systematic risk factors provides a more accurate, transparent, and actionable understanding of performance—especially for institutional consultants and asset allocators seeking to align attribution with portfolio construction and risk management.

- Why does it matter?
    a. **Granularity and Multi-Factor Insight**: Exposure-based attribution allows for simultaneous analysis of multiple risk factors, providing a nuanced view of what truly drives returns.

    b. **Identification of Unintended Exposures**: By isolating systematic risks, asset owners can distinguish between intentional portfolio bets and accidental factor tilts.

    c. **Alignment with Modern Portfolio Construction**: As factor investing and multi-asset strategies proliferate, attribution frameworks must reflect the realities of how portfolios are built and managed.

Top-Down Decomposition

Our process begins with the construction of a **replicating portfolio** that mirrors the aggregate risk exposures of the actual portfolio. For example, if the portfolio exhibits:

- 3 years of duration,
- 1% NAV exposure to long USDCAD,
- 5 years of spread duration with 100 bps OAS,

then performance attribution is calculated as:

- **Duration Return:** Using the total return of a 3-year government bond benchmark,
- **FX Impact:** Return of a 1% long USDCAD position,
- **Credit Excess Return:** Change in OAS × spread duration.

Each component isolates a major driver of portfolio return, making the decomposition both intuitive and directly aligned with market sensitivities. This methodology is not only more transparent but also more robust, as it avoids the arbitrary sector classifications and path dependencies inherent in traditional models.

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Top-Down Decomposition (Cont'd)

Why isolating each component matters:

- **Enhanced Risk Transparency:** Decomposing returns by risk factor provides a clear map of where performance is coming from, supporting more informed oversight and governance (JPM, 2023).

- **Improved Decision-Making:** Asset allocators can adjust exposures, hedge unwanted risks, and optimize risk-adjusted returns with greater precision.

- **Performance Attribution Accuracy:** By focusing on economic exposures, attribution reflects the true drivers of return, rather than artifacts of sector or security grouping.

- **Customizable Benchmarking**: We provide the flexibility to customize the benchmarking process for each component. Duration returns can be linked to specific yield curve segments, FX impacts can reference currency-hedged benchmarks, and credit returns can use sector- or rating-specific indices. This customization ensures that attribution is always relevant to the portfolio's unique structure and objectives—a key advantage highlighted in both academic and practitioner literature.

Security Level Attribution

Once top-level exposures are decomposed, we allocate component returns down to individual securities based on their proportional contribution to each risk factor:

- Duration return → allocated by interest rate duration,
- FX return → allocated by currency exposure,
- Credit excess return → allocated by spread duration × credit sensitivity.

This approach enables us to show **how each position contributed to the fund's macro risk exposures**, providing a meaningful, risk-aligned view of security-level performance. By avoiding overfitting and subjective classification, we deliver attribution that is both robust and intuitive—qualities that institutional consultants and asset allocators increasingly demand as portfolios grow in complexity.

Why this is beneficial:

- **Avoids Overfitting:** Attribution is grounded in measurable risk exposures, not arbitrary groupings.

- **Objective and Transparent:** Security-level contributions are directly linked to macro risk factors, supporting clear communication with stakeholders.

- **Scalable Across Portfolios:** The methodology adapts seamlessly to multi-asset and fixed income portfolios, where traditional sector-based attribution often fails.

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Comparison: Exposure-Based vs. Brinson Attribution

Brinson Attribution	Three Horizons Capital Exposure-Based Attribution
Breaks down returns by sector or security selection	Decomposes returns by key economic exposures (duration, FX, credit beta)
Prone to chaining problems and path dependency	Additive, risk-based components avoid compounding issues
Requires arbitrary classification of securities	Uses continuous, intuitive measures aligned with portfolio construction
Misalignment with actual portfolio risks	Directly reflects how portfolios are managed and where risk is taken
Less effective for fixed income and multi-asset strategies	Scalable and robust across asset classes and strategies

Why the Three Horizons Capital Approach

Advantage	Description
Avoids Chaining Problems	Results are additive and not path-dependent, ensuring clarity over time.
Client-Ready	Easier to explain and aligns with how external stakeholders think about risk.
Transparent & Scalable	Works across asset types and portfolios without arbitrary categorizations.
Customizable	Benchmarks can be tailored to reflect specific yield curves, currencies, or credit exposures relevant to the portfolio.

Conclusion

Three Horizons Capital's exposure-based attribution framework delivers a transparent, risk-aligned, and technically robust alternative to traditional attribution models.

By focusing on the true economic drivers of performance and providing flexibility in benchmarking and security-level analysis, we empower institutional investors and asset allocators to make better decisions, communicate more effectively, and manage risk with greater precision.

This is attribution built for the realities of modern portfolio management.

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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.