TRS Risk Management Committee

September 2013

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TEACHER RETIREMENT SYSTEM OF TEXAS MEETING
BOARD OF TRUSTEES
AND
RISK MANAGEMENT COMMITTEE

(Committee Chair and Members are Subject to Change at the September Board Meeting — Mr. McDonald, Committee Chair; Mr. Barth; Ms. Charleston; Mr. Kelly; & Mr. Moss, Committee Members)

AGENDA

September 12, 2013 – 10:30 a.m.
TRS East Building, 5th Floor, Boardroom

The September 12-13, 2013 meetings of the TRS Board of Trustees and Risk Management Committee will be held by telephone conference call as authorized under Texas Government Code Section 551.130. The Board and Risk Management Committee intend to have quorums physically present at ***1000 Red River Austin, Texas 78701 in the TRS East Building, 5th Floor, Boardroom.***

1. Consider the approval of the proposed minutes of the June 14, 2013 committee meeting – Committee Chair.

2. Review the Investment Risk Report – Jase Auby.

NOTE: The Board of Trustees (Board) of the Teacher Retirement System of Texas will not consider or act upon any item before the Risk Management Committee (Committee) at this meeting of the Committee. This meeting is not a regular meeting of the Board. However, because the full Risk Management Committee constitutes a quorum of the Board, the meeting of the Committee is also being posted as a meeting of the Board out of an abundance of caution.

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Tab 1

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Minutes of the Risk Management Committee
June 14, 2013

The Risk Management Committee of the Board of Trustees of the Teacher Retirement System of Texas met on June 14, 2013 in the boardroom located on the fifth floor of the TRS East Building offices at 1000 Red River Street, Austin, Texas. The following committee members were present:

Eric McDonald, Chair
Todd Barth
Karen Charleston
David Kelly
Chris Moss

A quorum of the committee was present.

Others present:

Anita Palmer, TRS Trustee
Nanette Sissney, TRS Trustee
Brian Guthrie, TRS
Ken Welch, TRS
Don Green, TRS
Betsey Jones, TRS
Carolina de Onís, TRS
Bob Jordan, TRS
Amy Barrett, TRS
Jamie Michels, TRS
Janet Bray, TRS
Sylvia Bell, TRS
Dan Junell, TRS
Jay LeBlanc, TRS
Michelle Pagán, TRS
Dennis Gold, TRS
Lih-Jen Lan, TRS
Rebecca Merrill, TRS
Rich Hall, TRS
Lynn Lau,TRS
Edward Esquivel, TRS
Ellen Small, TRS
Angela Vogeli, TRS
Steve Huff, Reinhart Boerner Van Deuren
Jim Baker, UnitedHere

Mr. McDonald called the meeting to order at 9:45 a.m.

1. Consider the approval of the proposed minutes of the April 18, 2013 committee meeting – Eric McDonald.

On a motion by Mr. Barth, seconded by Mr. Kelly, the committee approved the minutes of the April 18, 2013 meeting as presented.

2. Receive report on the Enterprise Risk Management Program – Jay LeBlanc.

Mr. LeBlanc gave a report on the Enterprise Risk Management (ERM) Public Pension Peer Group Forums held in 2012 and 2013. He stated that the peer group planned to continue meeting to discuss ERM issues. Mr. LeBlanc confirmed for Mr. Kelly that the issues raised by the peer group could apply to the whole group in general.

3. Receive the TRS Stoplight Report – Jay LeBlanc.

Mr. LeBlanc presented the 2013 Stoplight Report and the Risk Heat Map as of June 2013. He explained the features and design of both reporting systems. He stated that the purpose of generating those reports was to communicate the state of risks within TRS and to communicate

staff efforts in relation to ERM. Mr. LeBlanc responded to Mr. McDonald that the report was generated quarterly.

4. Receive an update on the risk management activities relating to the TEAM Program, 403(b), Employer Reporting, Records Management, Open Government, Business Continuity, Investment Accounting, Communications and External Relations – Michelle Pagán.

Ms. Pagán summarized the results of the risk assessments on the following business categories: the TEAM program; the 403(b) program; employer reporting; records management; open government; business continuity; investment accounting; and communications and external relations. At Ms. Palmer's request, Ms. Pagán and Ms. Merrill described the mitigation and monitoring activities related to companies in the 403(b) program erroneously reporting to TRS information about the qualification and registration of products they offer to public education employees. Ms. Merrill explained that the law requires 403(b) companies to verify that their products are qualified and registered properly.

Reviewing the other risk reports, Ms. Pagán concluded that a majority of the risk assessments and existing mitigations had been accepted by management. In some riskier categories, she said, additional strategies or actions were in progress to further mitigate those risks. She noted that the TEAM Program remained the highest risk category, and staff would continue monitoring its risks through regular risk assessments. She referred the committee to the appendix section of the Risk Management Committee book for the detailed reports of the current risk assessments.

Ms. Pagán confirmed for Mr. McDonald that the ERM function was collaborating with Internal Audit on related audit projects. She said that such collaboration would increase as the ERM program developed. Mr. Moss stated that he liked seeing the functions of ERM and Internal Audit clarified in the risk reports. Mr. Kelly and Mr. McDonald also recognized improvements in the scope and depth of the risk reporting.

The meeting adjourned at 10:15 a.m.

