PERA
INVESTED IN TOMORROW.

PERA INVESTMENT COMMITTEE & BOARD
EDUCATIONAL SESSION

August 29, 2019
Immediately following Board Meeting

AGENDA

ITEM		PRESENTER
A.	Performance Through a Risk Budget Lens 1. Overview of PERA Risk Budget 2. Performance Attribution 3. Future Portfolio Enhancements	Dominic Garcia Chief Investment Officer Tom Toth Wilshire Associates

Wilshire

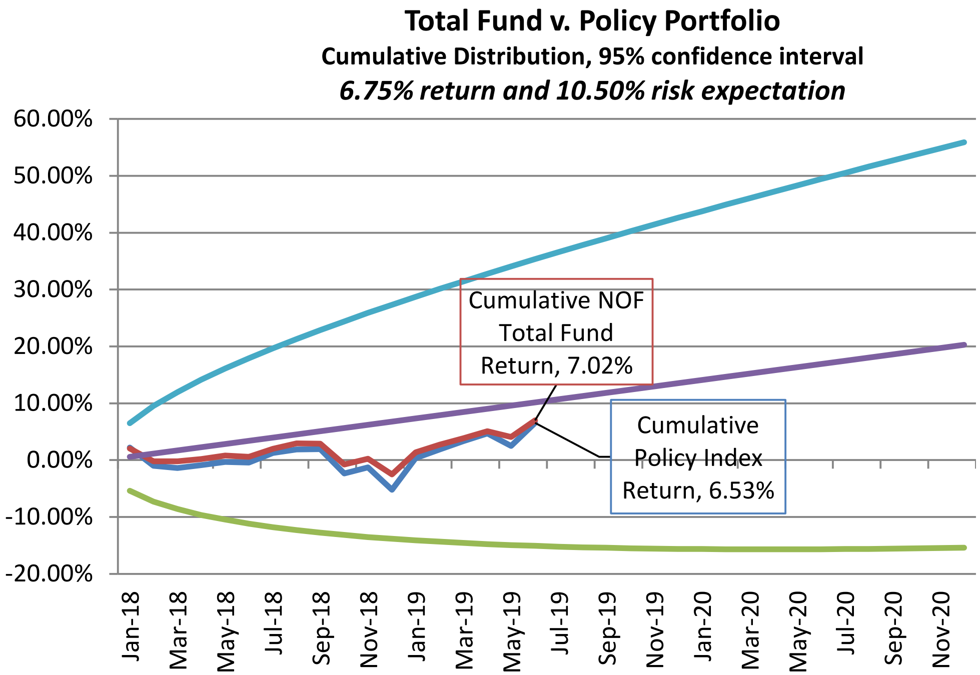
WILSHIRE ASSOCIATES

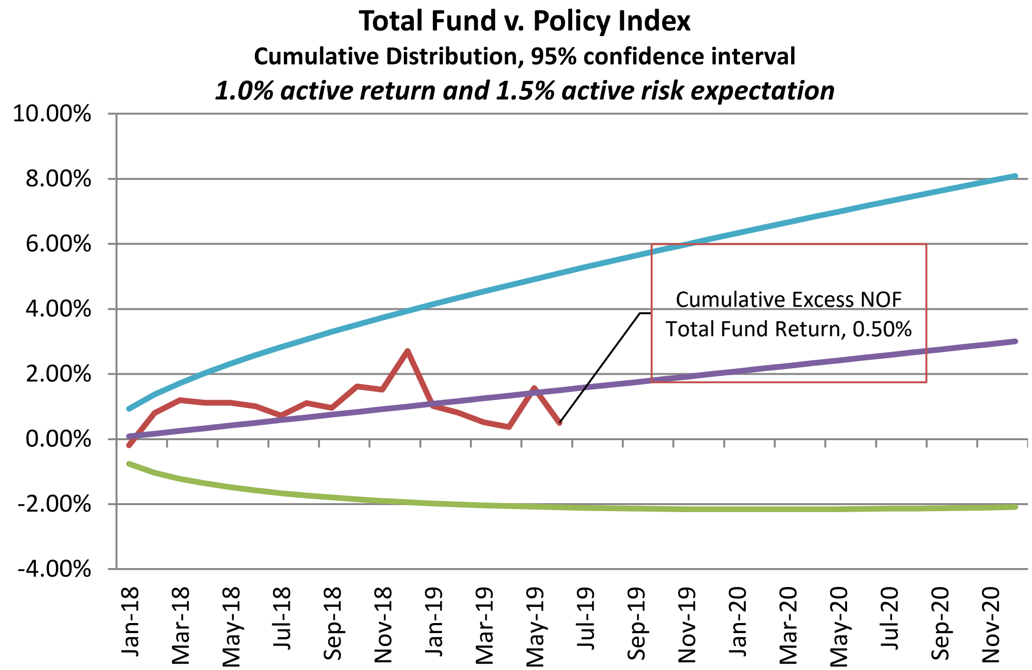
Wilshire Consulting

New Mexico PERA Performance Attribution Education

August 2019

Key Takeaways





- PERA Total Fund is performing within expectations
  - Performance attribution in this presentation will examine the drivers of the variance between the Total Fund portfolio and the Policy benchmark
- Active performance has been positively impacted by selection and negatively impacted by allocation effects
  - Strategies are being implemented to accentuate the positive selection impacts and neutralize the negative allocation impacts

Performance Attribution

- Benchmarking serves as a clear and objective means of evaluating performance
- Evaluation of the effectiveness of the PERA investment program is based on comparisons vs. two primary benchmarks
  - Reference Portfolio is a simple and low cost portfolio with a similar risk profile as the PERA Total Fund that can be implemented passively
  - Policy Benchmark is a more complex set of investment options, which matches PERA's investment philosophy and reflects the overall structure of the fund
- This presentation focuses on comparisons between the Total Fund and the Policy Benchmark

