# Review of Risk Governance and Proposal to Move From Risk Budgeting to Risk Guidance

## Annual Risk Management Review 2017

Dimitry Shishkoff, Director of Risk Management
Melissa Jerkins, Quantitative Analyst
February 2017

TMRS
Texas Municipal Retirement System

# Presentation Agenda

- Review key points from last year's Risk Management presentation on our investment risk management process
- Introduce the Three Lines of Defense Risk Governance model to better define roles and responsibilities
- Review History of Risk Budgeting Policy[1], in context of Risk Governance, and propose moving to a Risk Guidance Policy.

1. Text of Policy (framework) in IPS shown in Appendix 1

# Key Points From 2016 Annual Risk Management Review[1]

- Risk management is not something a separate group (functional area) "adds" to a portfolio; it must be fully integrated into every step of the investment process

- The job of the Risk Management Function (group) is to ensure that this integration happens and is effective

- TMRS Investment Department has well defined risk management process components, which if followed will ensure effective risk management

1. "Application of Risk Management Process Across Asset Classes" table from 2016 Annual Risk Management Review shown in Appendix 2

# Three Lines of Defense

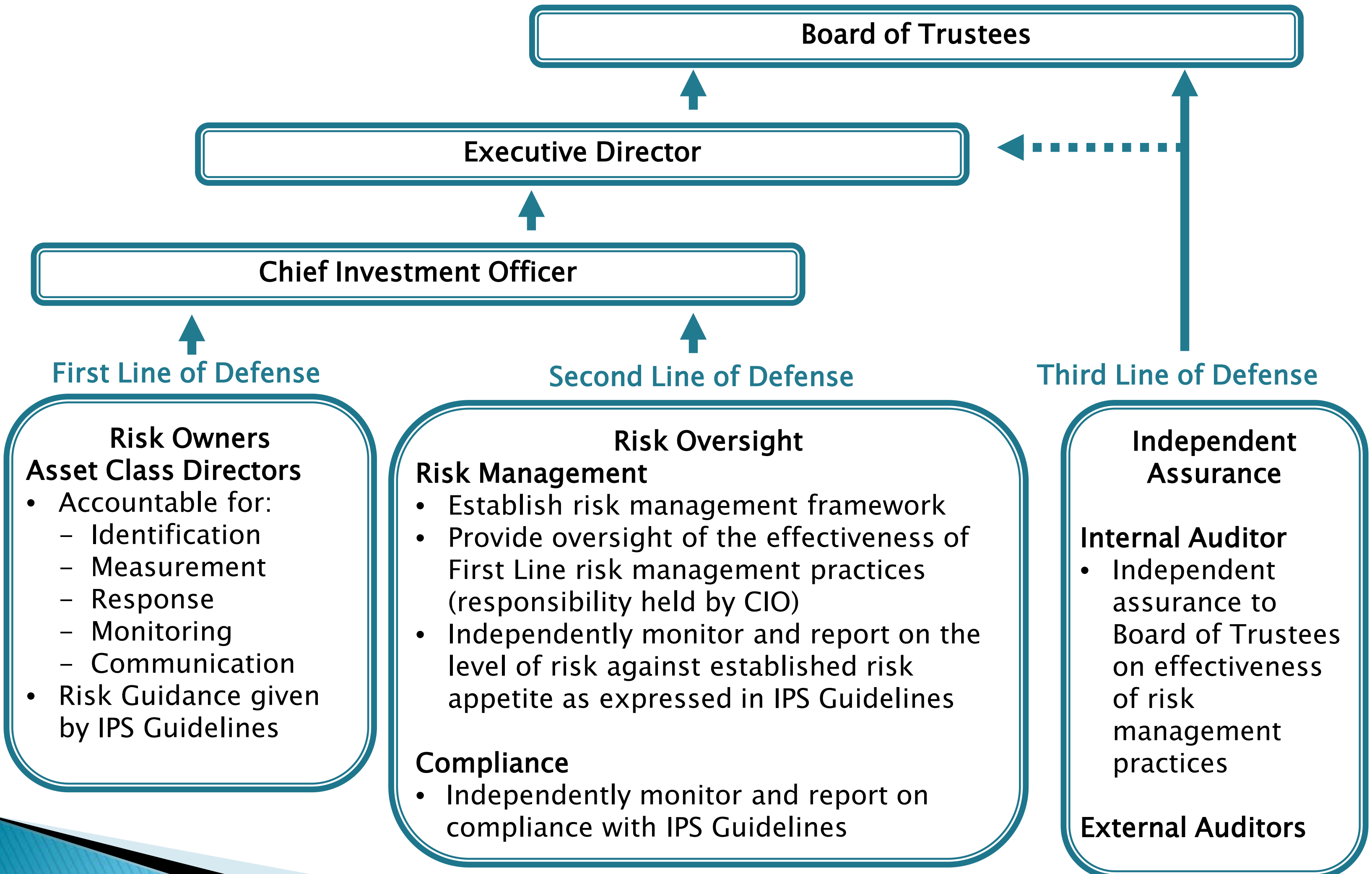
**The Three Lines of Defense concept distinguishes among three groups (or lines) involved in effective risk management.**