Tab 2

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TRS
TEACHER RETIREMENT SYSTEM OF TEXAS
INVESTMENT
MANAGEMENT DIVISION

Investment Risk Report

Jase Auby
Chief Risk Officer
September 2013

Contents

- Policy Requirements
  1. Asset Allocation
  2. Value at Risk (VaR)
  3. Tracking Error
  4. Leverage
  5. Liquidity
  6. Counterparty Risks
  7. Derivatives
- Improved Risk Model
- Conclusion
- Appendix

Policy Requirements

Policy Requirements	Description		In compliance?
1. Asset Allocation	**Out of compliance**		No
2. Value at Risk	**8.2% (49% of the VaR limit range)**		✓
3. Tracking Error	**In compliance with policy**		✓
	Tracking Error	As % of Max	
Total Public Fund	133	44%	✓
4. Leverage	**In compliance with policy**		✓
Total Trust			
Net Leverage	98.3% (Within historical norm)		✓
Gross Leverage	115.2% (Within historical norm)		✓
Securities Lending			
Net Leverage	100.4% (Within historical norm)		✓
Gross Leverage	119.7% (Within historical norm)		✓
Hedge Fund			
Net Leverage	41.1% (Within historical norm)		✓
Gross Leverage	290.9% (Within historical norm)		✓
Strategic Partners			
Net Leverage	97.8% (Within historical norm)		✓
Gross Leverage	170.5% (Within historical norm)		✓
Real Assets			
Loan to Value	39.1% (Within historical norm)		✓
5. Liquidity	**In compliance with policy**		✓
6. Counterparty	**In compliance with policy**		✓
Exposure	In compliance with policy		✓
Rating	In compliance with policy		✓
7. Derivative Exposures	**In compliance with policy**		✓

As of June 30, 2013

Policy Requirements

Policy Violation

- As of June 28, 2013, Absolute Return as a percentage of the Trust was below its minimum of 0% allowed by policy

Cause of the violation

- Tactical Asset Allocation entered into a credit underweight position of -0.69%
- Credit is part of the Absolute Return policy asset class
- However, the Trust's other Absolute Return positions aggregated to +0.63%
- Accordingly, the TAA position caused the Trust to have a net position of -0.06% versus a policy requirement of 0% minimum

Curing the violation

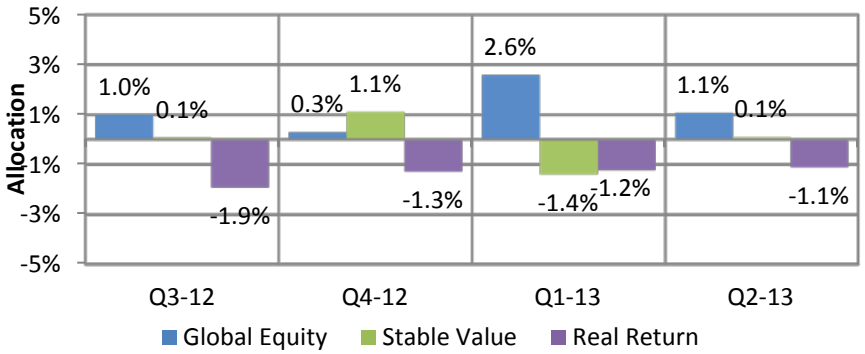
- TAA adjusted its underweight to bring the Trust back into compliance

Preventing the violation in the future

- Existing practice was for TAA to manually confirm its positioning by referring to the Trust's positions
- A systematic check has been added to the TAA process to automate this confirmation and prevent future mistakes

1. Asset Allocation

Group Active Allocation

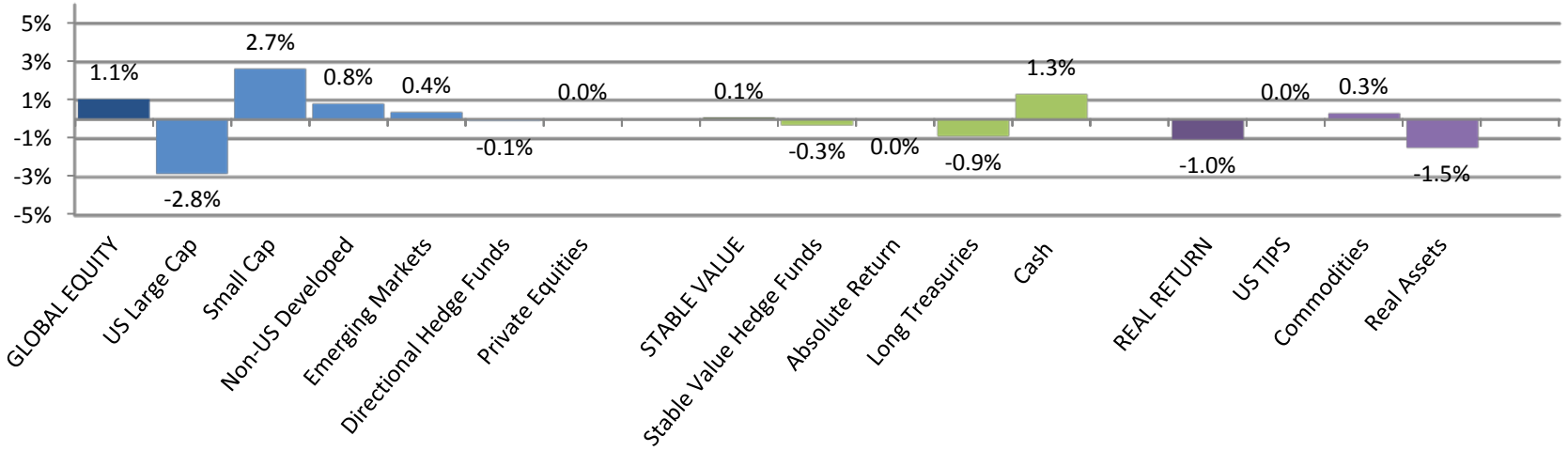


Top Three Overweights	
Small Cap	2.7%
Cash	1.3%
Non-US Developed	0.8%

Top Three Underweights	
US Large Cap	-2.8%
Real Assets	-1.5%
Long Treasuries	-0.9%

Asset Group/Class Active Allocation

(In Compliance with Policy)

