2016 Liquid Real Return Rebalance

Board of Trustees • October 20-21, 2016

Tom Masthay, Eddie Schultz, Rachel Cleak, Albourne

Texas Municipal Retirement System

Agenda

I. Executive Summary

Executive Summary

Liquid Real Return Portfolio Rebalancing Trade Summary

TMRS Staff is proposing a rebalancing trade within its portfolio. The decision to pursue a rebalancing trade among existing managers in lieu of new mandates comes at the conclusion of a manager search process. Four key outcomes arise from the proposed trade:

- Proposed rebalance results in a higher expected return / competitive Sharpe ratio real return portfolio, thus resulting in higher probabilities of TMRS meeting its asset allocation objectives.
- The remaining $450 million in the 2016 real return pacing plan would be successfully rebalanced from core fixed income to real return.
- Real return portfolio would likely reach 100% funding by Q1 2017 as existing private investments drawdown capital, making the asset class self-funding.
- Reduce exposure to a highly valued asset with low expected return potential while simultaneously increasing the diversification of the portfolio.

II. Investment Manager Analysis / Scoring

Background

Due Diligence Process Summary

The Liquid Real Return due diligence process started with a reassessment of the overall risk, return and inflation sensitivity objectives for the asset class.

Key Observations

- Long term asset allocation model inputs are substantially more optimistic than can be underwritten for short and intermediate time frames.
- Higher inflation sensitivity comes at the expense of lower expected returns. This concept is compounded by lack of real time mark to market of higher expected returning private real assets.
- TMRS' return objectives for the real return asset class cannot be met with public market investments exclusively, nor by maintaining significant GILBs exposure within the public market allocation.
- Significant shortfalls in expected returns for the real return portfolio should be expected until such a time substantial private real return investments are capitalized.

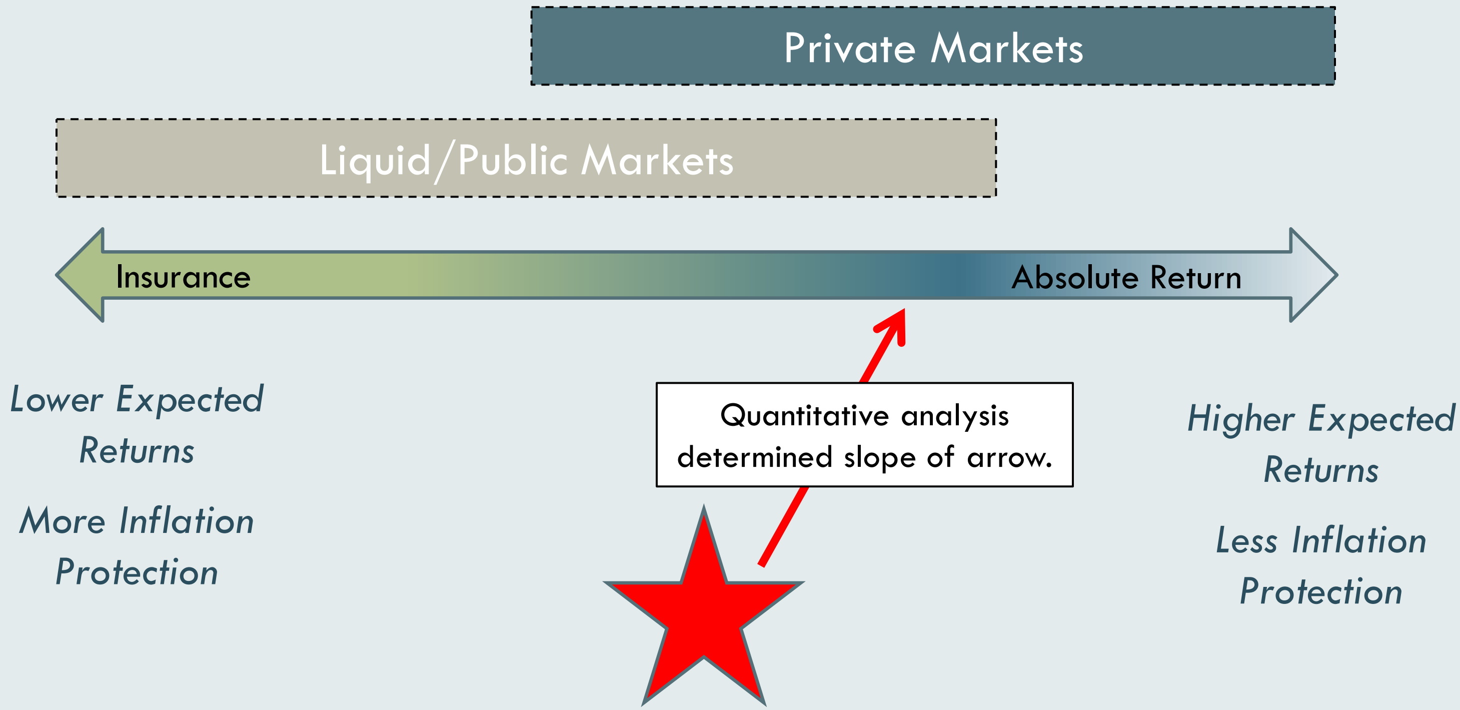
Conclusions from analysis:

Return enhancement and diversification must be prioritized as the primary objectives for the real return portfolio. TMRS initiated a search process for liquid real return mandates in order to help meet this objective.

Background

Real Return Objectives Analysis

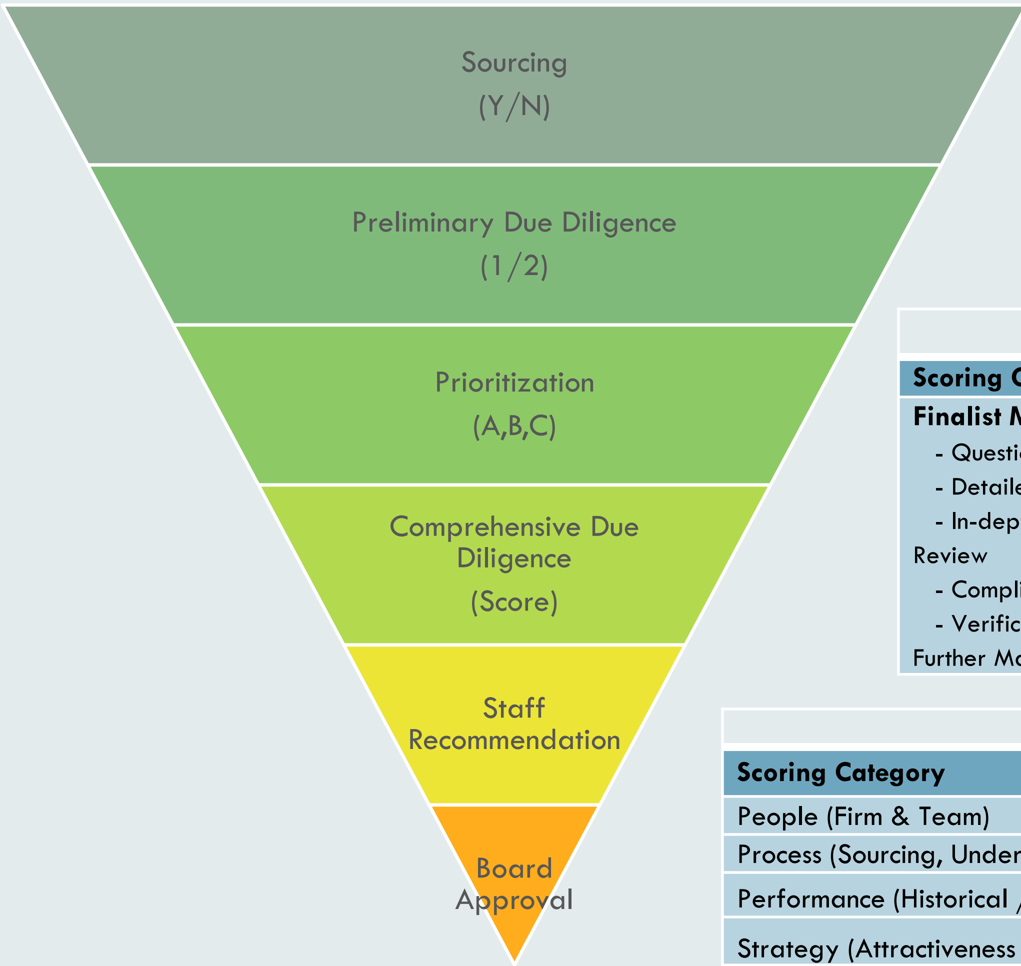
Currently, the Real Return asset class is used for <u>inflation protection</u>, return enhancement and diversification. CPI + 400bps is the Strategic Benchmark.