Performance Attribution

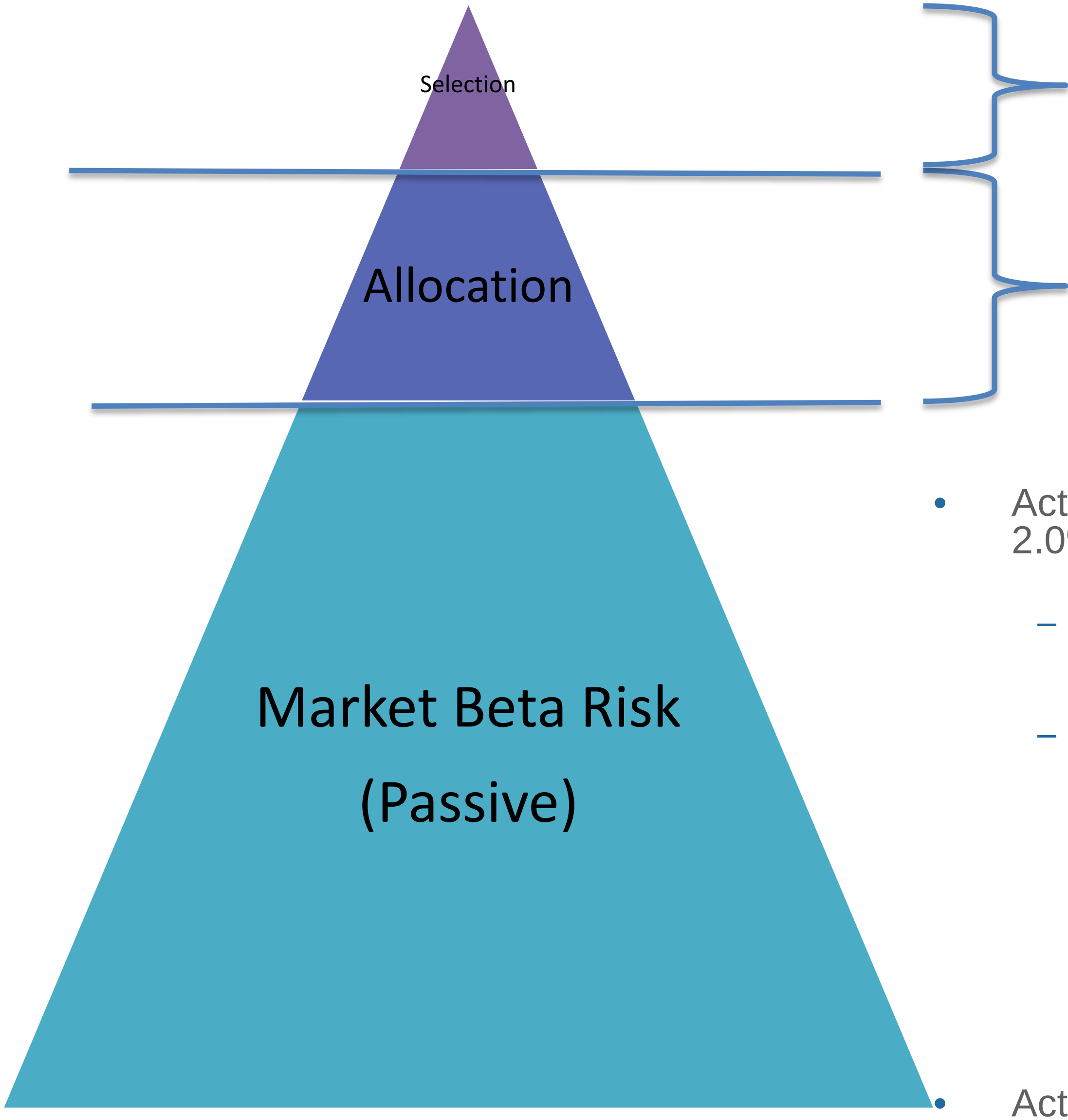
- Performance attribution describes how a portfolio's performance differed from a specified benchmark – i.e. the active return
  - Measures what factors are driving active return and provides insight into the level of risk being taken to generate that active return
  - Factors should be aligned with active risk budget
    - Allocation – structure and illiquidity
    - Selection
- Why should investors care?
  - Clear understanding of return drivers allows for stronger portfolio management
  - Focus on **enhancing** exposure to those factors which are likely to pay off over time and **neutralizing** factors that are less likely to pay off

Risk Framework Background

Risk framework focuses on 3 components – Beta, Allocation, Active Selection

- **Beta** captures the return and risk impact of the policy portfolio composed only of liquid markets
  - Policy benchmarks are limited to broad liquid and investable indexes
- **Allocation** captures the impact of utilizing both illiquid investments and strategy weights that differ from policy Beta targets
  - <u>Structure</u> return contribution accounts for differences in weights relative to the policy benchmark and the appropriate Beta return
  - <u>Illiquid</u> return takes into account the illiquidity premium and successful implementation
- **Selection** capture idiosyncratic sources of return and risk
  - Calculates how well strategies have performed relative to their appropriate benchmark
    - » Example – Kayne Andersen Small Cap is measured relative to the Russell 2000 Index of small capitalization stocks

Total Fund Risk Budget 2019



Expected Active Risk of 0.6%
(Expected Active Return of 0.4%)

Expected Active Risk of 1.4%
(Expected Return of 0.6%)

- Active Risk Target of 1.5% with a range of 1.0% to 2.0%
  - Selection impacts are expected to account for approximately 35% of the active risk
  - Allocation impacts from both structure and illiquid implementation are expected to account for approximately 65% of the active risk
    - Approximately 85% of Allocation risk expected to come from illiquid strategies
    - Approximately 15% of Allocation risk is expected to stem from structure tilts
- Active risk budget of 1.5% is expected to generate 1.0% in return

Allocation - Structure Risk

- Structure risk accounts for differences in weights relative to the policy benchmark and the appropriate Beta return
  - Covers implementation strategy within an asset class
  - Decisions within an asset class include:
    - Benchmark selection
    - Asset class specific decisions:
      - U.S. Equity → Large-cap vs. small-cap, or growth vs. value
      - Global Equity → Region, country, and/or currency exposures
      - Fixed Income → Sector, duration, and quality, as well as country and currency weightings

Allocation - Illiquidity Risk

- Illiquid risk takes into account the illiquidity premium and successful implementation
  - Private market valuation processes introduce a lag given the time required to compile and translate financial statements into estimated market values
  - Appraisal methodologies, even when done more frequently, can focus on comparable performance metrics which are backward looking
  - End result is that private market valuations which are less impacted by contemporaneous market volatility than the underlying investment might merit (both positively and negatively)

