Annual Risk Management Review

August 2016

TMRS
Texas Municipal Retirement System

IPS Requirements Of The Risk Management Program

- ROLES AND RESPONSIBILITIES OF THE RISK MANAGEMENT FUNCTION
  - Establishment of appropriate policies and procedures
  - Implementation and maintenance of analytical tools to measure and monitor risk

- INVESTMENT RISK MANAGEMENT - Risk management program to identify, evaluate, and manage all risks related to investment decisions. Key considerations:
  - Capital Markets
  - Managers and Terms
  - Governance (pertaining to internal control, skill, and execution of investment decisions)
  - Risk reporting

- *Appropriately, the IPS tells us what is required but not how to achieve it*

Annual Risk Management Review

- How do the CIO and the Board know that risk is being managed? (Absence of bad outcomes can prevail for a long time purely by chance)

- How does managing risk differ across different asset classes?

Process for managing risk relative to TMRS investment objectives

- Risk management is not something a separate group (functional area) "adds" to a portfolio, it is something that 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

- While the Investment Department and alternative asset class investments have grown rapidly, a common risk management process has been followed by Asset Class Teams, the CIO, Compliance, and the Risk Management Team

RISK MANAGEMENT PROCESS COMPONENTS

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

Differences in Managing Risk Across Asset Classes:

Market Characteristics Across Strategies Are Very Different

Market Characteristics		Traditional Long Only Public Market Strategies	Illiquid Alternative Strategies	Private Markets Strategies
	Information about investment opportunities	abundant, publicly available and cheap	expensive and highly complex	sparse, not publicly available, and expensive
	Pricing and Liquidity	large daily volume – liquid with market pricing	low volume with infrequent trading – less liquid with imperfect market pricing	Each investment is unique, years between transactions – highly illiquid with no market pricing
	Cost of Trading	very cheap	expensive	very expensive
	Market Efficiency	nearly efficient	inefficient	highly inefficient

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		

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	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

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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

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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

Differences in Managing Risk Across Asset Classes:

Application of Risk Management Process Across Asset Classes

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Applying the Risk Management Process:

Public Equities

Risk Identification		Risk Measurement	Responses	Monitoring
Underlying	**Direct**			
Market Risk, Active Risk, Concentration Risk	Fund not doing what they promised: • fraud • strategy change • team change • risk policy failure • strategy failure	**Market risk is the largest part of the total risk.** Tracking Error (i.e. Active Risk due to taking bets relative to the strategic benchmark) is small by comparison. Still, many quantitative and qualitative dimensions have to be considered simultaneously to evaluate if this active risk is being managed as promised. Early warning signals of performance details or organizational changes inconsistent with expectations. **Measure the difference in market risk between the portfolio and the Benchmark.** Transparency into holdings facilitates extensive exposure and performance attribution analysis.	Initial Selectivity: Due Diligence in initial Fund Search/recommendation identifies desire (ethical standards) and ability to deliver risk managed performance. Ongoing Selectivity: resizing capital allocation or termination based on early warning signals fund is deviating from expectations. **Manager Guidelines and Compliance testing are useful tools** for managing concentration risk.	**Continuous Due Diligence is critical** - Asset Team maintains ongoing dialogue with manager watching for early warning signals inconsistent with expectations. Quarterly Summary Risk Report (36 pages), based on actual month end holdings, summarizes 182 page Risk Report. Dissects difference in market risk between the portfolio and the Benchmark as well as monitoring changes over time. Very detailed and accurate; **surprises relative to this risk estimate should be negligible.**
Manager motivations	Misalignment of interests	Manager being financially rewarded even when not meeting investor goals	Managed via selectivity and negotiating fees and terms	

Applying the Risk Management Process:

Absolute Return Strategies

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<tr>
<td>Market risk is largely hedged

Specific risks are magnified:

Investment
• concentration
• long/short leverage
• complex securities
• dynamic trading
• illiquid pricing

Operations</td>
<td>Fund not doing what they promised:

• fraud
• strategy change
• team change
• risk policy failure
• strategy failure
• liquidity mismatch</td>
<td>Complexity and lack of transparency are the primary challenges. It is not just the amount of risk that's important but its composition. Many quantitative and qualitative dimensions have to be evaluated simultaneously to obtain an accurate picture.