A 2016 Real Return Investment Policy Statement recommendation will propose to reorder the portfolio objectives to reduce potential objective confusion.

**A version of this figure originally appeared in the 2016 annual asset class review as presented to the TMRS Board on June 23, 2016. The figure at that time presented the slope of the arrow as a matter of open question, one yet to be determined by further analysis.*

Manager Search Process



Manager Screen & Universe Analysis Scoring

Scoring Category	Score / Outcome
Manager Screen - Is vehicle consistent w/ TMRS' objectives?	Yes - Take Meeting; No - Don't Take Meeting
Manager Analysis - Does vehicle have adequate capacity and timeline? - PPPST* Preliminary Review	1 - Advance; 2 - Stop Research

Semi-Finalist Scoring Matrix

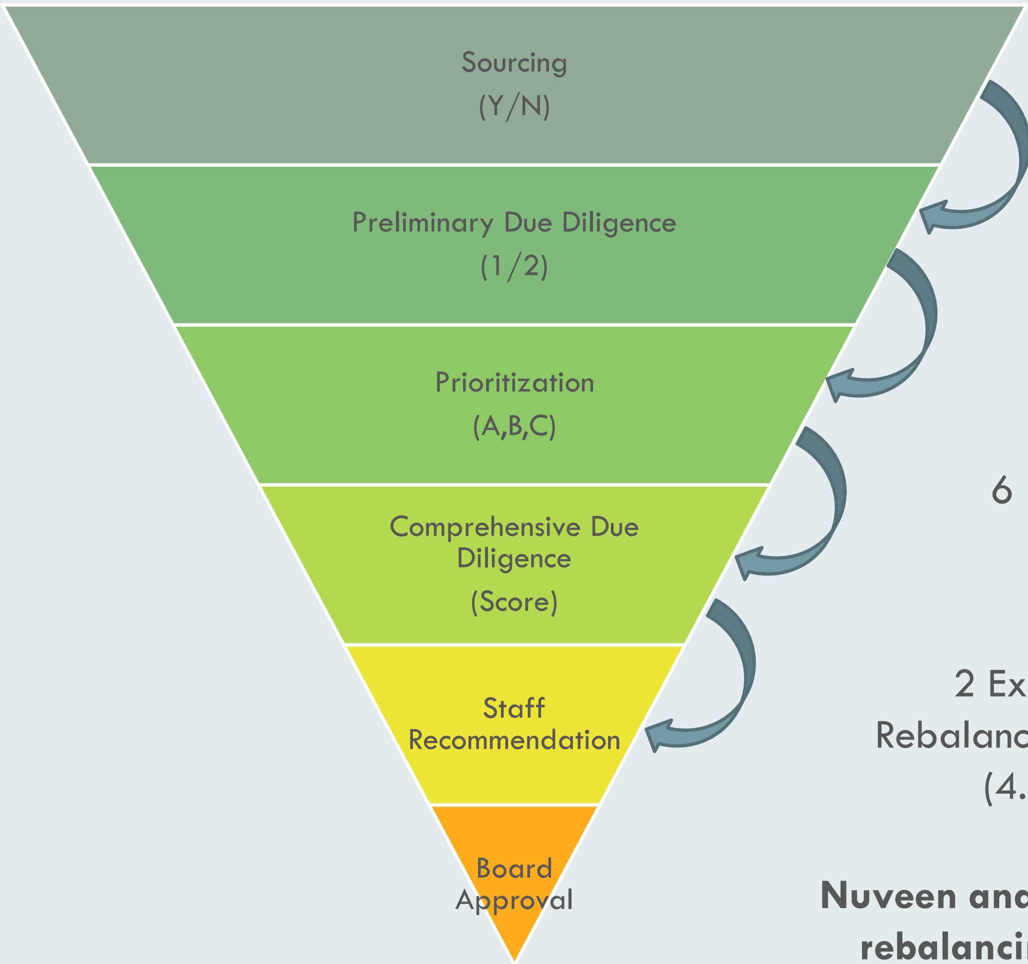
Scoring Category	Score
Finalist Manager Review - Questionnaire Review - Detailed PPPST* Review - In-depth Manager Qualifications Review - Compliance with TMRS IPS - Verification of Research, References, Further Market Research	A - Prioritize for Final Due Diligence B - Perform More Research C - Stop Research / Manager not Selected

Final Due Diligence Scoring Matrix

Scoring Category	Possible Points
People (Firm & Team)	0 - 40 points
Process (Sourcing, Underwriting and Managing)	0 - 40 points
Performance (Historical / Expected)	0 - 40 points
Strategy (Attractiveness of Opportunity / Portfolio Fit)	0 - 40 points
Terms (Fees, Liquidity, etc.)	0 - 20 points
Total	**100†**

**PPPST – People, Process, Performance, Strategy, Terms*
†Selected managers standardized to a score of 100 to allow comparability among selected managers.

Manager Search Process



Reviewed 46 distinct liquid real return proposals

35 distinct liquid real return managers reviewed

6 proposals entered final due diligence (13.0% of 46)

2 Existing Manager Rebalance Recommendations (4.3% % of 46)

Nuveen and Cohen & Steers (C&S) rebalancing trade selected for recommendation.

Portfolio Solution Scoring

Category	Rebalancing Trade	Completion Portfolio Solution #1	Completion Portfolio Solution #2
People	22.5	22.5	21
Process	25	20	20
Performance	10	7.5	7.5
Strategy	30	27.5	25
Terms	12.5	10	10
Total Points	100	87.5	83.5

Key Conclusions:

- Completion portfolios proposed were "customized" solutions. The drawback to this approach is that managers are not necessarily applying their highest, best, and/or everyday skill set to such mandates.
- Completion portfolio solutions proposed circulated around concepts of increasing inflation beta and adding assets TMRS did not have explicit exposure to. Both quantitative and qualitative assessments indicated that similar 'customized' outcomes could be achieved by modifying/rebalancing existing mandates.
- There are high levels of implementation costs to pursuing new mandates.

Consideration of new mandates against a potential rebalancing trade requires a slightly modified approach to assessing relative options. Mainly two questions overlay the scoring assessments:

1) Do new portfolio solutions add anything of substantial value / can I modify existing mandates to achieve a similar outcome?

2) Do I encounter substantial sources of implementation shortfall from choosing to pursue new mandates rather than a rebalancing trade?