- **1st Line of Defense: Functions that own and manage risks**
  Asset Class Directors (operational managers) own and manage risks

- **2nd Line of Defense: Functions that oversee risks**
  CIO (management) establishes risk management and compliance functions to ensure the first line of defense is properly designed, in place, and operating as intended

- **3rd Line of Defense: Functions that provide independent assurance**
  Board of Trustees (governing body) establishes Internal Audit to provide independent assurance on the effectiveness of governance, risk management, and internal controls, including the manner in which the first and second lines of defense achieve risk management and control objectives. External Audit also partially performs some of these functions

# Three Lines of Defense Risk Governance



# First Line of Defense

**First Line of Defense**

**Risk Owners**
Asset Class Directors

- Accountable for:
  - Identification
  - Measurement
  - Response
  - Monitoring
  - Communication
- Risk Guidance given by IPS Guidelines

**Risk Management Process Components (Annual Risk Review August 2016)**

**CLEAR OBJECTIVES** – At every investment decision level, a clear statement or recognition of objectives being served

**RISK IDENTIFICATION** – Includes relevant capital markets risks, specific active strategy risks, business risks (managers and other intermediaries), internal governance and organizational risks

**RISK MEASUREMENT AND EVALUATION** – Includes manager due diligence, strategy risk analysis, benchmark risk analysis, risk aggregation within asset classes and the total fund

**RISK RESPONSE** – Includes risk ownership, manager/fund contract terms, size of investment, rebalancing

**MONITORING** – Includes qualitative and quantitative measures of response effectiveness, and execution and effectiveness of the process itself

**COMMUNICATION** – Internal risk reviews, Reporting

# Second Line of Defense

## Second Line of Defense

**Risk Oversight**

Risk Management

- Establish risk management framework
- Provide oversight of the effectiveness of First Line risk management practices (responsibility held by CIO)
- Independently monitor and report on the level of risk against established risk appetite as expressed in IPS Guidelines

1. **Monitor and report on risk**
    - IPS Risk and Compliance reporting requirements
2. **Against established risk appetite as expressed in IPS Guidelines**
    - IPS defines allowed asset classes, allocation targets, and acceptable allocation ranges
    - Expected Asset Class risk defined by a combination of historical benchmark risks (where applicable) and assumptions used in Asset Allocation Studies
    - IPS Active Risk Budgeting Framework
    - IPS Asset Class Guidelines