Early warning signals of performance details or organizational changes inconsistent with expectations.

Model market risk of the fund's net exposure to region-by-asset-class (strategy) and changes in levels of long/short leverage</td>
<td>Initial Selectivity: Due Diligence in initial Fund Search/recommendation identifies desire (ethical standards) and ability to deliver risk managed performance.

Ongoing Selectivity: resizing capital allocation or termination based on early warning signals fund is deviating from expectations.</td>
<td rowspan="3">Continuous Due Diligence is critical - Asset Team maintains ongoing dialogue with manager watching for early warning signals inconsistent with expectations.

Ongoing dialogue to maintain and/or improve quality of manager relationship

Quarterly Summary Risk Report – 17 pages. Focuses on comparing actual vs. expected performance results as well as monitoring changes in long/short leverage over time. Rough estimate of actual investment risk; surprises relative to this risk estimate should be modest and come from leverage and/or concentration of specific risk</td>
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<td rowspan="2">The best managers have limited capacity and can afford to be very selective about investors they partner with</td>
<td>Losing access to the best managers</td>
<td>Losing access to just the top 10% of managers reduces expected return by 2%</td>
<td>Build win-win relationships with funds based on good faith negotiating, timely execution, respect for proprietary information, and deep understanding of strategy expectations.</td>
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<td>Misalignment of interests</td>
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Applying the Risk Management Process:

Private Market Funds

Risk Identification		Risk Measurement	Responses	Monitoring
Underlying	**Direct**			

No market pricing
 	
Magnified specific risk:
 	
• concentration
• leverage
• complexity
  - unregistered securities
  - capital structures
• entry/exit valuations
• blind pool
	Fund not doing what they promised:
	
	• fraud
	• strategy drift
	• team change
	• strategy failure
	• term misalignments
		Complexity, limited transparency, and lack of market pricing are the primary challenges. Short term performance measurement conventions are a poor fit with the **inherently longer term investment horizons of this asset class.**
		
		Interim measures of performance provide some information, however, qualitative evaluation of the portfolio as it becomes implemented is more important.
		
		Model market equivalent risk of holdings based on position in capital stack, property types, industries, and geography
			Initial Selectivity: Due Diligence in initial Fund Search/recommendation identifies desire (ethical standards) and ability to deliver risk managed performance.
			
			Ongoing: Utilize Limited Partner Advisory Committee authority where possible or vote specific consent or amendment items to respond to risk.
			Adjustment of future investments and re-allocation to subsequent funds in response to unexpected outcomes.
				Continuous Due Diligence is critical - Asset Team maintains ongoing dialogue with manager watching for early warning signals inconsistent with expectations.
				Periodic Due Diligence:
				• Meeting with senior investment team
				• Portfolio holdings and interim performance evaluation
				• Dialogue with underlying portfolio company (holdings) executives.
				• Review of financial statements
				
				Quarterly Summary Risk Report – Same as Asset Class section of Board Risk Report. Rough estimate of market equivalent risk; **surprises relative to this risk estimate will appear over the long term and will be due to specific risk**