Nuveen Addition (1/2)

Highlights

Portfolio Manager: Jay Rosenberg

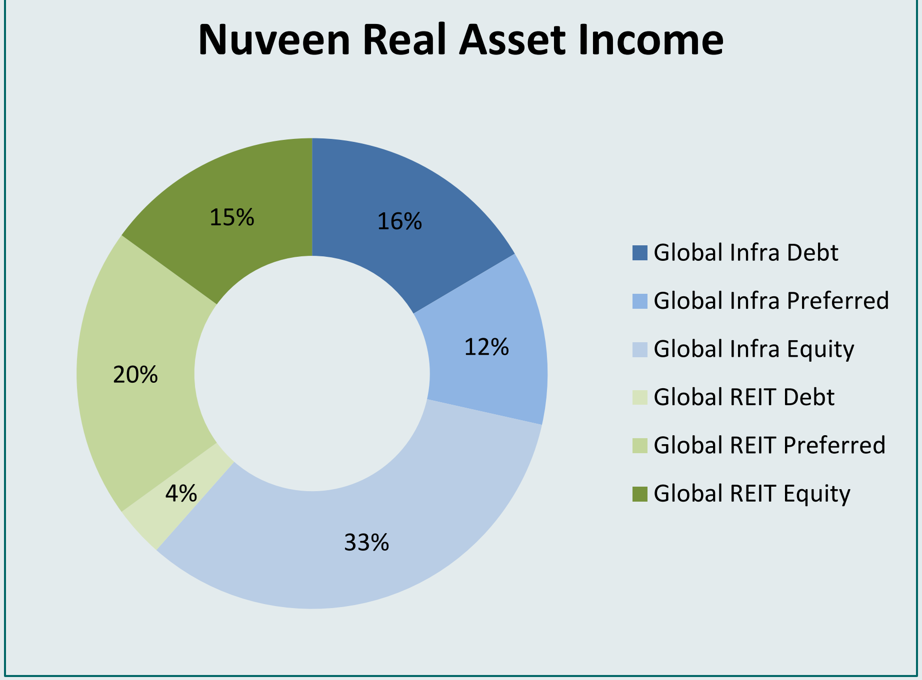
Firm AUM: $137.1Billion

Real Asset AUM: $9.6 Billion

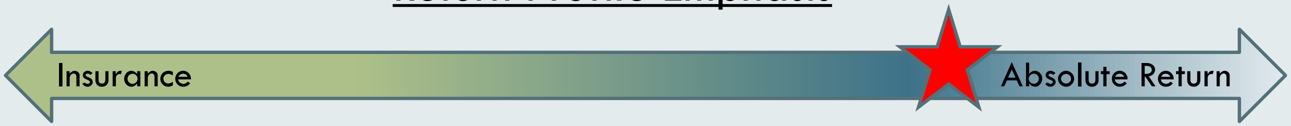
Investment Professionals: 128

Office Location: Minneapolis, Chicago

Board Approved: Dec. 3, 2015
Performance Inception Date: June 1, 2016



Return Profile Emphasis



**A substantially similar version of this slide originally appeared in the original manager recommendation as presented to the TMRS Board on December 3, 2015.*

Nuveen Addition (2/2)

The Nuveen strategy focuses on investments backed by tangible, long-term assets that demonstrate consistent cash flow streams due to long term contracts, concessions and other essential functions and services provided. The strategy invests across the capital stack in Global Listed Infrastructure and Real Estate Investment Trust assets. The strategy is attractive to TMRS given its contractual income orientation and non-use of Global Inflation Linked Bonds. For these reasons Nuveen is expected to be both diversifying and accretive to TMRS from a returns perspective.

Investment Case

- *High contractual income yield*
- *Measured security selection process designed specifically for the strategy*
- *Strength of team and research process*

Considerations

- *Interest rate exposures*
- *Differentiated nature of the product*
- *More absolute return orientation vs. insurance orientation (less inflation sensitivity)*

Scoring Matrix

Category	Nuveen	Comp. Mgr. A	Comp. Mgr. B
People	25.0	24.0	20.0
Process	20.0	18.0	16.0
Performance	15.0	10.0	10.0
Strategy	30.0	25.0	20.0
Terms	10.0	10.0	10.0
Total Points	**100.0**	**87.0**	**76.0**

Cohen & Steers Addition (1/2)

Highlights

Portfolio Manager: Vince Childers

Firm AUM: $49.7 billion

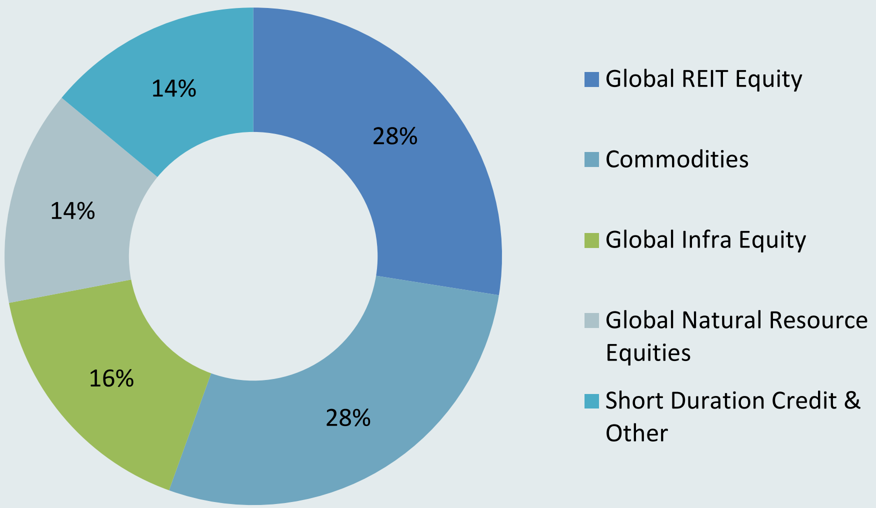
Real Assets AUM: $19.7 billion

Investment Professionals: 33

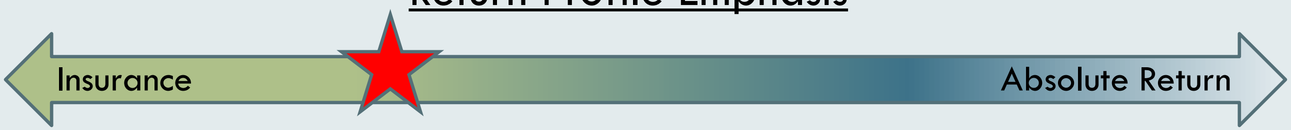
Office Location(s): New York, Seattle, London, Hong Kong, Tokyo

Board Approved: Dec. 3, 2015 / May 20, 2016
Performance Inception Date: June 1, 2016

C&S Real Asset Multi-Strategy



Return Profile Emphasis



**A substantially similar version of this slide originally appeared in the original manager recommendation as presented to the TMRS Board on December 3, 2015.*

Cohen & Steers Addition (2/2)

The Cohen & Steers strategy focuses on asset allocation and bottom up security selection as a means to outperform markets in periods where both stock and bonds are underperforming historical averages. The portfolio solution is equity and commodity oriented (rather than income oriented) and thus carries an expected return stream more reflective of an insurance profile than some competing products. The Fund is attractive to TMRS given its inflation sensitive return profile and non-inclusion of Global Inflation Linked Bonds. For these reasons it is expected that Cohen & Steers strategy will be diversifying and consistent with the broader risk/return mandate set forth in the most recently adopted TMRS Asset Allocation.

Investment Case

- *Dedicated Asset Allocation Research function*
- *Exposure to inflation beta sensitive assets*
- *Understandable expectations of portfolio components*

Considerations

- *Relatively Recent Strategy Launch*
- *Commodities and Natural Resource Equities Exposure*
- *Real Assets as Insurance*

Scoring Matrix

Category	Cohen & Steers	Comp. Mgr. A	Comp. Mgr. B
People	22.5	20.0	18.0
Process	25.0	22.0	18.0
Performance	10.0	10.0	10.0
Strategy	30.0	20.0	20.0
Terms	12.5	10.0	10.0
Total Points	100.0	82.0	76.0

III. Rebalancing Trade Analysis

Summary of Trade Construction Process

Step 1: Build a Trade Model

We must build a trade model upon which further analysis can be conditionally tied to in order to understand both trade risks and outcomes. Step 1 involves tweaking the inputs of the model to arrive at a set of feasible trade ideas from which the consequences of objectives meeting trades can be analyzed.