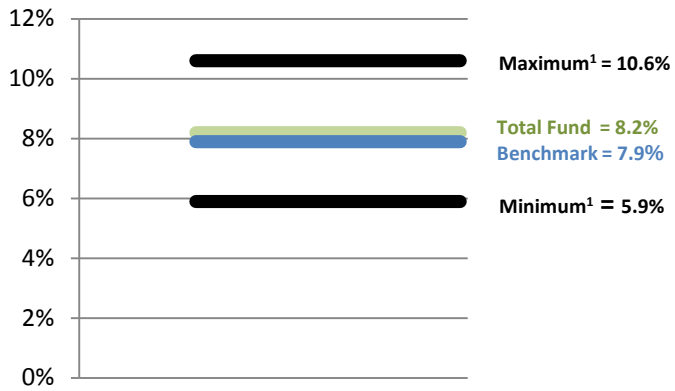


Source: State Street Bank

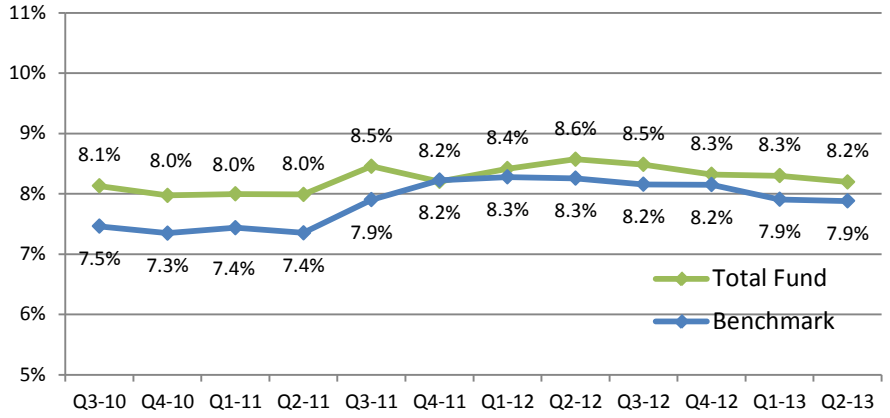
As of June 30, 2013

2. Value at Risk (VaR)

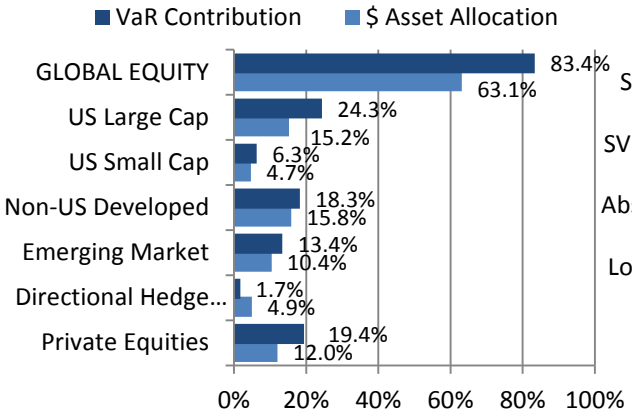
VaR as a Percent of Market Value
(One Month, 95% Confidence)

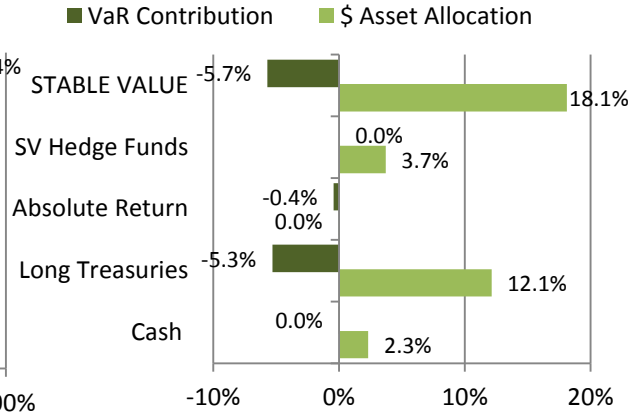


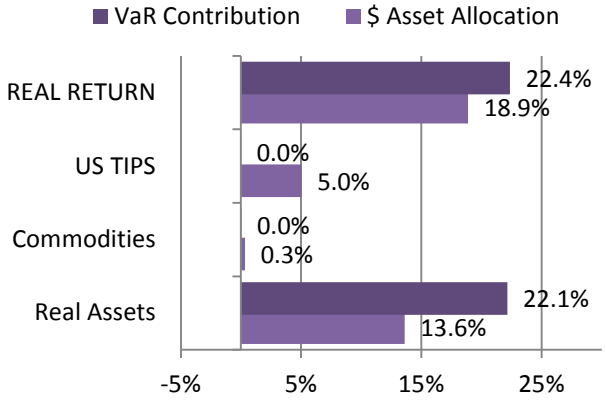
Three-Year VaR History
(as Percent of Market Value)