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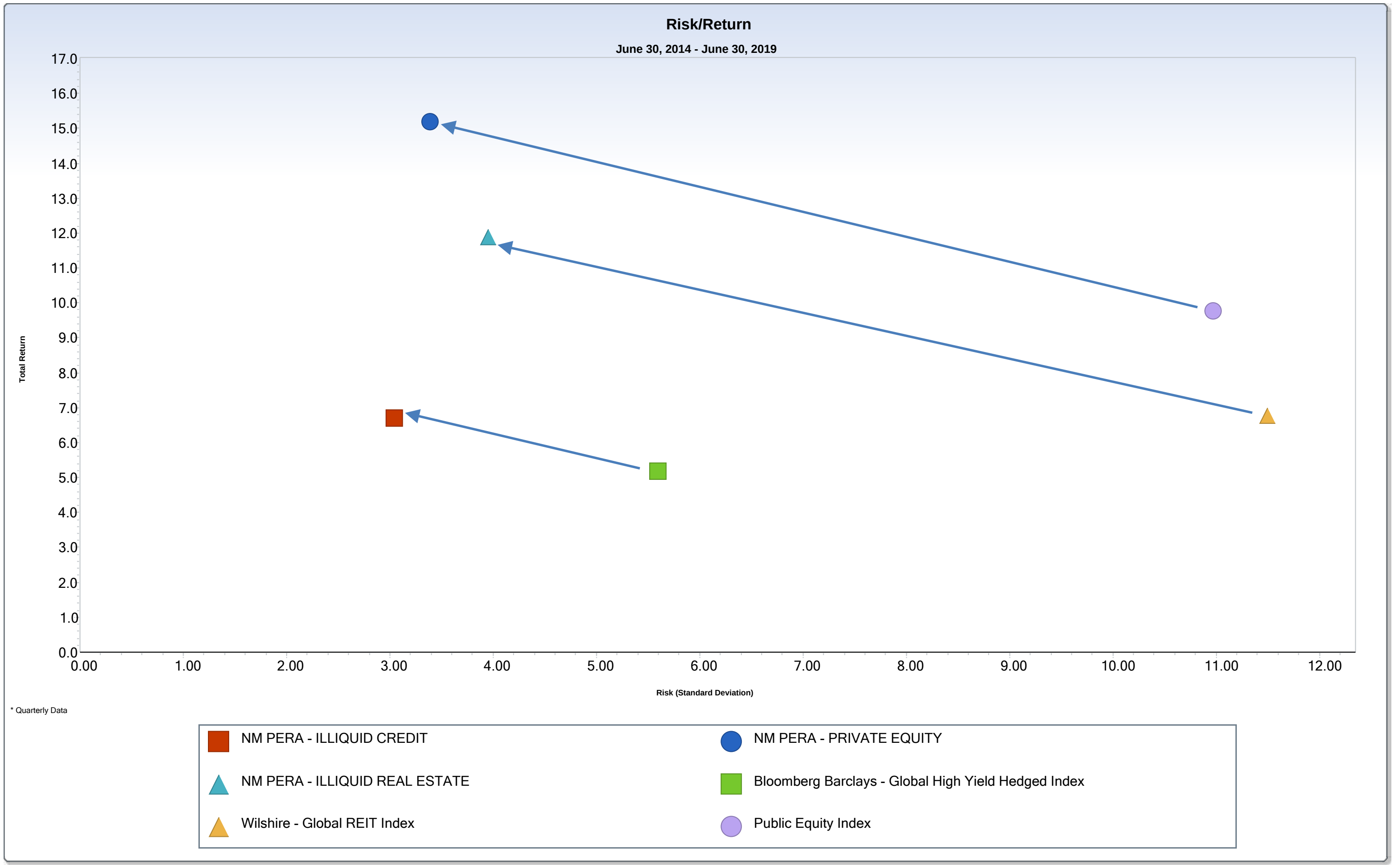
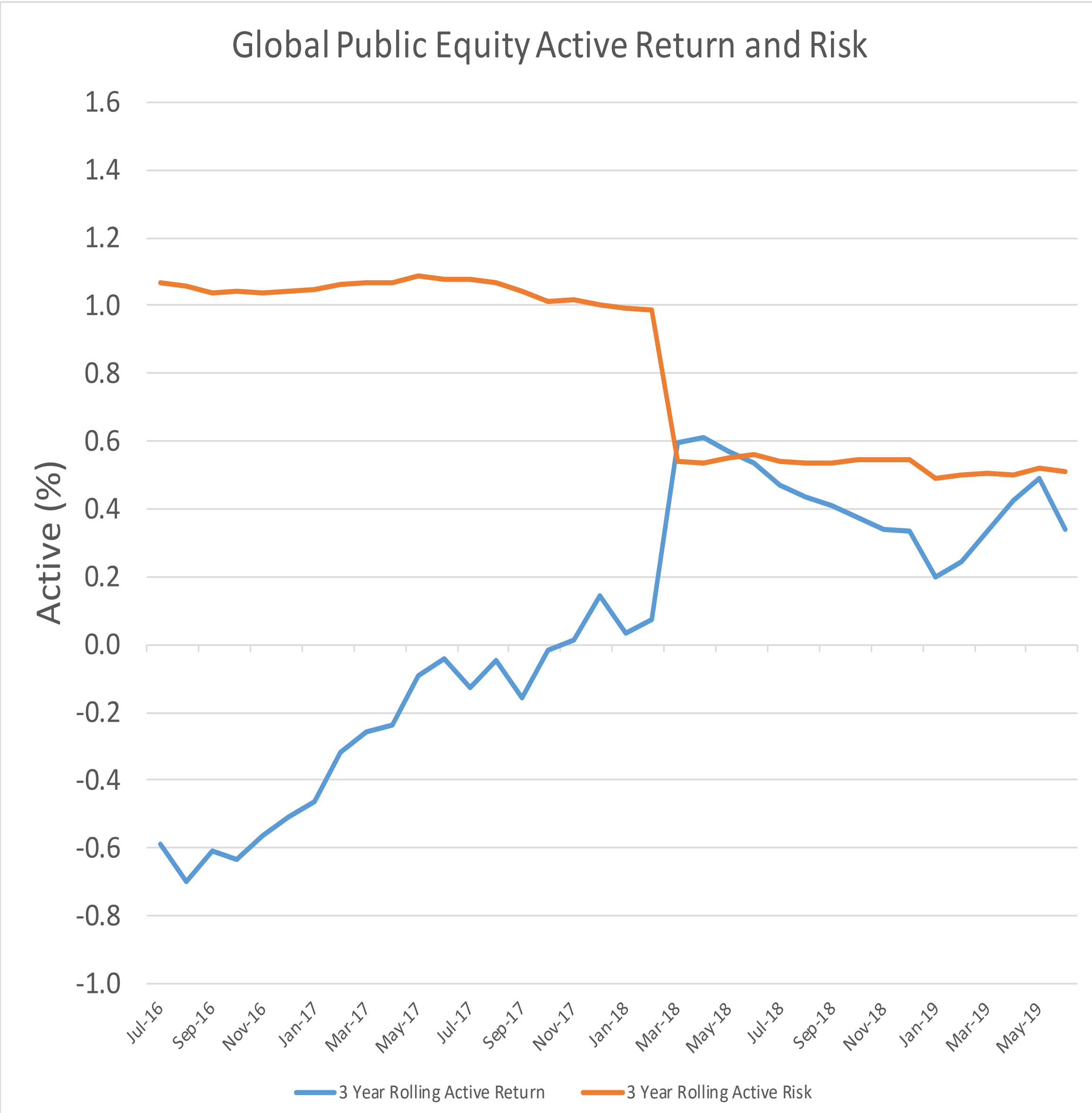
Illiquidity Risk Illustration



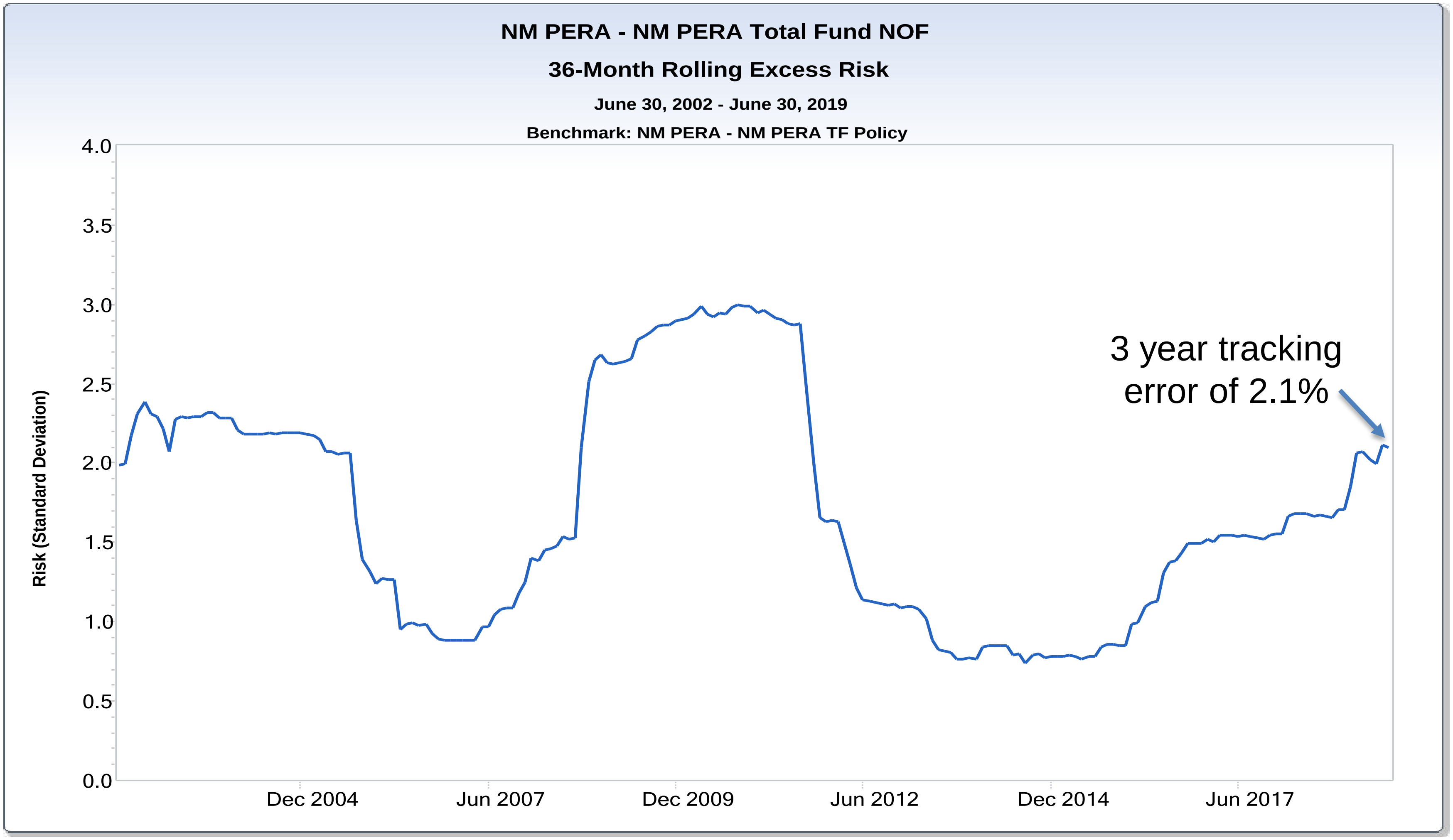
- Measured private equity results are meaningfully less volatile than a public market benchmark
  - Less diversified
  - Smaller enterprises
  - Can be more leveraged