Step 2a: Determine Trade Sizing

We've already determined appropriate levels of targeted private real return assets through the real return objectives assessment. We must therefore create a pacing model and assess the potential glide paths of account values in order to understand the feasibility of the plan, probabilities of meeting objectives, and assessing liquidity needs.

Step 2b: Re-underwrite the Trade Instruments

We must understand and have outlooks established for each of the instruments planned to be traded in so that an understanding of the value of the trade in terms of risk, return, liquidity, feasibility, and meeting of objectives may be assessed. All of these inputs inform overall trade sizing and relative sizing of various trade components.

Step 3: Synthesize Analysis

We must synthesize all of risk, return, liquidity, feasibility, and objectives in order to arrive at an implementable trade. A trade plan must then be established in order to minimize execution costs and maximize net benefits for the portfolio and TMRS beneficiary base.

The Trade Model / Sizing

The Recommended Rebalance ● Base Case

Proposed Trade Detail					
($ millions as of September 8, 2016)	**Current Exposure ($)**	**Current Exposure (%)**	**Targeted Exposure (%)**	**Proposed ∆ in Funded Amount**	**Post Trade Exposure ($)**
Core Fixed Income	5,922	23.71%	10.00%	**(450)**	5,472
Real Return Portfolio Size	1,873	7.50%	10.00%	**-**	2,323
Colchester Size	1,020	4.08%	2.79%	**(322)**	698
Nuveen Size	386	1.54%	3.04%	**373**	759
Cohen & Steers Size	361	1.44%	3.04%	**399**	759

Trade Effects Analysis - Base Case					
	E(R)	**E(Comp R)**	**E(Vol)**	**E(Sharpe)**	**Notes**
Core Fixed Income	2.04%	1.86%	0.060	0.06	A
Colchester	2.50%	2.12%	0.088	0.10	B
Nuveen	5.20%	4.48%	0.124	0.29	B / C
Cohen & Steers	4.20%	3.31%	0.137	0.19	B
Funding Assets	2.36%	2.15%	0.065	0.11	D
Purchased Assets	4.68%	3.95%	0.125	0.24	
Pre-Trade Portfolio (w/ Core FI)	3.15%	2.84%	0.080	0.19	
Pre-Trade LRA Portfolio	3.44%	3.00%	0.096	0.19	
Post Trade Portfolio/LRA	4.01%	3.46%	0.107	0.22	
Est. Trade Cost	0.39%				E
Est. Payback Months (Arit / Comp)	2.0	2.6			n/a

Notes:

A - 2.04% YTW as of Sept. 12, mod. Duration of 5.94

B - Expected returns and vol source is PIMCO. Underwritten based on benchmark indexes. No alpha assumption embedded.

C - Approximate current yield for portfolio

D - Correlation table from which estimated volatilities were derived is provided in the footnotes.

E - Estimates provided by managers PIMCO, Nuveen and Cohen & Steers. Base expectation is for trade costs of 47bps. See footnotes.

Additional Notes: Est. Cash Return = 1.66% for purposes of calculating Sharpe ratios; Source: PIMCO

Return Expectations and probabilities of meeting investment objectives were both significantly enhanced by the proposed rebalancing trade.

None of opportunity costs, trade costs, cash flows, or potential for portfolio disruption impose negatively on trade assessments.

The Trade Model / Sizing

Trade Scenario Analysis & Stressed Case

Trade Scenario Analysis				
Trade Case (GILBS %, $)	**E(R)**	**E(Comp R)**	**E(Vol)**	**E(Sharpe)**
Current Portfolio (57%, $1020)	3.45%	3.01%	0.096	0.19
Trade 1 (41% GILBS, $1,020mm)	3.76%	3.27%	0.102	0.21
Trade 2 (35% GILBS, $875mm)	3.90%	3.38%	0.104	0.21
Trade 3 (32% GILBS, $800mm)	3.97%	3.43%	0.106	0.22
Trade 4 (28% GILBS, $700mm)	4.01%	3.46%	0.107	0.22

Trade Effects Analysis - Stress Case (Trade 4) *(150 bps less return from Non-GILBs, Perfect Correlations, 33% higher transactions costs)*					
	E(R)	**E(Comp R)**	**E(Vol)**	**E(Sharpe)**	**Notes**
Core Fixed Income	2.04%	1.86%	0.060	0.06	A
Colchester	2.50%	2.12%	0.088	0.10	B
Nuveen	3.70%	2.97%	0.124	0.16	B / C
Cohen & Steers	2.70%	1.80%	0.137	0.08	B
Funding Assets	2.36%	2.15%	0.065	0.11	
Purchased Assets	3.18%	2.37%	0.131	0.12	
Pre-Trade Portfolio (w/ Core FI)	2.65%	2.32%	0.082	0.12	D
Pre-Trade LRA Portfolio	2.80%	**2.34%**	0.098	0.12	
Post Trade Portfolio/LRA	2.98%	**2.34%**	0.115	0.11	
Est. Trade Cost	0.50%				E
Est. Payback Months (Arit / Comp)	7.3	27.6			n/a
Notes:					
A - 2.04% YTW as of Sept. 12, mod. Duration of 5.94					
B - Expected returns and vol source is PIMCO. Underwritten based on benchmark indexes. No alpha assumption embedded.					
C - Approximate current yield for portfolio					
D - Correlation table from which estimated volatilities were derived is provided in the footnotes.					
E - Estimates provided by managers PIMCO, Nuveen and Cohen & Steers. Base expectation is for trade costs of 47bps. See footnotes.					
Additional Notes: Est. Cash Return = 1.66% for purposes of calculating Sharpe ratios; Source: PIMCO					

Returns and risk-adjusted returns expectations are enhanced by proposed trade. Substantial conservatism can be underwritten into trade in order to arrive at approximate break even outcome as compared to not doing the trade.

Portfolio/Trade descriptions are as follows: 1) Current portfolio is reflective of today's real return portfolio where Colchester represents 57% of all funded amounts; 2) Trade 1 represents a trade where Nuveen and C&S are upsized such that the real return portfolio becomes fully funded but only core fixed income is utilized as a funding source; 3) Trade 2 is the same as trade 1 with the exception that Colchester is used as an additional funding source and is reduced to 350 basis points, the IPS limit for any single real return mandate; 4) Trade 3 is the same as trade 2 with the exception that additional amounts are drawn from Colchester such that all three liquid real return mandates are equally sized; 5) Trade 4 increases the size of Nuveen and Cohen & Steers to the 300 basis points. In all cases Nuveen and C&S are equally weighted with each other. Red cells highlight changed variables in the trade effects analysis table.