VaR vs. $ Allocation - Detail





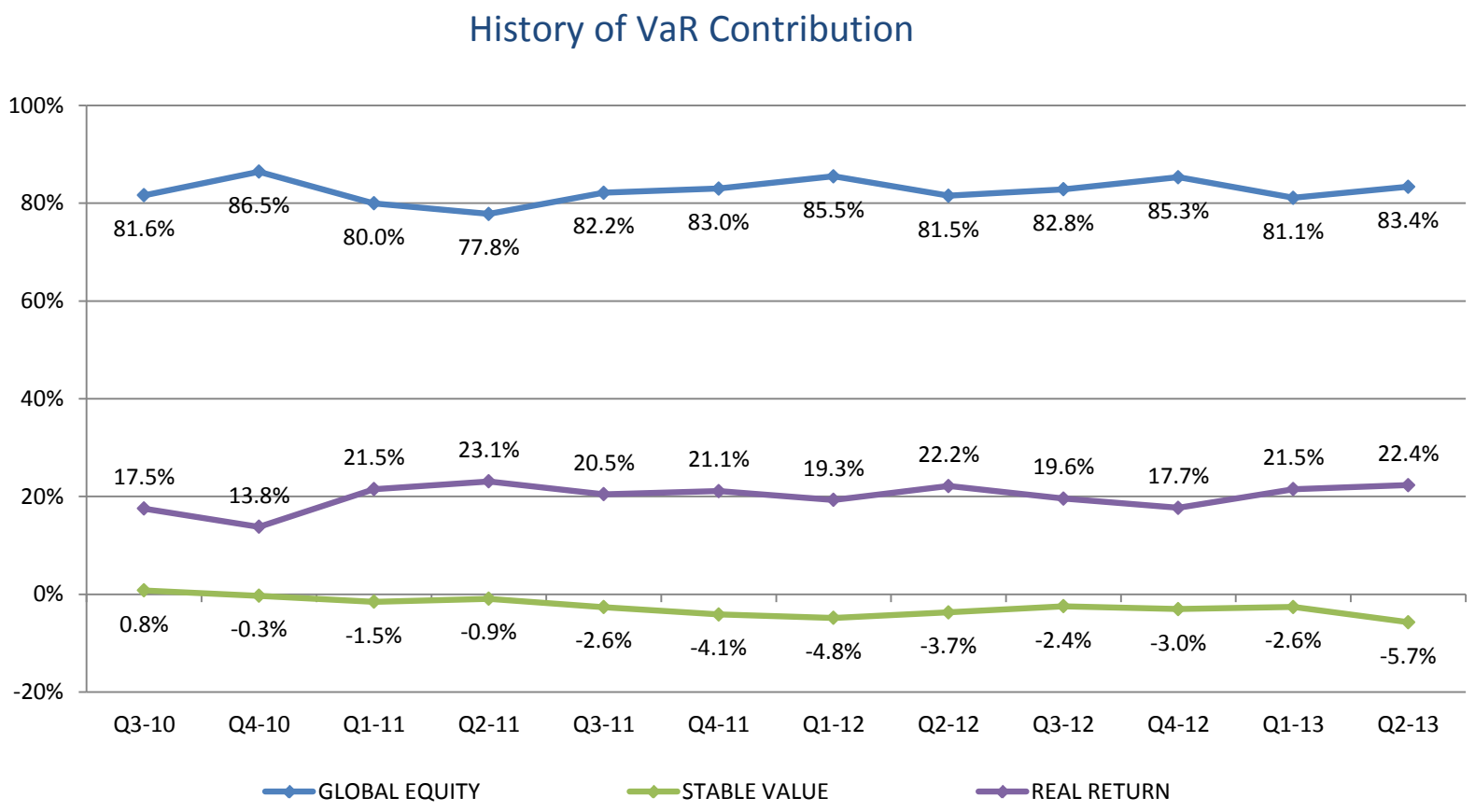


[1]Minimum and maximum VaR levels are determined by adjusting the allocation to each policy asset class within the allowable policy range such that VaR is minimized and maximized.

Source: State Street Bank

As of June 30, 2013

2. VaR Contribution by Asset Groups



Source: State Street Bank

As of June 30, 2013

3. Tracking Error

Policy Asset Class Tracking Error

Policy Assets	Market Value ($, billions)	Current Forecast (bps)	3 Year Realized (bps)
US Large Cap	$17.6	204	262
US Small Cap	5.4	282	319
Non-US Developed	18.3	142	134
Emerging Market	12.0	198	264
Directional Hedge Funds	5.7	266	[1]
US Treasuries	14.0	27	168
Absolute Return	0.0	3423	894
Stable Value Hedge Funds	4.3	317	332
Cash	2.7	9	58
Global Inflation Linked Bonds	5.8	19	48
Commodities	0.4	3306	1363
Total Public Assets	**$86.3**	**96**	**133**
Private Equity	14.0	173	439
Real Assets	15.7	564	219
Total Private Assets	**$29.6**	**335**	**265**
Total Assets	**$116.0**	**135**	**140**

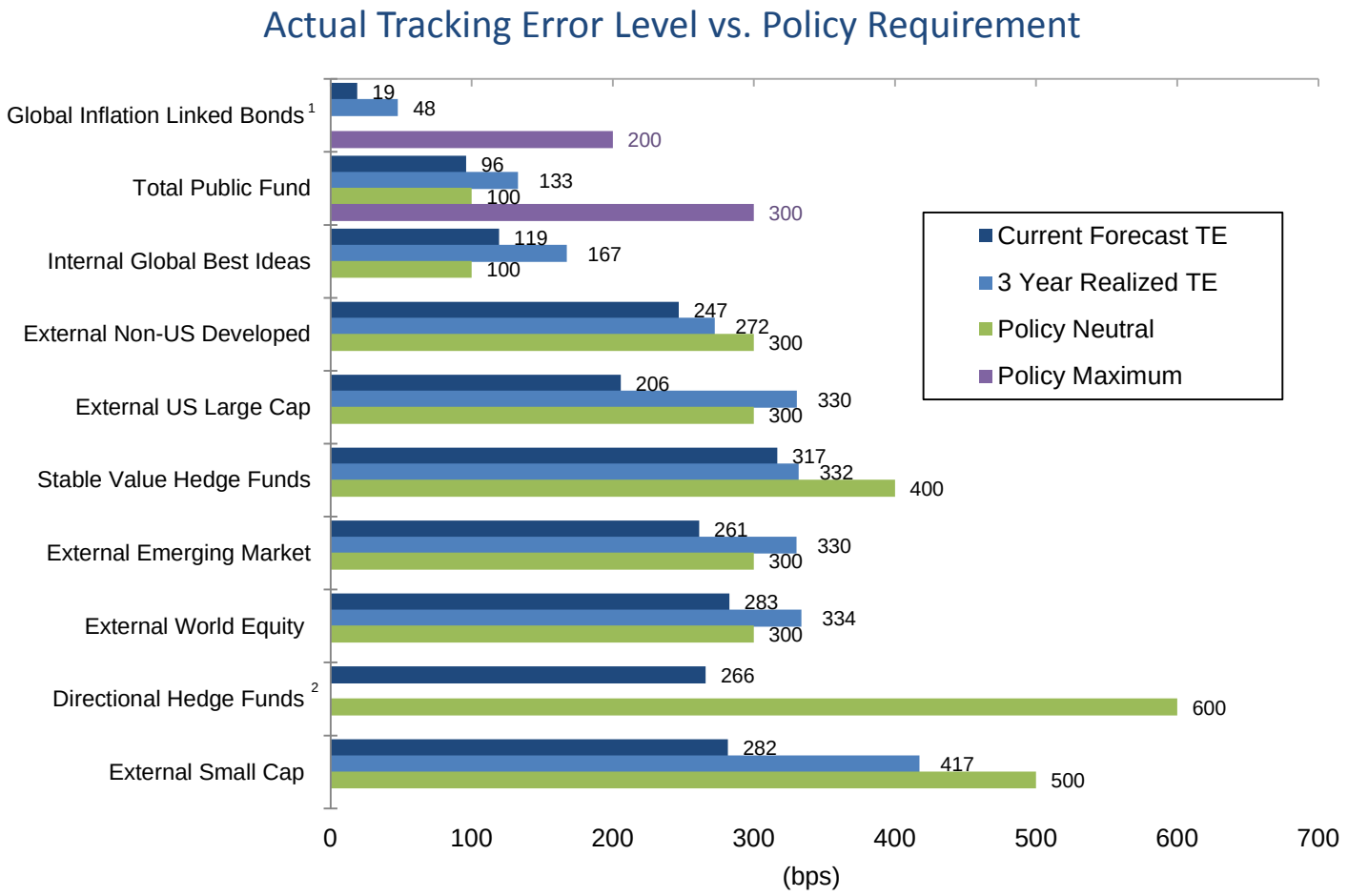
Policy neutral is 100 bps and policy maximum is 300 bps