Selection Risk



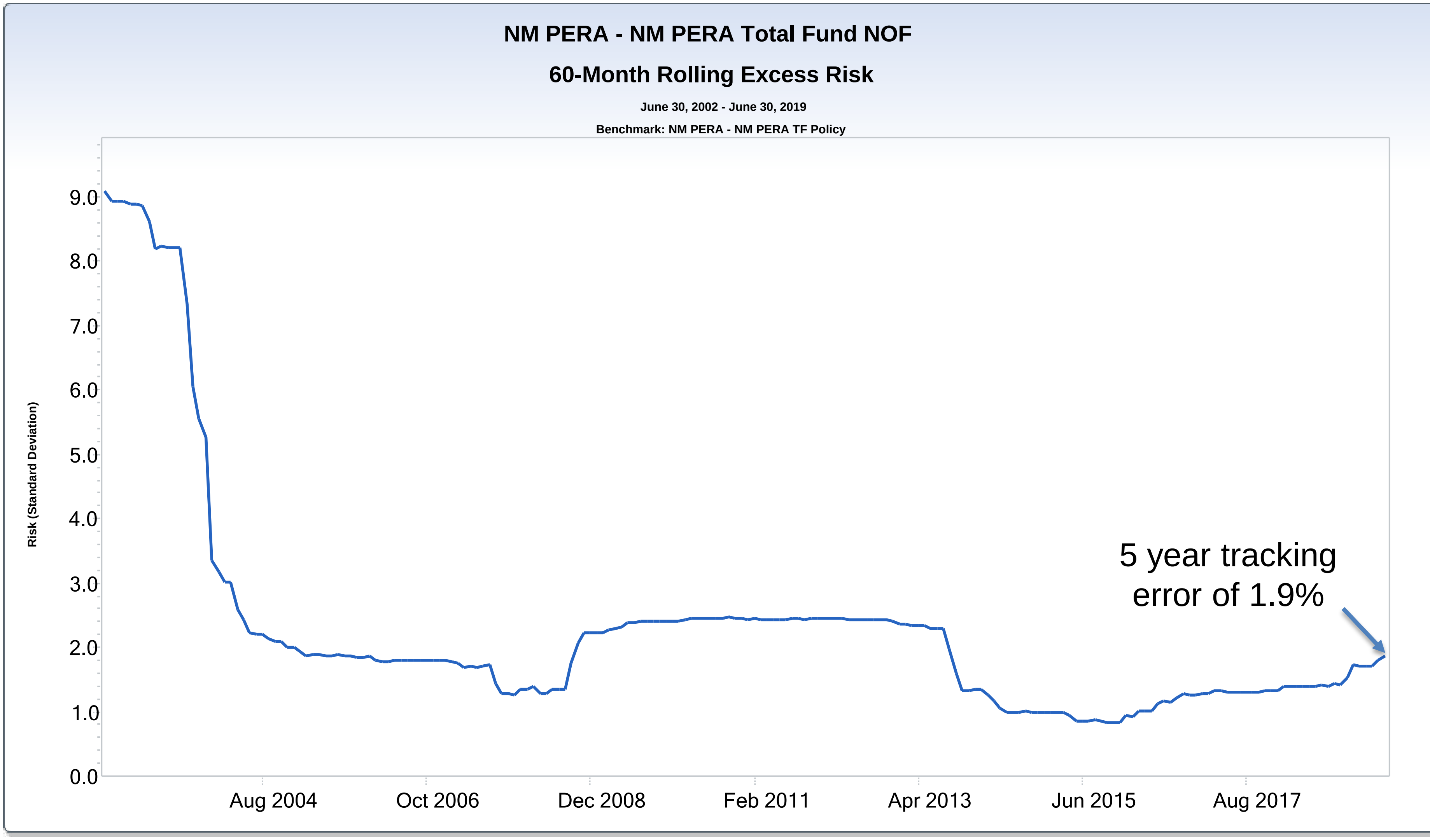
- **Selection** capture idiosyncratic sources of return and risk
  - Calculates how well strategies have performed relative to their appropriate benchmark
  - Purest expression of “value-add” for manager strategies as it isolates impact of benchmark mismatches and factor tilts

Active Risk (Tracking Error)



- Active risk measures the variation in the relative return of the Total Fund versus the policy benchmark
- Outperforming the policy benchmark requires taking on active risk

Active Risk (Tracking Error)