The Trade Model / Sizing

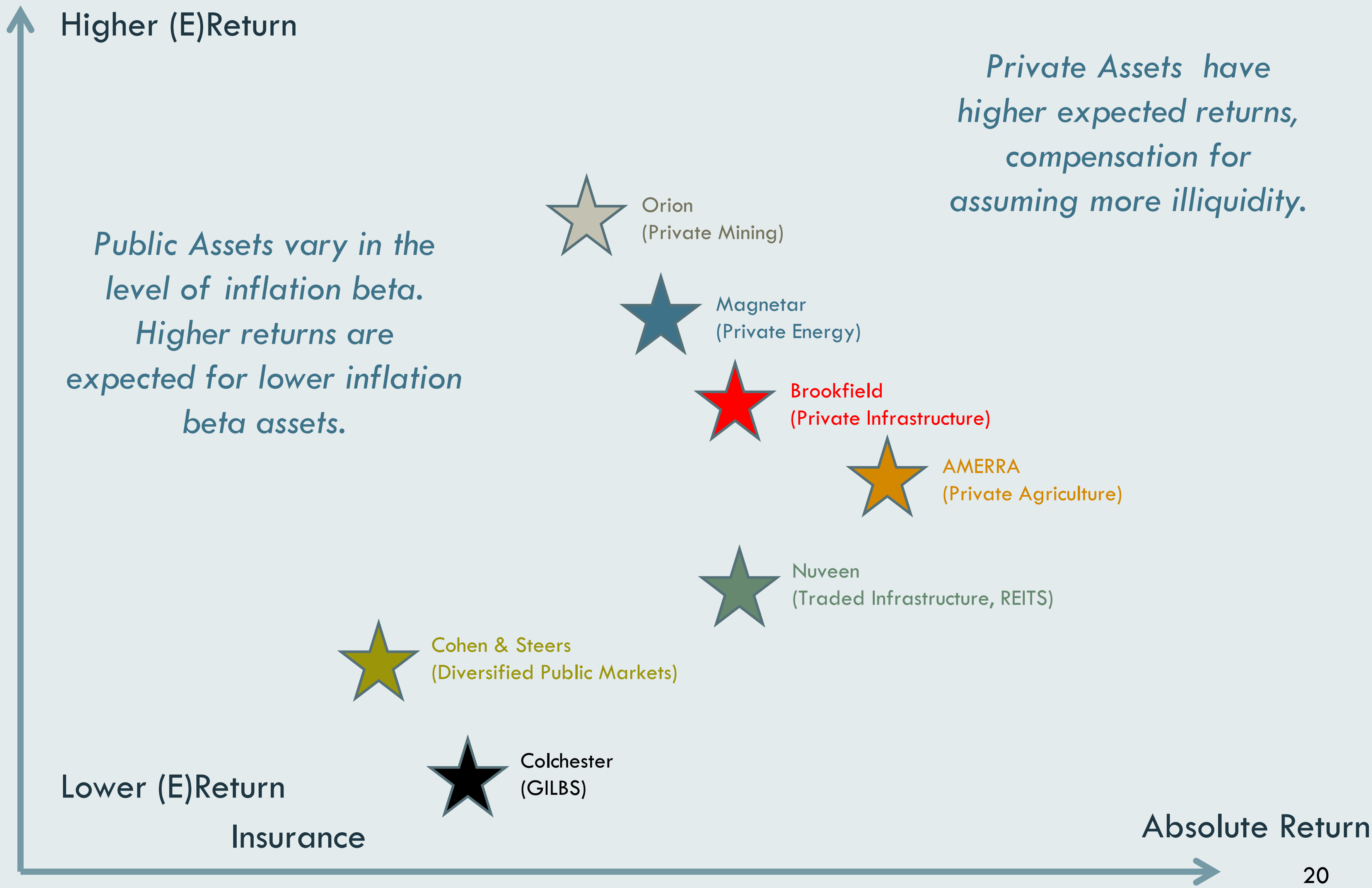
Trade Costs Analysis

Estimated Trade Costs for Real Return Rebalancing Transaction					
	Trade Cost	Core FI	Colchester	Nuveen	Cohen & Steers
Treasury	0.010%	36.0%	0.0%	0.0%	0.0%
Conventional Mortgage	0.032%	28.0%	0.0%	0.0%	0.0%
Corporate	0.125%	26.0%	0.0%	0.0%	0.0%
TIPS	0.050%	0.0%	38.4%	0.0%	0.0%
GILBs (ex-US)	0.250%	0.0%	61.6%	0.0%	0.0%
High Yield	0.500%	0.0%	0.0%	13.7%	0.0%
Preferred	0.500%	0.0%	0.0%	35.1%	0.0%
Equity	0.125%	0.0%	0.0%	47.8%	0.0%
Cohen & Steers	0.220%	0.0%	0.0%	0.0%	100.0%
Other	0.500%	10.0%	0.0%	0.0%	0.0%
Cash	0.000%	0.0%	0.0%	3.4%	0.0%
Estimated Trade Cost	n/a	0.095%	0.173%	0.304%	0.220%
Gross Trade Value	n/a	450	322	373	399
Net Trade	772				
Est. Transactions Cost	0.39%				

* Data Sources: PIMCO, Barclays Aggregate, Nuveen, Cohen & Steers. Highly conservative inputs were used where conflicting or incomplete data was available.

Re-underwrite Trade Instruments

Manager Expectations Profiles

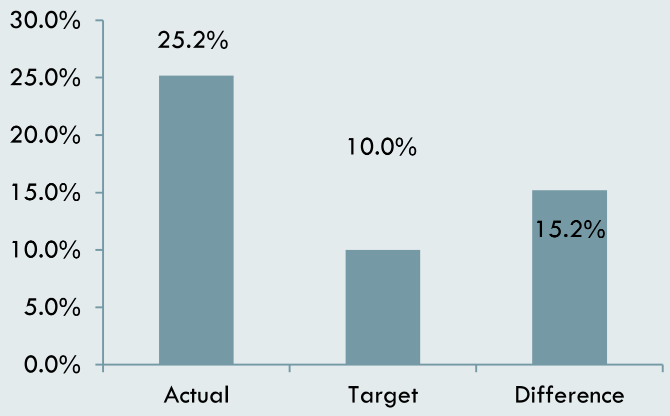


**This figure substantially similar to this appeared in the 2016 annual asset class review as presented to the TMRS Board on June 23, 2016*

Re-underwrite Trade Instruments

Funding Asset, Core Fixed Income

Core Weighting vs. Target ***(June 30, 2016)***



<u>Summary</u>

- Interest rates may remain lower for longer given central bank policies.
- Investors continue to search for attractive yields in other asset classes because of this persistently low interest rate environment.
- Market reactions are making it difficult for the Federal Reserve to increase rates given tepid economic growth and very low inflation expectations.
- Current monetary policy combined with effective fiscal policy could have a significant impact on the future level of interest rates.

Source: TMRS Fixed Income Annual Review 2016

US Treasury Yields

Maturity	Yield	Record Lows
10yr	1.56	1.36
30yr	2.22	2.10

As of 8/29/2016
Source: Bloomberg

TMRS remains significantly overweight to core fixed income allocations. Due to low expected returns from the asset class, core fixed income is expected to be accretive on a risk/return basis as a funding asset.

<u>Barclay's Aggregate Statistics</u>
Yield to Worst: 2.04%
Mod duration: 5.94

As of 9/12/2016
Source: Barclays Live

TMRS is currently utilizing core fixed income to fund real return capital calls.

Re-underwrite Trade Instruments

Funding Asset, Colchester Global (1/2)

Inflation Linked Bond Data	
Colchester ITD Annualized Return*	0.61%
Colchester ITD Ann. Bond Return	4.57%
Colchester ITD Ann. Currency Return	-1.72%
Colchester Annualized Alpha Net *(as of 6/30/16)*	0.00%
GILB Index Exp. Real Yield	-0.63%
Colchester Exp. Real Yield	-0.22%
12 Month CPI-U	1.1%
12 Mo. CPI-U Ex-Food & Energy	2.3%
2/1/11 GILB Index Yield	1.1%
9/19/16 GILB Index Yield	-0.84%
2/1/11 Global Treasury Index Yield	2.30%
9/19/16 Global Treasury Index Yield	.70%
9/19/16 GILB Index Mod. Duration	12.9
**Colchester Inception Date: 2/1/2011*	

Sources: Bureau of Labor Statistics, Barclay's Live, Colchester Global Investors
All data as of 8/31/16 unless otherwise denoted.