[1]Realized tracking error cannot be calculated due to the short history of this portfolio

Source: State Street Bank

Annualized as of June 30, 2013

3. Policy Tracking Error



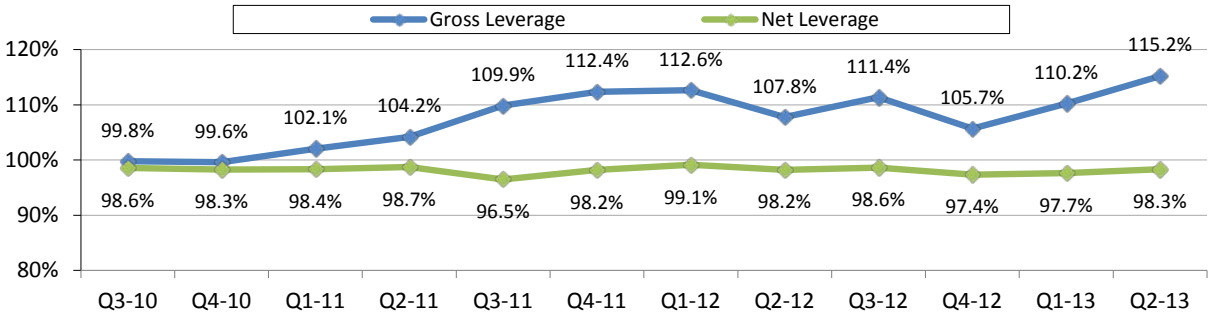
[1]No policy neutral tracking error set for Global Inflation Linked
[2]Realized tracking error cannot be calculated because of the short history of this portfolio

Source: State Street Bank

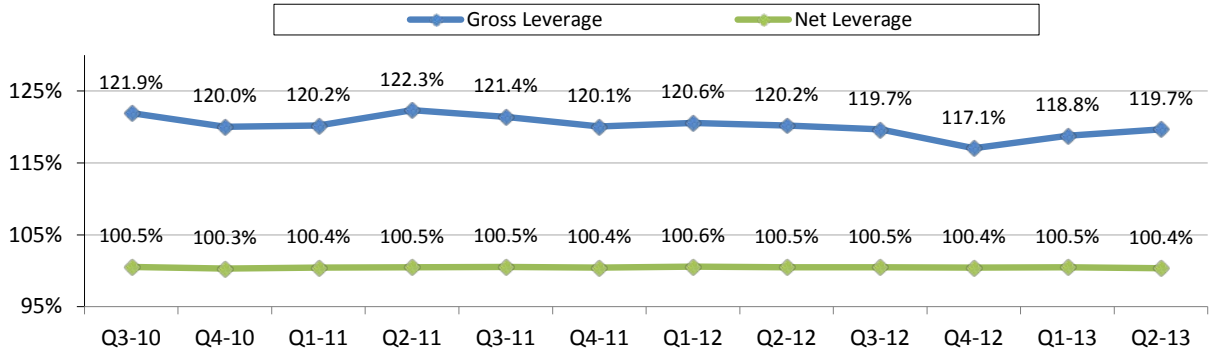
Annualized as of June 30, 2013

4. Leverage

Trust-Level Leverage
(Excludes Securities Lending)