# The Risk in question is Implementation Risk

| IPS Sec. XIII Investment Risk Management , B. Key Risks | IPS Risk Guidance |
|---|---|
| Strategic Risk – the risk of pursuing the wrong investment strategy due to lack of clarity in investment beliefs, objectives, and/or risk tolerance. | IPS Sec. X. Asset Allocation & Rebalancing Policy |
| **Implementation Risk – the risk of unmet (Strategic) expectations due to:**<br>• **Poorly designed investment guidelines**<br>• **Managers not following well designed guidelines**<br>• **Managers not delivering on (return) expectations** | • IPS Sec. XXI. Investment Management Guidelines<br>• IPS Sec. XIV. Risk Budgeting<br>• IPS Sec. XIII. Investment Risk Management, C. Investment Risk Reporting |

# Risk Budgeting: Background

- The Active Risk Budgeting Policy was adopted by the Board in August 2013
  (Active Risk is the risk taken in an actively managed portfolio relative to a benchmark )
- Purpose was to communicate and monitor Implementation Risk
- Goal was defining a Board approved allowable amount of active risk
- Key features of the adopted Risk Budgeting Policy were:
  - Theoretically sound rationale (philosophy)
  - Excess Return Objective[1] (currently equals 0.45% for total Fund)
  - Risk Budget for active risk (Tracking Error of 2% for total Fund)
  - Methodology for allocating excess risk across accounts
  - Related Monitoring and Reporting

1) Target Excess Return – Defined by the IPS as the gap between the expected annualized compound return of the Policy Index based on the Investment Consultant's capital market assumptions and the assumed long-term rate of return on TMRS assets established by the actuary.

# In 2013 TMRS was just starting to hire active managers – predominantly in traditional asset classes

| | | Weight May 2013 | Target Weight |
|---|---|---|---|
| Domestic Equities | Passive | 21.9% | 8.75% |
| | Active | 2.1% | 8.75% |
| International Equities | Passive | 19.3% | 8.75% |
| | Active | 2.1% | 8.75% |
| Core Fixed Income | Passive | 38.3% | 21.0% |
| | Active | 9.3% | 9.0% |
| Real Return | Active | 4.6% | 5.0% |
| Real Estate | Active | 2.4% | 10.0% |
| Non-Core FI | Active | – | 10.0% |
| ARS | Active | – | 5.0% |
| Private Equity | Active | – | 5.0% |

- When the Risk Budgeting Policy was adopted, TMRS had:
  - Just begun hiring active Equity managers
  - Just adopted and begun hiring active Non-Core Fixed Income managers
  - Not begun investing in alternatives, other than Real Estate
- An Active Risk Budget Policy was an excellent way to measure and communicate Implementation Risk being taken in these new areas for TMRS

# Today our active program is implemented – ongoing activity predominantly in Alternative Asset Classes

| | | May-13 | | Now | |
|---|---|---|---|---|---|
| | | Fund Weight | Target Weight | Fund[1] Weight | Target Weight |
| Domestic Equities | Passive | 21.9% | 8.75% | 13.2% | 8.75% |
| | Active | 2.1% | 8.75% | 8.1% | 8.75% |
| International Equities | Passive | 19.3% | 8.75% | 9.9% | 8.75% |
| | Active | 2.1% | 8.75% | 7.1% | 8.75% |
| Core Fixed Income | Passive | 38.3% | 21.0% | 3.9%[2] | – |
| | Active | 9.3% | 9.0% | 7.6% | 10.0% |
| Real Return | Active | 4.6% | 5.0% | 10.2% | 10.0% |
| Real Estate | Active | 2.4% | 10.0% | 10.2% | 10.0% |
| Non-Core FI | Active | – | 10.0% | 16.9% | 20.0% |
| ARS | Active | – | 5.0% | 10.1% | 10.0% |
| Private Equity | Active | – | 5.0% | 2.7% | 5.0% |

- Investment Policy is fully implemented:
  - 73% Active
  - 35% Alternatives
- Active Risk, viewed across all Asset Classes:
  - Includes both implementation and return improvement purposes
  - Can be estimated but not exactly measured
  - No longer the best way to represent Implementation Risk
- IPS Asset Class Guidelines provide the best guidance on policy implementation risk questions

1) Weights recognizing unfunded commitments as of September 30th 2016
2) Includes 0.2% unallocated cash