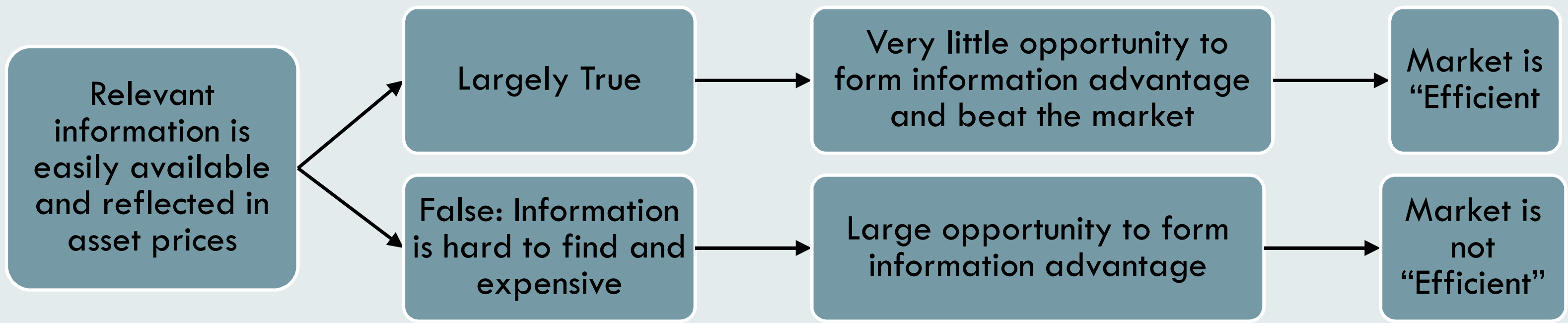
The best managers have limited capacity and can afford to be very selective about investors they partner with	Losing access to the best managers	**Losing access to just the top 10% of managers reduces expected return by 3.5%**	**Build win-win relationships with funds** based on good faith negotiating, timely execution, respect for proprietary information and deep understanding of strategy expectations.	
	Misalignment of interests	Manager being financially rewarded even when not meeting investor goals	Managed via selectivity and negotiating fees and terms	

Summary

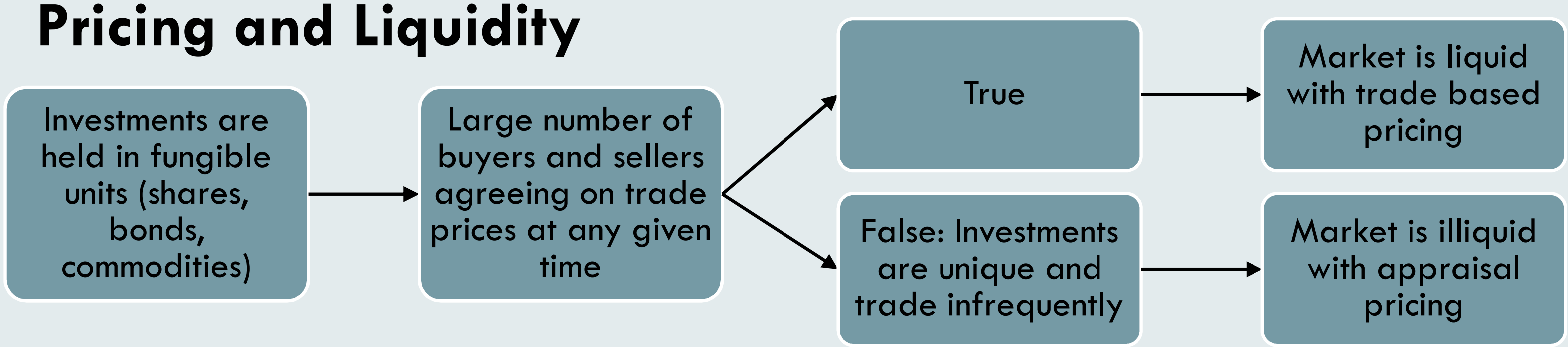
- Risk Management defines risk as uncertainty of achieving the organization's objectives
- Risk Management is a process that must be fully integrated in the making, execution, and monitoring of investment decisions
- Risk to achieving our investment objectives comes from internal and external business risks, as much as from the markets we invest in
- Absence of bad outcomes is not evidence of good risk management; a well designed and transparent risk management process is
- TMRS has a well defined risk management process across all asset classes which is well positioned to evolve with the growth in scope and complexity of our investment program, as it seeks to continuously improve the probability of meeting TMRS objectives

Market Characteristics

Market Efficiency



Pricing and Liquidity



Disclosure

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