Securities Lending Leverage

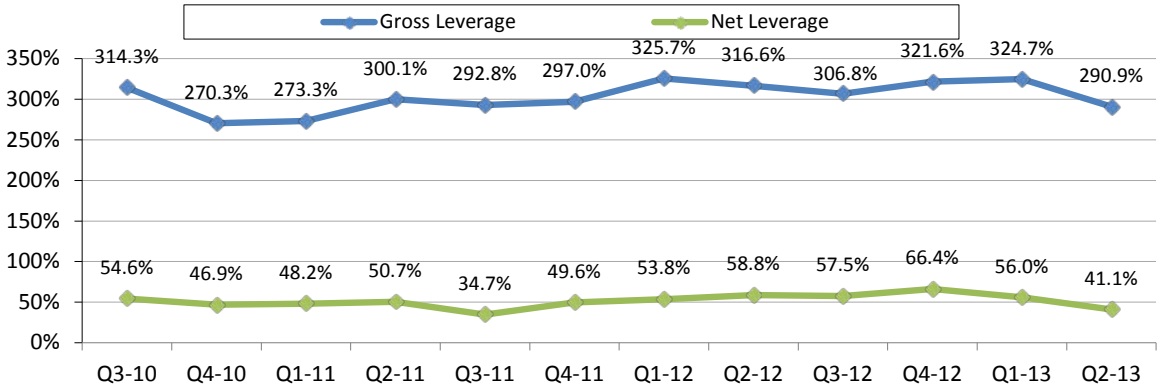


Source: State Street Bank

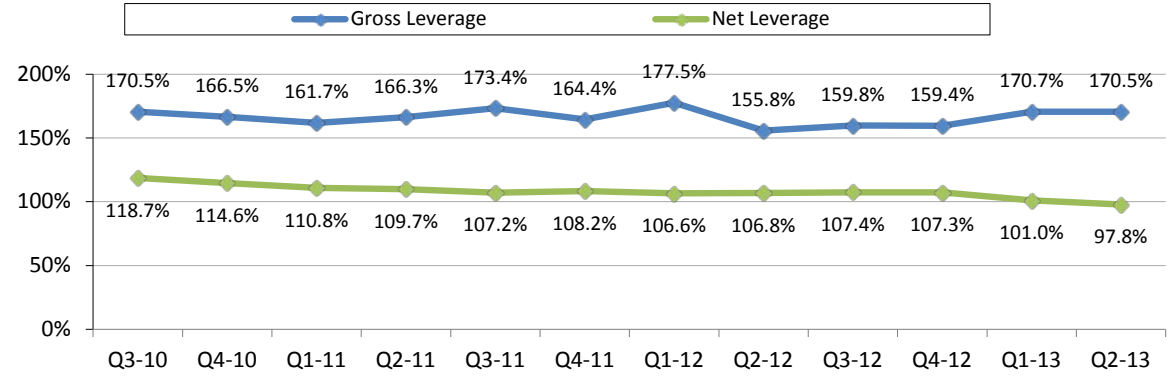
As of June 30, 2013

4. Leverage

Hedge Fund Leverage



Strategic Partners Leverage

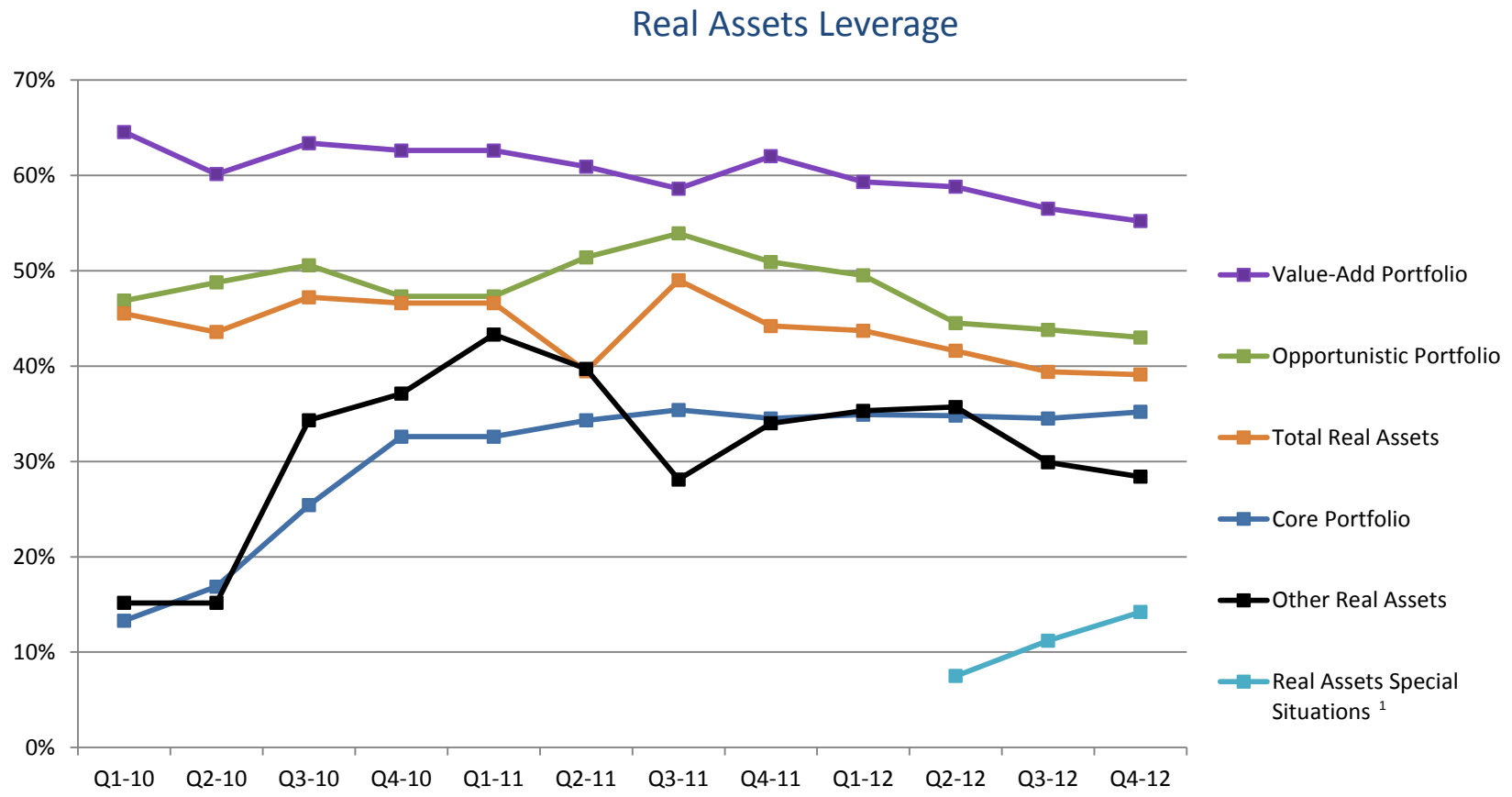


Note: Gross Leverage is defined as the sum of long exposure and short exposure and Net Leverage is defined as the difference between long exposure and short exposure.