# Choosing a Risk Measure for Communicating and Measuring Implementation Risk Across All Asset Classes

**Active Risk as a measure of Implementation Risk**

- Estimates how far returns might fall  below the benchmark due to active management
- Measured as the tracking error of an active portfolio relative to a passive benchmark investment option
- Passive investment options typically exist for traditional market benchmarks (like the Russell 3000), cost just a few basis points to implement, and are composed of very liquid securities
- For Alternative Asset Classes, passive benchmark options do not exist
  - Active risk is must be taken just to match benchmark returns
  - Active risk is not measurable
  - Even estimated active risk is not useful since the uncertainty of the estimate is as large as the estimate itself

**Total Risk as a measure of Implementation Risk**

- Total Risk, or simply Risk, estimates how far return can fall below expected return
- Risk can be usefully estimated for alternative asset classes and strategies
- Asset Class policy guidelines typically define allowable strategies and allocation ranges

# Using Strategy Guidelines and Risk Expectations to Communicate and Monitor Implementation Risk

## Real Estate Example – Set Strategy Ranges and Risk Expectations

| Real Estate Strategies | Min Allocation in IPS | Max Allocation in IPS | Expected Risk Levels | | |
|---|---|---|---|---|---|
| | | | Low End | High End | Current Strategy |
| Core | 50% | 100% | 12.5% | 14% | 12.5% |
| Value-Added | 0% | 25% | 15% | 20% | 15% |
| Opportunistic | 0% | 25% | 20% | 25% | 20% |
| Public Securities | 0% | 20% | 19% | 19% | 19% |

- For many Asset Class Strategies there is a range of possible sub-strategies with different risk levels
- We capture the Asset Class Team's expectations on this range with the "Low End" and "High End" risk assumptions
- Diversification opportunities between asset class strategies are also identified using expected correlations

**Core:** Stable and Income Producing with Limited Risk
**Value-Added Investments**: Generally core properties with identifiable deficiencies that can be corrected and converted to Core
**Opportunistic Investments:** Similar to Value-Added investments but with greater risk characteristics such as distressed assets, development, land and international properties
**Public Real Estate Securities**: Publicly listed and traded global real estate securities