Real Bond & CPI Data

<u>Highlights of Existing Real Return Exposure</u>

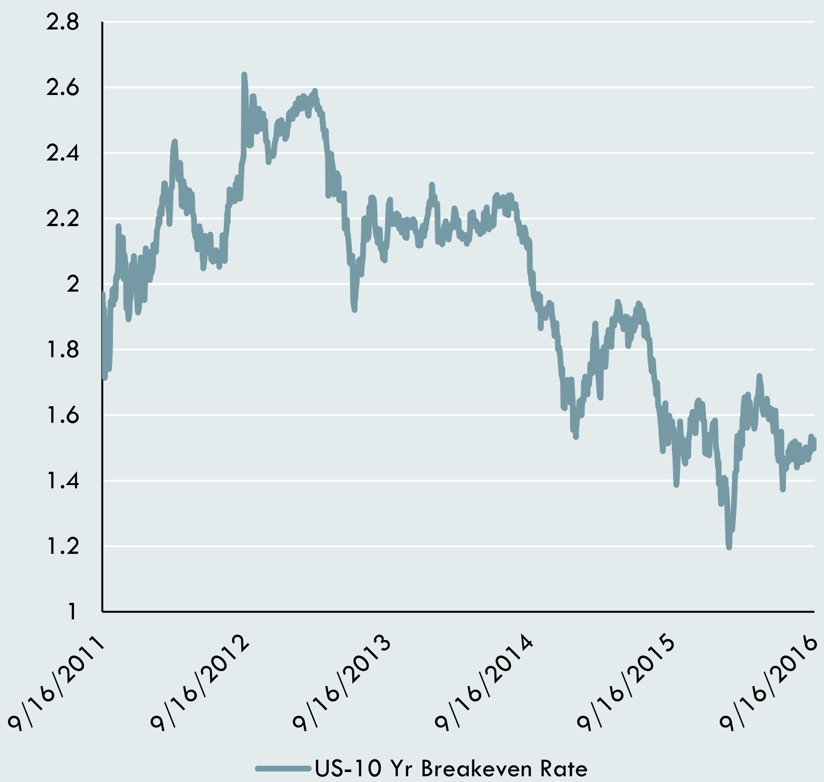
- Low Inflation + Low Real Bond Yields = Low Nominal Yields for GILBs.
- Colchester Returns = 3.15% since inception (as of 6/30/16). Historical returns driven by global interest rate reductions.
- Colchester Real Yield > Index Real Yield due to Emerging Markets Exposure. EM exposure function of higher expected Real Yields.
- RVK Asset Allocation Model Expected Return for Real Return Asset Class = 6.53%.
- The Barclays GILBS index is up 8% through September 19, 2016.

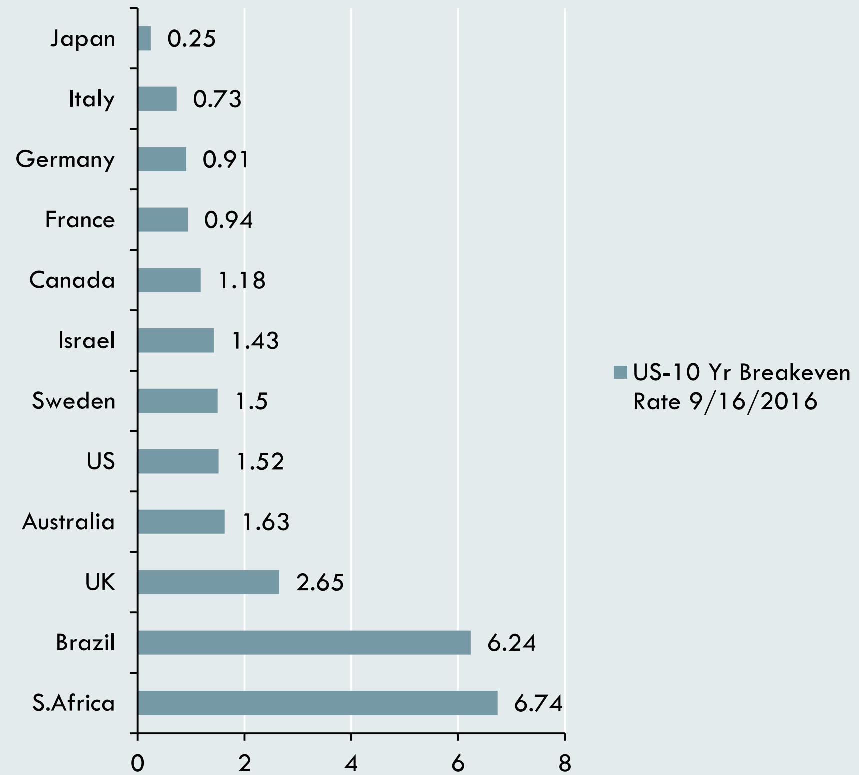
Re-underwrite Trade Instruments

Funding Asset, Colchester Global (2/2)

Inflation Expectations: TIPS & GILBs Breakevens

Break-evens provide a snapshot of what the fixed income market is currently predicting for inflation.





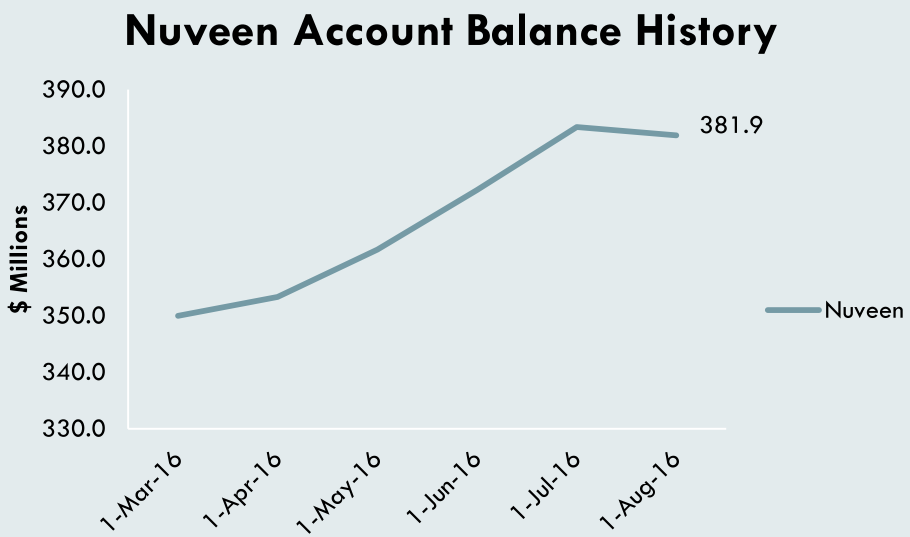
- Data Source: Bloomberg
- Note: Breakevens are the difference in the yield between a nominal and inflation protected bond of similar maturity and grade

Re-underwrite Trade Instruments

Purchase Asset, Nuveen

<u>*Benchmark*</u>

28% S&P Global Infrastructure Index
21% FTSE EPRA/NAREIT
18% Wells Fargo Hybrid Preferred REIT
15% Barclays Global Capital Index
18% Barclays US Corporate High Yield
Historical Product Tracking Error = 2.3%



Portfolio Yield: 5.44%

Equity Securities - 47.8%	
Number of Securities	134
Dividend Yield	5.70%
Weighted Average Market Capitalization	$9.7 billion
EV/EBITDA	11.7x
Long-Term Debt-to-Capital	31.2%

Preferred Securities - 35.1%	
Number of Securities	87
Yield to Worst	4.59%
Duration	5.4 years
Credit Rating**	
AAA	0.0%
AA	0.0%
A	0.7%
BBB	26.0%
BB	17.1%
B	1.2%
CCC and Below	0.0%
Unrated	55.0%

Debt Securities - 13.7%	
Number of Securities	53
Yield to Worst	6.67%
Duration	4.7 years
Average Price	95.78
Credit Rating**	
AAA	0.3%
AA	0.0%
A	0.0%
BBB	12.8%
BB	17.9%
B	50.7%
CCC and Below	12.8%
Unrated	5.6%