Source: State Street Bank

As of March 31, 2013

4. Leverage



[1]Real Assets Special Situations is a new classification started in 3Q 2011

Source: The Townsend Group

As of December 30, 2012

5. Liquidity

Sources of Liquidity ($, billions)	Market Value	Stressed Value
Liquid Assets Not on Loan (Cash, UST, TIPS, Equity, Commodities)	53.4	31.1
Securities Lending Collateral (Cash, Fixed Income)	23.1	19.4
Total Sources of Liquidity	**76.5**	**50.4**
Note: Excluded Iliquid Assets (Private Equity, Real Assets, Hedge Funds, Other)	*42.8*	*NA*
Note: Excluded Liquid Assets remaining on loan	*19.8*	*NA*

Uses of Liquidity ($, billions)	Market Value	Stressed Value
Normal Uses of Liquidity	-0.8	-0.8
Stressed Securities Lending		-2.6
Stressed Derivatives		-1.4
Stressed Private Markets		-1.6
Total Uses of Liquidity	**-0.8**	**-6.3**

Liquidity Ratio	
Sources of Liquidity	50.4
Uses of Liquidity	-6.3
Ratio (Sources/Uses)	**8.0**
Alert Threshhold	4.0
Fail Threshhold	3.0
Test Result	**Pass**
Note: Net Liquidity (Sources less Uses)	*44.1*
Note: 12 Months Benefit Payments (at 4% Annual)	*4.6*

Assumptions: In the stress case, Liquid Assets are valued at 53% and Securities Lending collateral is valued at 77% which is meant to approximate 1.5x the worst monthly performance of these assets in the past ten years plus an additional liquidity stress. Within Securities Lending, 50% of equity on loan and 0% of US Treasuries on loan are assumed to be returned to TRS. Derivatives are assumed to experience the same market stress applied to the Liquid Assets. Private Markets investments are assumed to not return any capital and experience capital calls at 6x the normal amount expected for a month.

Source: State Street Bank

As of June 30, 2013

6. Counterparty

Counterparty Exposure

Counterparty	Swaps Number of Contracts	Forwards Number of Contracts	Futures Number of Contracts	OTC Options Number of Contracts	Counterparty Exposure ($, millions)	Net Notional ($,millions)
Over the Counter [1]						
Bank of America, N.A		5			$0.4	-12.3
Barclays Bank PLC	11	17			$0.0	-870.5
Citibank N.A.	4	96			$1.2	359.9
Credit Suisse International	2	1			$0.7	63.0
Deutsche Bank AG	10	84		2	$17.2	-128.8
Goldman Sachs International	21	33		1	$16.7	214.5
JPMorgan Chase Bank N.A	43	56		1	$0.0	293.0
Morgan Stanley	3	21			$0.0	7.9
Societe Generale	4	38			$1.2	41.0
UBS AG	12	110		1	$1.5	-57.2
Exchange Traded Futures [2]						
Goldman Sachs & Co.			172		$188.8	772.8
JP Morgan Securities LLC			42		$51.1	514.7
Grand Total	**110**	**461**	**214**	**5**	**$278.8**	**$1,198.1**

[1] Counterparty exposure is defined as positive market value of all OTC derivative positions less collateral posted. Policy limits this value to $500 million per counterparty.
[2] Counterparty exposure is initial margin posted.

Source: State Street Bank

As of June 30, 2012

6. Counterparty

Counterparty Ratings and Capital Assessment[1]

Counterparty	S&P Rating	Moody's Rating	Fitch Rating	Capital Ratios[2]	
				Tier 1	Common
Over the Counter					
Bank of America, N.A.	A	A3	A	16.7	11.7
Barclays Bank PLC	A+	A2	A	13.3	11.8
Citibank N.A.	A	A3	A	14.1	16.0
Credit Suisse International	A+	A1	A	19.4	12.0
Deutsche Bank AG	A+	A2	A+	15.1	11.9
Goldman Sachs International	A-	A3	A	12.6	11.4
JPMorgan Chase Bank N.A	A+	Aa3	A+	17.7	16.4
Morgan Stanley	A-	Baa1	A	12.5	11.6
Societe Generale	A	A2	A+	21.3	20.5
UBS AG	A	A2	A	19.1	16.5
Exchange Traded Futures					
Goldman Sachs & Co.	A	A3	A	12.6	11.4
JP Morgan Securities LLC	A-	A1	A+	17.7	16.4

[1]Rating of credit support provider. Policy requirement is A- or A3 by at least one of Fitch, Moody's or S&P.
[2] When fully implemented, Basel 3 will require 8.5% Tier 1 capital and 7.0% Common capital.