# Using Strategy Guidelines and Risk Expectations to Communicate and Monitor Implementation Risk

## Real Estate Example –Allowable Risk Range and Current Risk

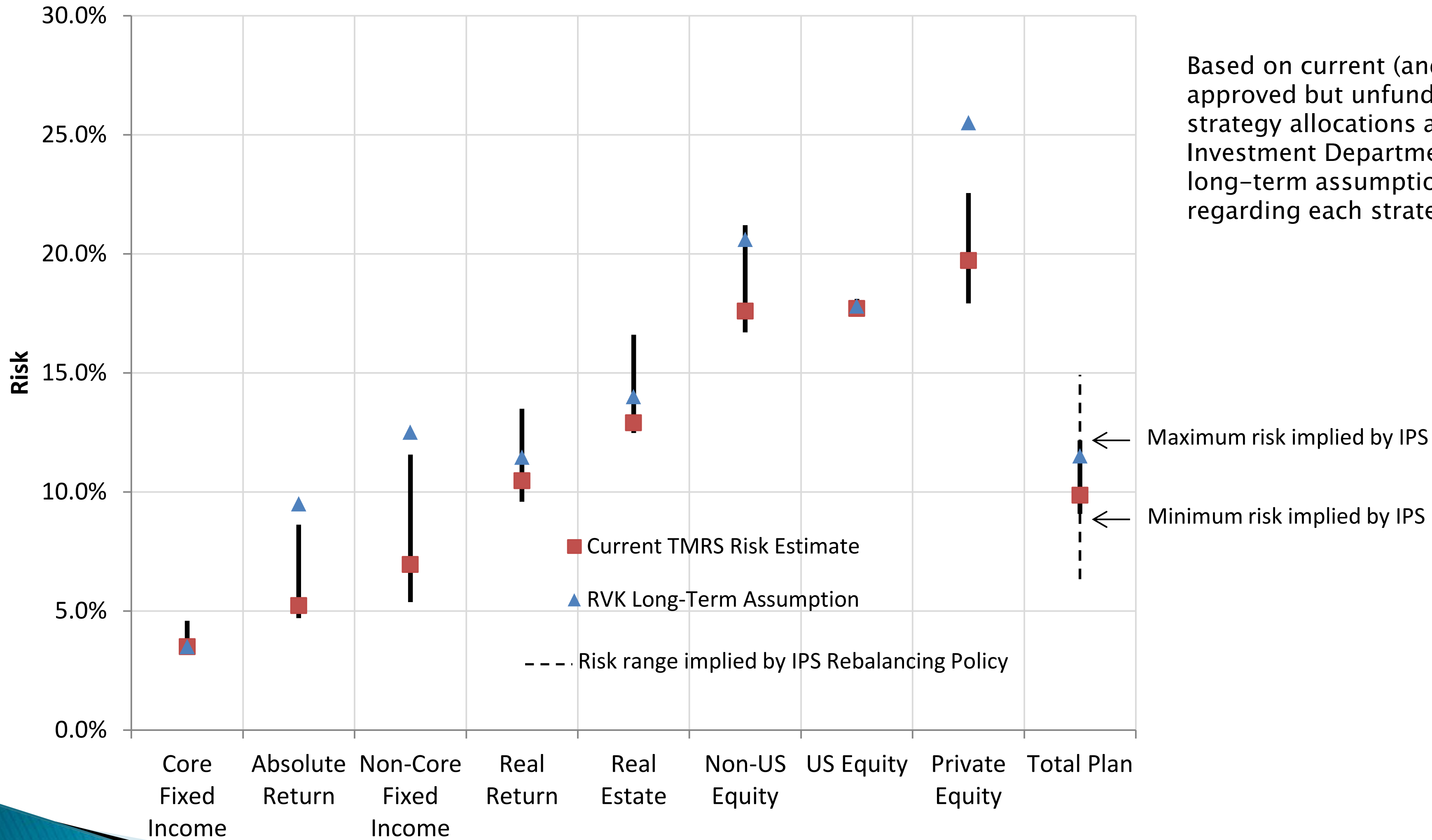
| Real Estate Strategy | Asset Class Strategy Allocations Allowed by IPS Guidelines | | Current Asset Class Strategy Mix |
|---|---|---|---|
| | Least Risky | Most Risky | |
| Core | 92.3% | 50% | 67% |
| Value-Added | 7.7% | 25% | 22.5% |
| Opportunistic | 0% | 25% | 10.5% |
| Public Securities | 0% | 0% | 0% |
| TOTAL RISK | 12.5% | 16.6% | 12.9% |

Combining:

1) The range of possible risk within Asset Class Strategies, with
2) The range of Asset Class Strategy Allocations allowed by the IPS Guidelines

Gives us the “Least” and “Most” risky Asset Class implementation possibilities

# Implementation Risk Ranges Implied by IPS Asset Class Guidelines




Based on current (and approved but unfunded) strategy allocations and Investment Department long-term assumptions regarding each strategy

# Concluding Observations

- The risk that investment staff is managing on a day to day basis is Implementation Risk (Strategic Risk, which is the other key risk, is considered and set in the Asset Allocation Studies)

- The first requirement in managing Implementation Risk is communicating with the Board as to how much is appropriate, where it should be taken, and how it will be monitored.

- Staff believes that Risk Ranges and Current Risk based on Strategy Guidelines and Strategy Risk Expectations is the best approach that can be consistently and meaningfully applied across all asset classes.

- This framework has also been useful for staff discussion across asset class teams and we expect its value to only increase.