**As of 8/31/16*

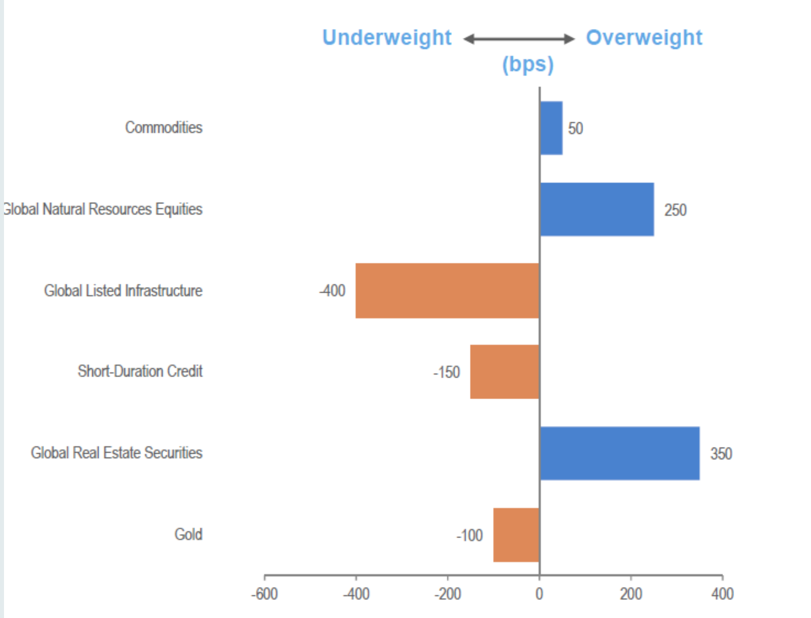
Re-underwrite Trade Instruments

Purchase Asset, Cohen & Steers

Benchmark

27.5% FTSE EPRA/NAREIT
27.5% Bloomberg Commodity Total Return
15% S&P Global Natural Resources Index
15% Dow Jones/Brookfield Global Infrastructure
10% BofA/ML 1-3 Year US Corporate Index
5% Gold Spot Price
Estimated Tracking Error = 2%

C&S Account Balance History



	Portfolio Target[1] %	Benchmark[2] %
Commodities	28.0	27.5
Global Natural Resources Equities	17.5	15.0
Global Listed Infrastructure	11.0	15.0
Short-Duration Credit	8.5	10.0
Global Real Estate Securities	31.0	27.5
Gold	4.0	5.0

**As of June 30, 2016*

Re-underwrite Trade Instruments

Liquid Real Return Performance Summary

Relative Performance of Nuveen/C&S Portfolio		
	Core Fixed Income	**GILBs**
$ Outperformance	21,892,341	20,602,045
% Outperformance	3.69%	4.29%
**April 1 - August 31 (since first full month of Nuveen account)*		

The December 3, 2015 approved allocations to Nuveen and C&S have added 8bps of return at the total portfolio level in less than 6 months of being invested.

	Nuveen			**Cohen & Steers**	
Month-End	Account Balance *($ millions)*	Performance Relative to Benchmark		Account Balance *($ millions)*	Performance Relative to Benchmark
Mar-16	354	n/a		-	-
Apr-16	359	n/a		-	-
May-16	361	n/a		350,000	-
Jun-16	371	1.15%		361,900	-
Jul-16	381	-0.50%		365,050	-0.07%
Aug-16	380	-0.06%		360,850	0.58%

*Both Nuveen and C&S have outperformed benchmarks since the inception of the mandates.**

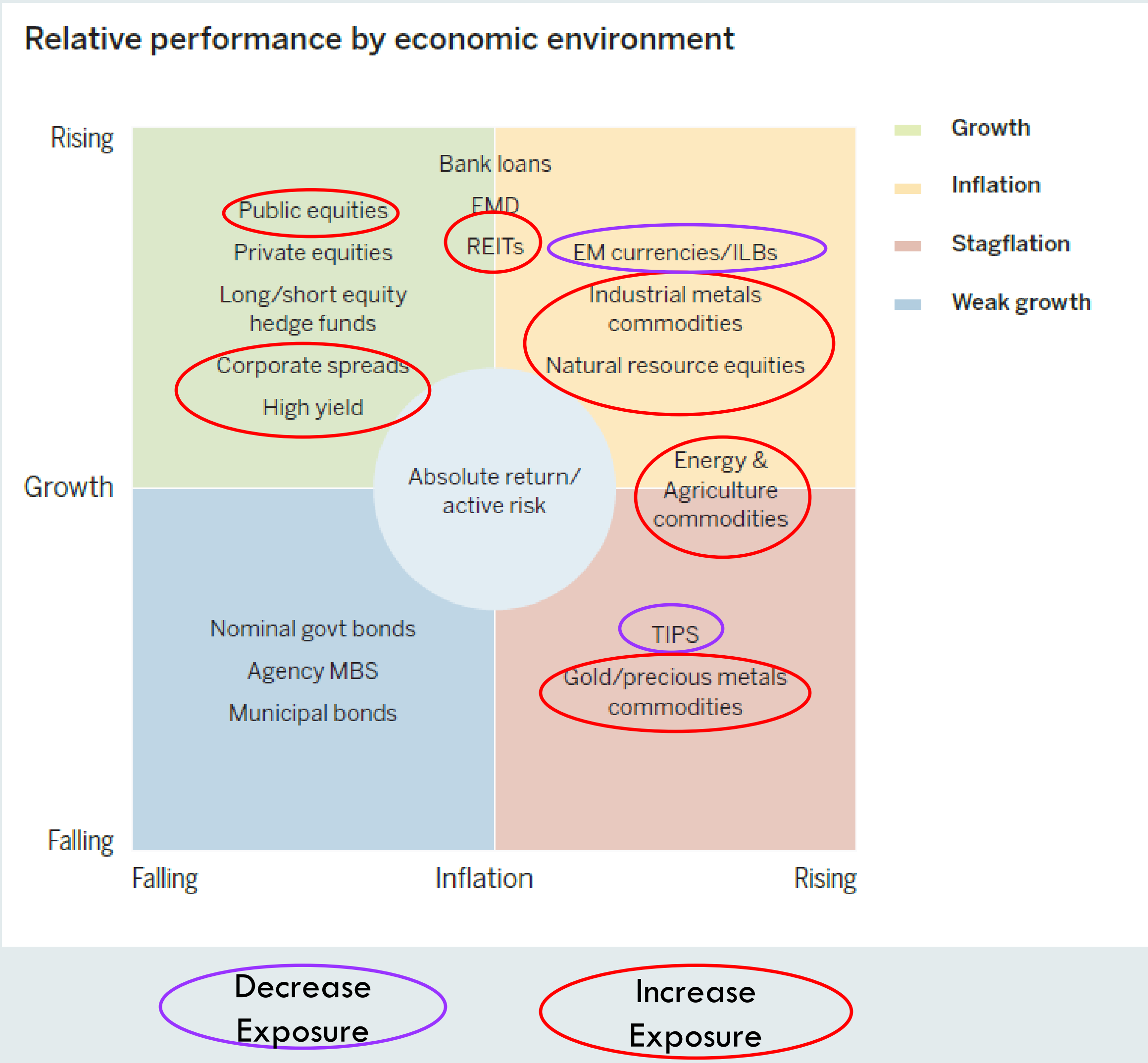
*__Notes__

Note 1: At the time of preparation of performance figures finalized performance figures were not available for the months of July and August 2016. Numbers were aggregated in the following order of prioritization: 1) State Street finalized figures; 2) State Street Non-Finalized Figures; 3) Manager Figures. Additional anomalies in the compilation of figures occurred in relation to this, principally benchmark tracking. Nuveen began tracking the benchmark on June 1. Cohen & Steers was implemented more quickly than anticipated (effectively being traded into a near finalized portfolio by day 3 of trading) making it possible to track performance as early as June 1. Reports appear to indicate that C&S will not begin tracking performance relative to its benchmark until July 1.