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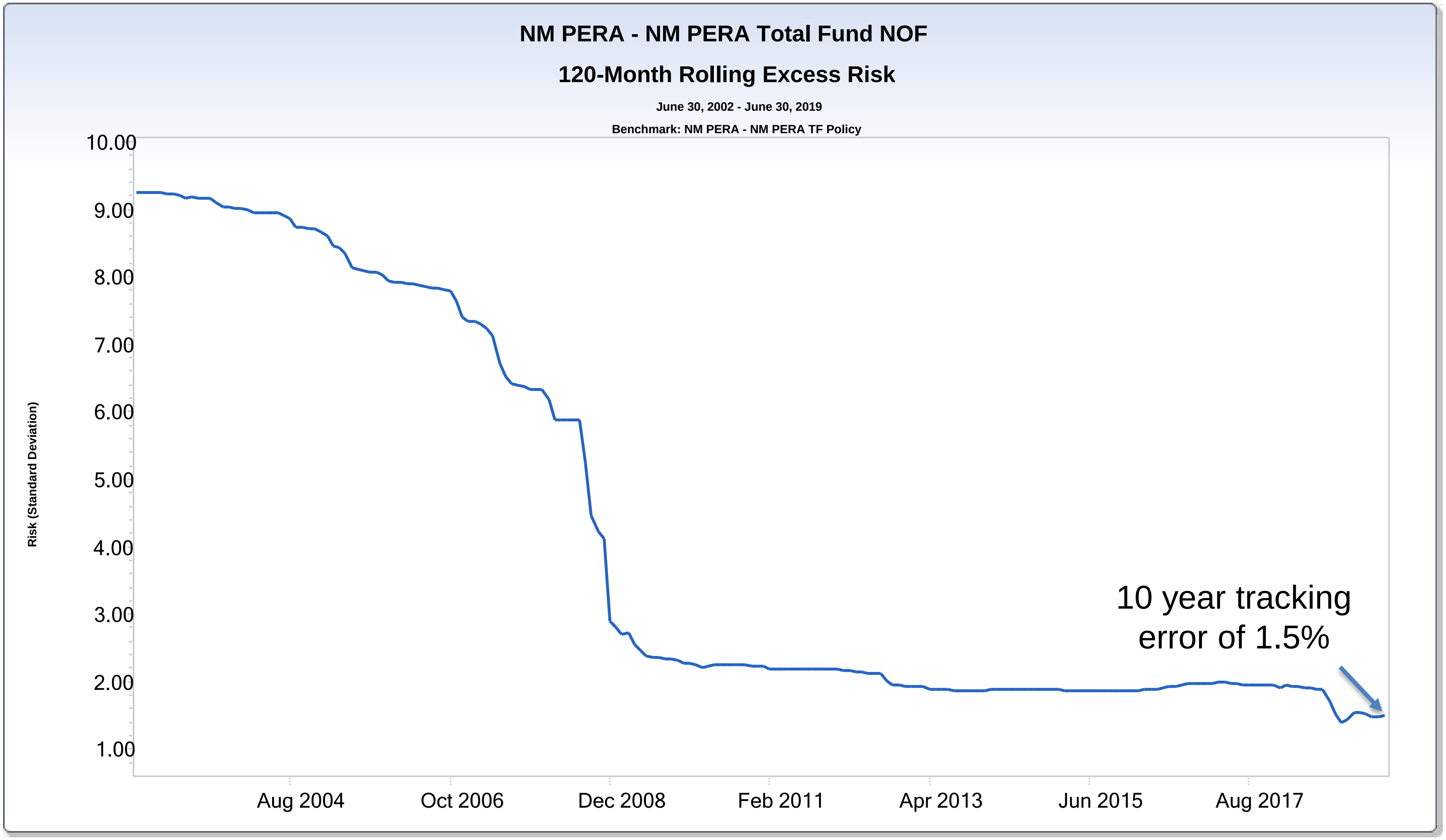
Active Risk (Tracking Error)



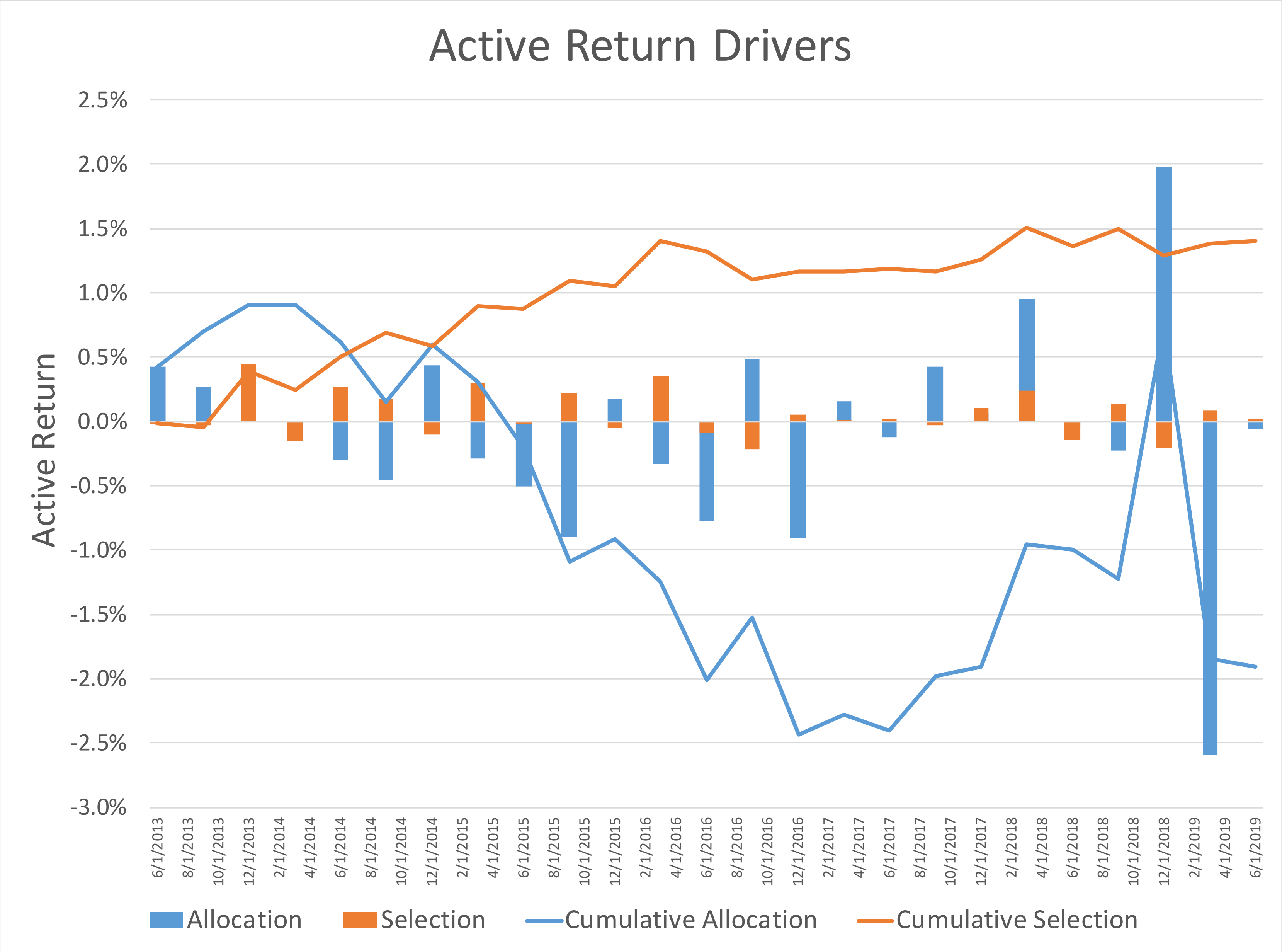
- Active risk measures the variation in the relative return of the Total Fund versus the policy benchmark

Active Risk Attribution

Active return attribution focuses on the impact of **Allocation** and **Selection**

- **How is this calculated?**
  - Three required inputs
    - » Actual portfolio return
    - » Dynamic index return
      - o Weighted index of underlying manager strategy indexes
    - » Policy index return
      - o Broad liquid investable indexes such as the MSCI ACWI IMI index in global equity
- **Selection**
  - Actual portfolio return minus Dynamic index return
- **Allocation**
  - Dynamic index return minus Policy return