# Next Steps

- Continue Risk Budgeting process as currently structured
- Run new Implementation Risk Monitoring side by side with Risk Budgeting for remainder of 2017
- Include final draft of related IPS changes, for formal adoption, as part of annual IPS review in Oct/Dec 2017

# Appendix

Appendix 1

# Current Thoughts on Potential IPS Language Changes

## Current Language

XIV. RISK BUDGETING

TMRS has adopted a risk budgeting and allocation framework for active risk. The purpose of this framework is to define a risk budget for Active Risk at the total fund level and to provide a transparent and measurable methodology for allocating that risk to active strategies in an optimal way.

The total fund risk budget is recommended to the Board based on the investment staff's estimate of what is necessary to achieve the Target Excess Return but not to exceed the Marginal Risk Tolerance implied by the choice of Strategic Allocation Target.

Regular Review

To ensure that the Risk Budget continues to be appropriate:

1. It will be reviewed at least annually, coinciding with the Strategic Target Allocation review and formal asset allocation study
2. More in-depth study will be done at least every five years and coincide with the formal pension financial (asset-liability) study.

## Potential Language

XIV. ACTIVE RISK

Active risk is the risk of portfolio investment returns being different than those of the Policy Benchmarks. Consistent with the statement of investment beliefs in this document, the Board recognizes that active management can be used to improve risk adjusted returns and sets the Target Excess Return for Investment Staff to achieve. The Board also recognizes that taking active risk is unavoidable in many alternative asset classes whose Policy Benchmarks cannot be passively implemented. To provide guidance on the range of allowable active risk, the ASSET CLASS GUIDELINES section of this document defines investment guidelines for each Asset Class.

Regular Review

To ensure that the Asset Class Guidelines continue to be appropriate, Guidelines will be reviewed during each Annual Asset Class review. The results of these exercises will be incorporated in all Asset Allocation Studies.

The following is added to XIII. INVESTMENT RISK MANAGEMENT, C. Investment Risk Reporting

4. Range of risk implied by IPS Asset Class Guidelines and the risk in the current Asset Class implementations

(Page 12 from "Annual Risk Management Review", 2016 Appendix 2

## Differences in Managing Risk Across Asset Classes:
# Application of Risk Management Process Across Asset Classes

| | | PUBLIC MARKET | ALTERNATIVES | PRIVATE MARKET |
|---|---|---|---|---|
| OBJECTIVES | | Add incremental return to asset class benchmark with minimal increase in total fund risk | | |
| RISK IDENTI-FICATION | EXTERNAL | Investment skill (public and private markets), Operations (execution and control), Alignment of interests | | |
| | INTERNAL | Investment skill (manager, strategy, and terms), Operations (execution and control), Alignment of interests | | |
| | PORTFOLIO | Market risk, Active bets | Short Positions, Leverage, Complexity, Concentration, Transparency, Market risk | Sourcing, Re-structuring, Leverage, Concentration, Investment entry/exit |
| RISK MEASUREMENT | CIO | Adequacy of: internal investment skill, ability to execute investment decisions quickly and accurately, resources and procedures for internal control, alignment of interests | | |
| | ASSET CLASS TEAM | Manager Due Diligence – By far the largest and most important risk management component in the decision to recommend a manager, with increasing significance in opaque and private markets | | |
| | RISK TEAM | Market risk based on holdings; Challenge: clean data | Market risk-based exposures; Challenge: transparency, complexity | Market risk based on holdings characteristics; Challenge: no market pricing |
| RISK RESPONSE | | Selectivity, Terms and Guidelines, Sizing; Adequate internal skill, operations, and alignment of interests | | |
| MONITORING | ASSET CLASS TEAM | Ongoing Due Diligence - By far the largest and most important risk management component in managing the risk that a manager is not doing what we hired them to do | | |
| | COMPLIANCE | IPS Policies, Internal Procedures, Manager Guidelines | | |
| | RISK TEAM | Portfolio risk: explicit | Portfolio risk : ex ante estimate vs ex post actual | Portfolio risk : market equivalent risk estimate |
| COMMUNICATION | | Internal risk reviews, Reporting | | |