Note 2: It is not an anomaly that GILBS underperformed the Nuveen and C&S portfolio less on a dollar basis but more on a percentage basis than Core Fixed income relative to the same portfolio. The reason is staggered start dates for trading of accounts of Nuveen and C&S. Nuveen began trading in the last 10 days of March. C&S began trading on June 1.

Synthesize Analysis

Diversification/Market Analysis



The Post-Recommendation portfolio moves the portfolio in the direction of TMRS' broader diversification approach.

Notes on Recommended Trade

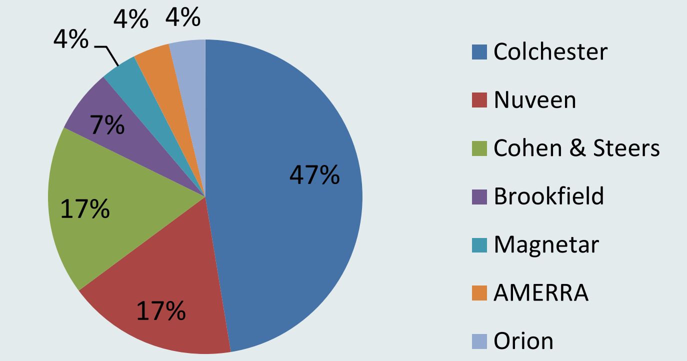
- *Supply side economics of commodities markets affected by pricing pressures in all of energy, mining and agricultural sectors. Strong dollar also affecting commodities markets.*
- *A portfolio positioned heavily for responsiveness to stagflation is exceptionally low yielding. ILB responsiveness is not leveraged to inflation – i.e. ILBs have a theoretically inflation beta approximating 1 absent rates moves.*

**Source: Wellington*

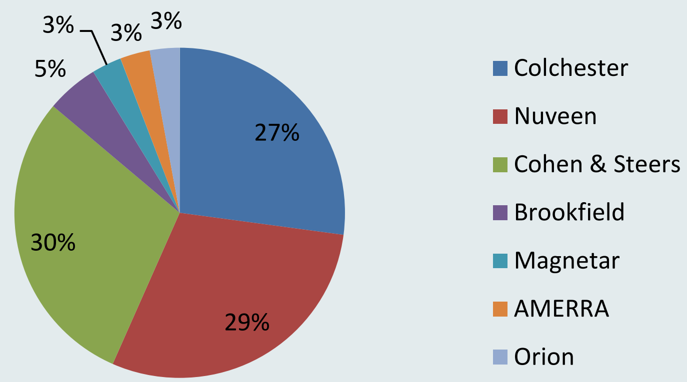
Synthesize Analysis

Diversification Analysis

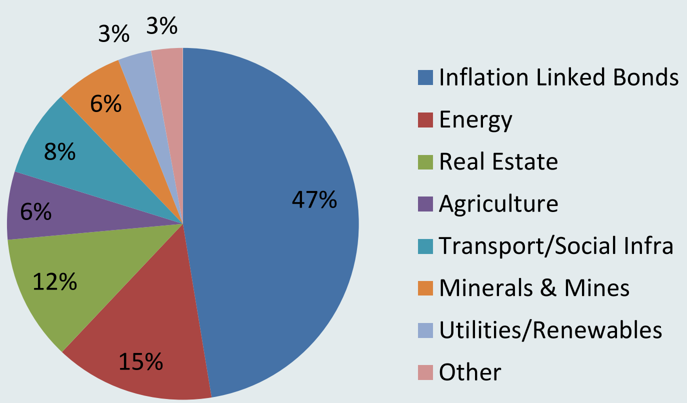
Current Exposure by Manager



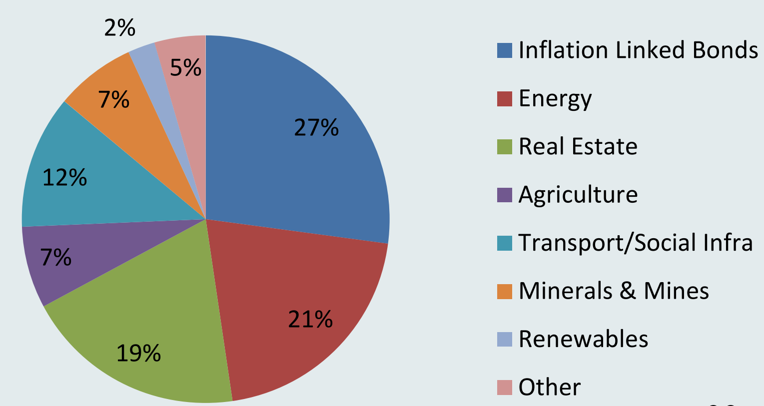
Post-Recommendation Exposure by Manager



Current Exposure by Sector



Post-Recommendation Portfolio Exposure by Sector

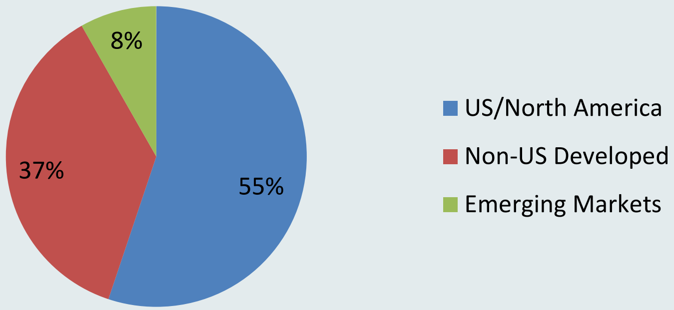


*Exposures by Adjusted Commitments; Pre-trade portfolios pie charts do not incorporate unallocated portion of portfolio, roughly 16% of total real return

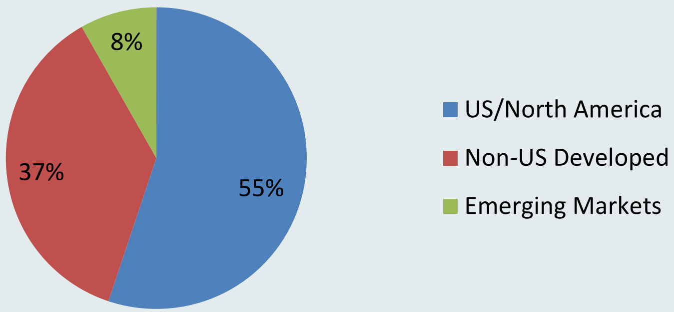
Synthesize Analysis

Diversification Analysis

Post-Recommendation Portfolio Exposure by Geography
(by Adj. Commitments)



Post-Recommendation Portfolio Exposure by Geography
(by Adj. Commitments)



The Post-Recommendation portfolio brings the real return allocation near full funding, increasing market value exposure to 100% of target for the asset class likely by Q1 2017.

Full implementation, however, will only occur at such a time objectives for the asset class are expected to be met. This will occur when greater private real asset deployment has occurred.

*Exposures by Adjusted Commitments; Pre-trade portfolios pie charts do not incorporate unallocated portion of portfolio, roughly 16% of total real return

IV. Requested Board Action

Requested Board Action

Liquid Real Return Portfolio Rebalancing Trade Recommendation

*Proposed Board of Trustees Actions**

- Approve additional allocation to the Nuveen Real Asset Income Strategy of $375 million and take exposures to approximately 300bps of the total plan.
- Approve additional allocation to the Cohen & Steers Real Asset Multi-Strat of $400 million and take exposures to approximately 300bps of the total plan.
- Fund proposed mandates by: 1) rebalance the remaining $450 million of the 2016 real return pacing plan from core fixed income, and 2) rebalance the remaining $325 million from the Colchester Global managed GILBs.

**Trade values calculated based on September 8, 2016 account values. Final executed proposed trade subject to small variations in trade value.*