Active Return Results

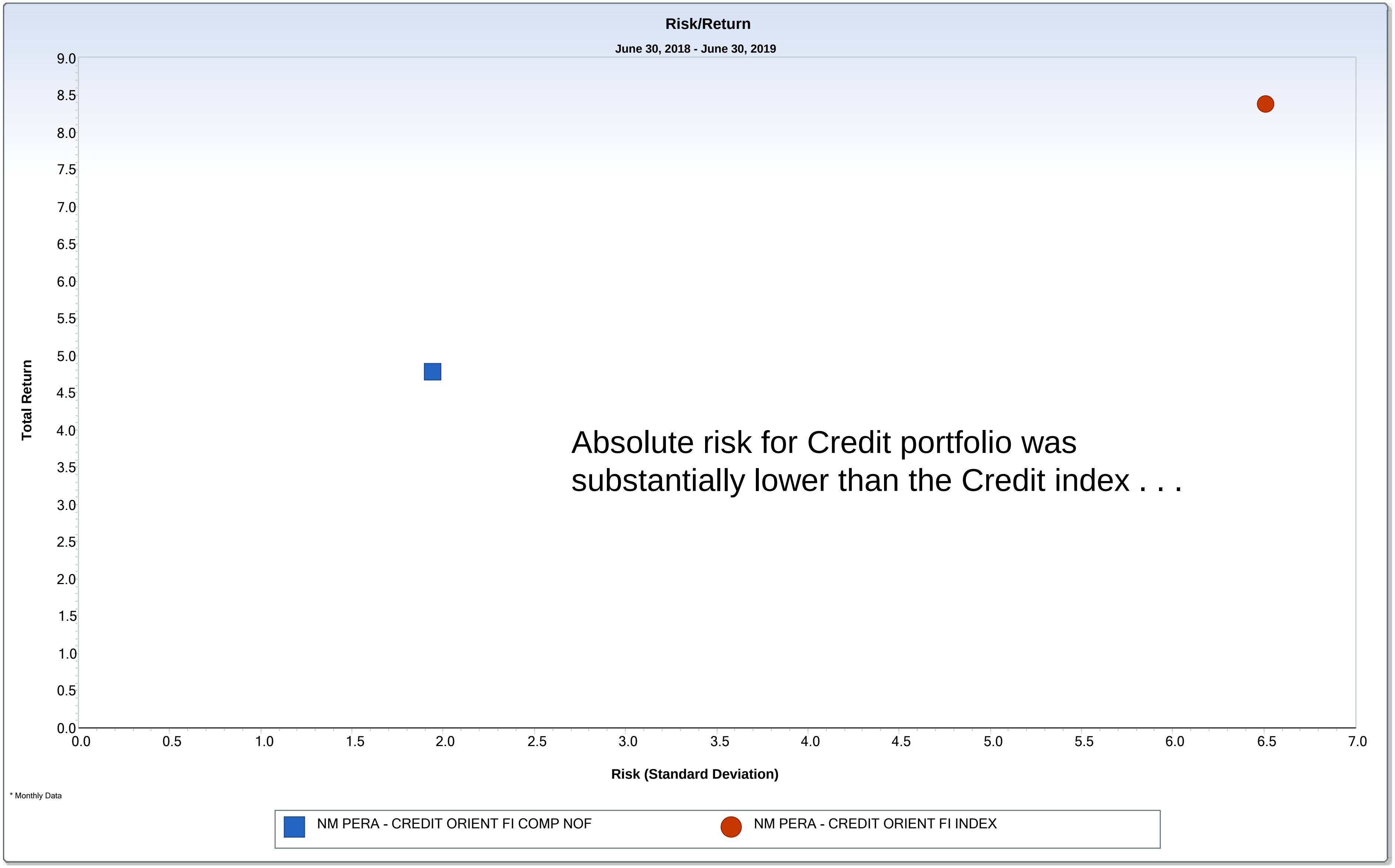


Active Risk Attribution – 1 Year

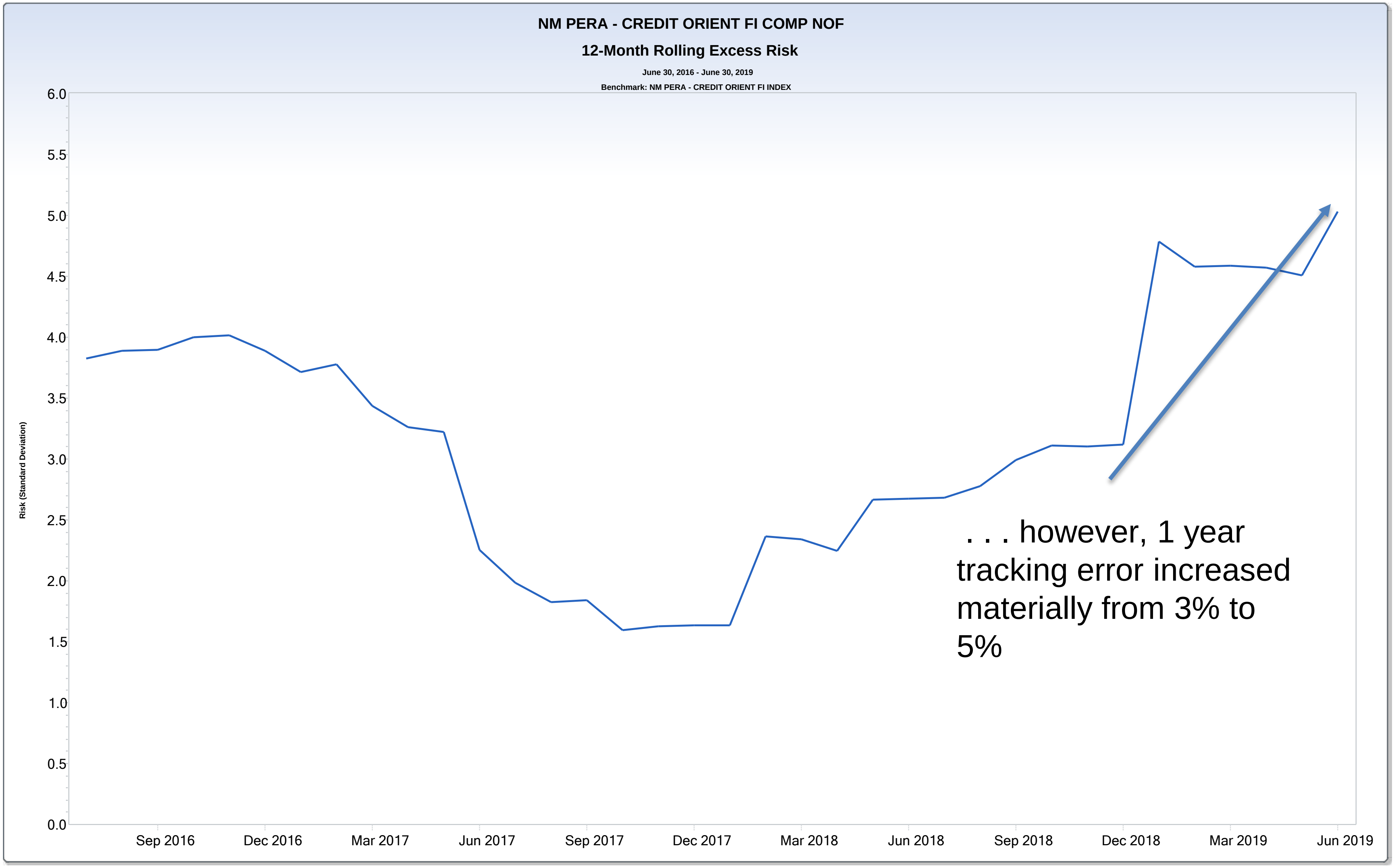
- Excess Risk= 300 bps
  Excess Return= -58 bps
  - Selection
    Excess Return = +1 bps
    Excess Risk = 122 bps
    - Positive Contributors
      Global Equity + 11 bps
      RRM + 11 bps
      Credit +3 bps
    - Negative Contributors
      Real Assets -98 bps
  - Allocation
    Excess Return = -59 bps
    Excess Risk = 278 bps
    - Positive Contributors
      Global Equity +11 bps
      Real Assets +70 bps
    - Negative Contributors
      Credit -363 bps

Note: Risk is not additive due to correlation impacts

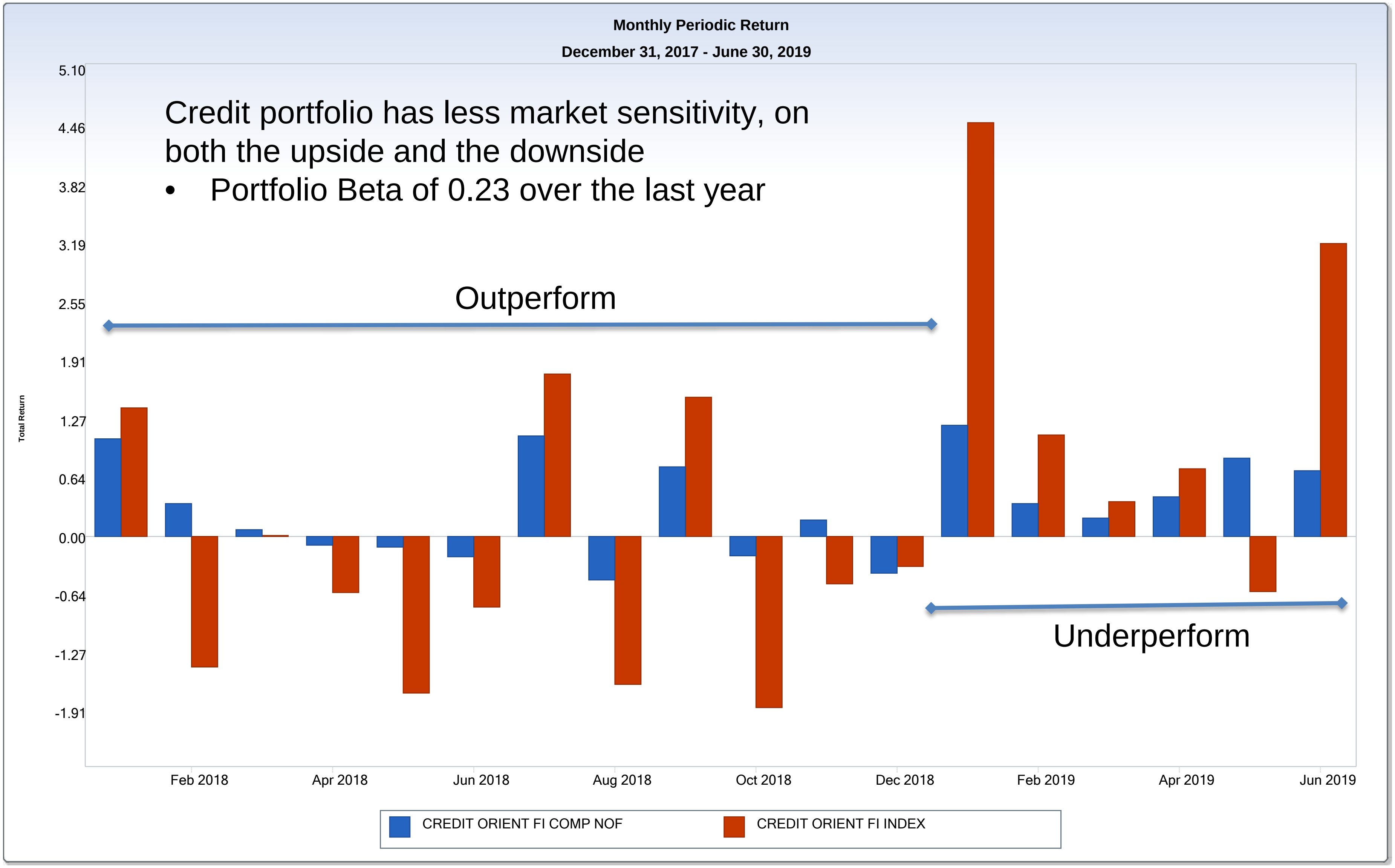
Active Risk Attribution Credit – 1 Year



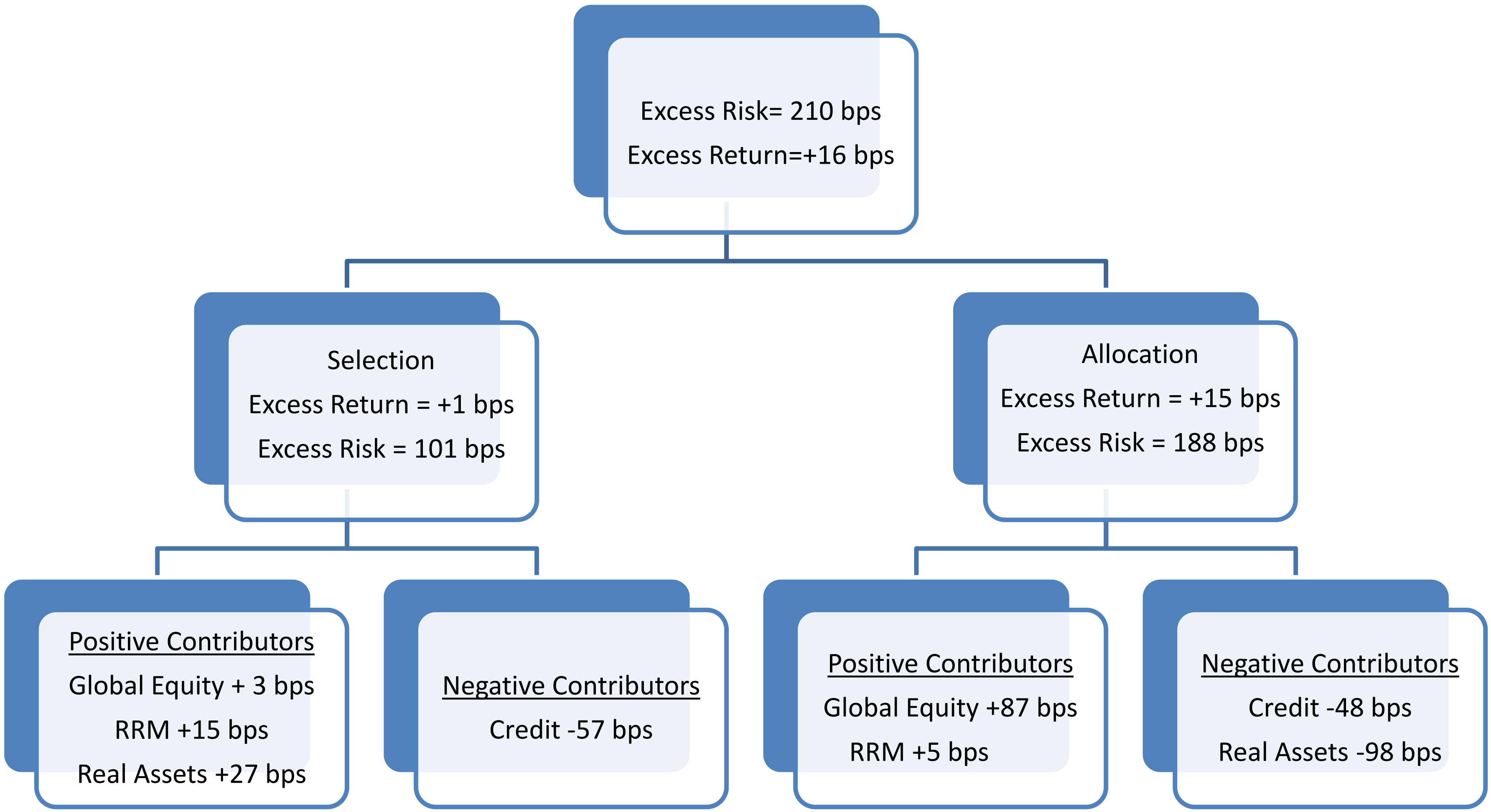
Active Risk Attribution Credit – 1 Year



Active Risk Attribution Credit – 1 Year



Active Risk Attribution – 3 Year



Note: Risk is not additive due to correlation impacts

Active Risk Management Tools

Risk Budget Category	Type of Risk	Description	Solution	Action Status	Impact +/-
Selection	Idiosyncratic Risk	*Desired Risk* Isolate manager security selection skill, residual	Established 5-stage internal process & monitoring to ascertain public/private manager skill Portable alpha overlay	✓ On-going process with month to month diligence and research o In process: details on portable alpha implementation	*Positive* While variable, the impact has been positive over time
Allocation	Structure Risk	*Unwanted Risk* Arising from geographic, market capitalization, sub-asset mismatch vs. policy benchmark Arising from implementing strategies Beta exposure that is less than or greater than the policy benchmark.	Re-align portfolio to policy benchmarks via overlay to get back to policy risk. Re-align Beta misfit in public and semi-liquid strategies via mandate re-alignment	✓ Re-aligned public mandates in EMD, HY, Global Equity o In-process: began overlay in August with Legal & General; implementing in quarterly stages into 2020 o In process: Mandate re-alignment in public REITs	*Negative* Sub-asset mismatch vs. policy benchmark & Low Beta orientation in Credit and Real Asset portfolio has detracted value Neutralize with L&G overlay with potential to add value through short term tactical tilts
	Illiquidity Risk	*Desired Risk* Skill-based risk from active "control" decisions & illiquidity premium vs. public benchmarks	Established 5-stage internal process & monitoring to ascertain public/private manager skill Upgraded analytics—direct alpha comparison.	✓ On-going process. Month to month diligence and research	*Positive* + 301 bps direct alpha since inception Contributes meaningful short-run active risk
	Strategic Asset Allocation Drift Risk	*Desired Risk, managed within Rebalance Range* Arising from un-managed asset allocation target differences vs. policy targets	Eliminate asset allocation drift via synthetic, derivative liquidity accounts & regular re-balancing per policy	✓ Eliminated in Dec.2017-Jan. 2018 ✓ Re-confirmed re-balance policy, re-aligned benchmarks, enhanced liquid derivative accounts	*Positive & Neutral* Generated +$30m in value add in 2018 Now neutral effect

Overlay Strategies

- A well crafted overlay strategy uses derivatives as cost effective tools that provide the flexibility to achieve specific goals
  - Reduce structural risks driven by capital allocations to high conviction managers
- An overlay strategy offers several potential benefits:
  - Increase the amount of cash held for liquidity needs
  - Reduce the cash drag on performance
  - Reduce transaction costs associated with rebalancing
  - Provide tailored hedging strategies or active tilts
    - Enhance returns, reduce correlation, mitigate tail risks

Overlay Strategy Risk

Risk	Description	Risk Management Strategy
Basis Risk	Derivative instruments do not perfectly track benchmark index returns	Use highly liquid, widely traded derivatives on standard benchmarks
Leverage	Market exposure of derivative positions exceeds the value of the cash collateral	Aggressive daily monitoring of the total portfolio positioning and exposures
Margin / Liquidity	Market losses on derivative positions cause mark-to-market losses	Close communication with the overlay manager can help to anticipate cash flows
Counterparty	Counterparty credit risk in OTC trading	• Implementation can emphasize exchange traded instruments to reduce credit risk • Vigilant counterparty monitoring

Legal & General Overlay Capabilities

	Legal & General
Organization/ Team	Wholly owned subsidiary of Legal & General plc, a publicly traded company. Overlay service is provided utilizing resources of LGIM multi-asset team in London and Chicago. Substantial breadth of expertise across the organization with 46 portfolio managers/strategists that are further supported by research resources of the larger organization. Team has experience implementing pension overlays with multiple pension clients. Dedicated service team with limited number of portfolio responsibilities should enhance customer service experience.
Philosophy	Seek to understand PERA objectives and constraints, identify opportunities that are aligned with those objectives, and provide the most effective execution and implementation to extract value from those opportunities. As market dynamics and PERA's needs evolve, seek to be a partner in maintaining the alignment on objectives and constraints with the available opportunities. Aligns very well with PERA's goals in implementing a dynamic overlay.
Portfolio Construction	L&G view the function of a policy overlay as unique to the goals of PERA and do not believe in one-size-fits-all solutions. The investment approach is client-led and understanding of the objectives and constraints expressed by the PERA. While tactical asset allocation is dynamic, L&G believe that a consistent approach is critical to success over time. Process relies on diversity and discipline to have as broad a view of market opportunities as possible and then to implement ideas in a risk controlled manner intended to achieve outcomes specific to PERA across return, volatility and tail risk characteristics. L&G were quite responsive in providing insight into how they estimated their process would work with PERA's desired target allocations.
Risk Management	LGIMA's perspective is that policy overlays are risk management exercises. Viewing it from this perspective helps fulfill one of the core objectives for the PERA program. In practice, this means looking to understand and model the different risk factors already present in the Fund using their risk management tools, which allows them to determine the potential trade-offs from various investment alternatives, and also to calibrate risk parameters such as tracking error. Given the nature of the proposed strategy, aligning risk management views is critical to effectively sizing and implementing the appropriate tactical views so that results are consistent with PERA's views and objectives for the program.

Legal & General Overlay Capabilities

	Legal & General
Implementation	Three PM's in Chicago trade certain OTC derivatives - primarily equity-related total return swaps and options - in implementing the strategy. Also utilize Global Trading Team which operates out of three locations (London, Chicago, and Hong Kong). In total, the team has 24 members which have, on average, 15 years' industry experience. For the proposed strategy, group might at times be able to take advantage of market dislocations, changes in regulation, or investor behavioral biases that result in supply/demand imbalances for derivatives in certain markets. Monitor the market environment for these opportunities to add value by switching between similar overlay instruments while still meeting the risk objectives of the overlay program. Look to identify opportunities that are expected to persist for some time, rather than potentially increasing tracking error in the hope of realizing a short-term incremental gains.

Alpha and Beta Returns

BETA	vs.	ALPHA
• Compensation for exposure to asset class		• Asset class risk + tracking error
• Systematic risk from overall asset class behavior		• May or may not be compensated for additional risk
• Primary driver of portfolio performance		• Requires skill to extract additional return from asset class
• Relatively inexpensive to gain exposure		• More expensive to gain exposure
• Efficient to implement		

Alpha and Beta Separation

KEY CONCEPT

Search for alpha does NOT need to be limited by the strategic asset allocation target weights

Separate alpha and beta decisions for greater flexibility in selecting alpha generating strategies

Higher alpha potential by increasing use of inefficient market segments or less constrained investment strategies

Portable Alpha Strategy

- Untangling the framework for pursuing Alpha from the Beta decisions derived through the asset allocation process can enhance Total Fund returns
- Alpha portfolio construction process is paramount to produce an uncorrelated, market neutral return stream
- Implementation complexity is material, requiring the use of derivatives and regular cash movement for targeted Beta exposure
- Need to understand the leverage implicit in porting alpha streams on top of market Beta exposures
- Risk monitoring needs to be robust to examine unanticipated changes in alpha manager risk positioning and underlying Beta exposures

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