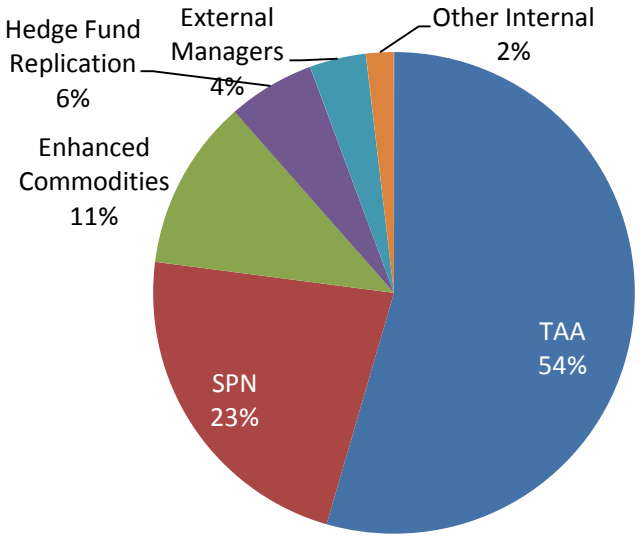
Source: Ratings Agencies and Bloomberg

As of June 30, 2012

7. Derivatives

Gross Notional

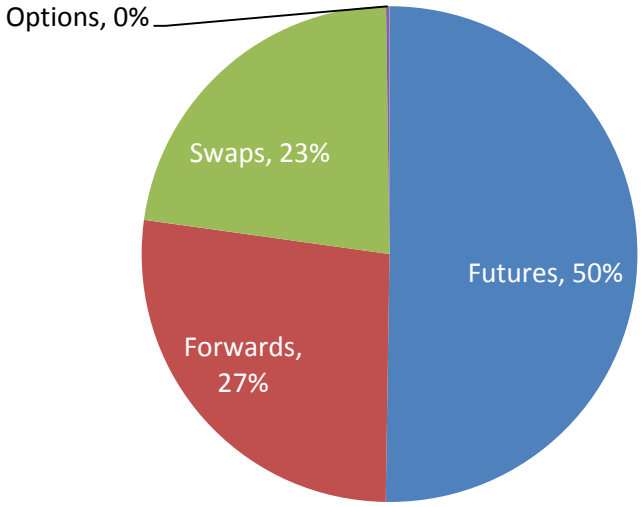
TRS Gross Notional **by Portfolio**



The bulk of derivatives usage is TAA (tactically adjusting the Trust's asset allocation) and the SPNs (TAA and benchmark replication)

Portfolio	Gross Notional ($, millions)
TAA	11,249.55
SPN	4,654.41
Enhanced Commodities	2,368.05
Hedge Fund Replication	1,200.83
External Managers	781.69
Other Internal[1]	385.51
Total	**$20,640.04**

TRS Gross Notional **by Instrument Type**



Futures and forwards, which are among the most liquid forms of derivatives, constitute the bulk of the Trust's derivatives portfolio

Instrument	Gross Notional ($ millions)
Futures	10,370.84
Forwards	5,563.48
Swaps	4,659.67
Options	46.05
Total	**$20,640.04**

[1]Other Internal includes Quantitative Vector Fund (QVF), Risk Parity, Low Volatility with Overlay portfolio and FX Forwards used for settlements.

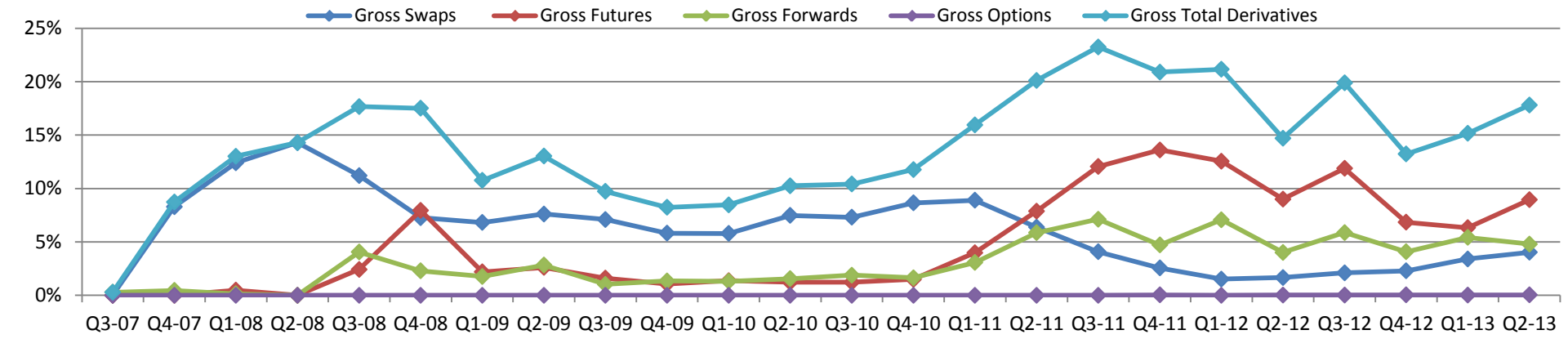
Source: State Street Bank

As of June 30, 2012

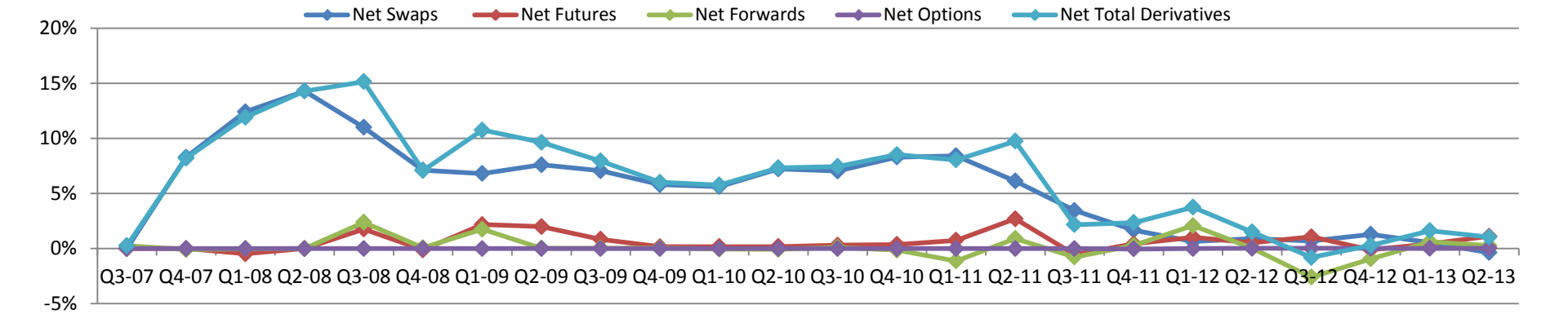
7. Derivatives

Gross Notional and Net Notional (as a % of Total Trust)

Gross Notional



Net Notional

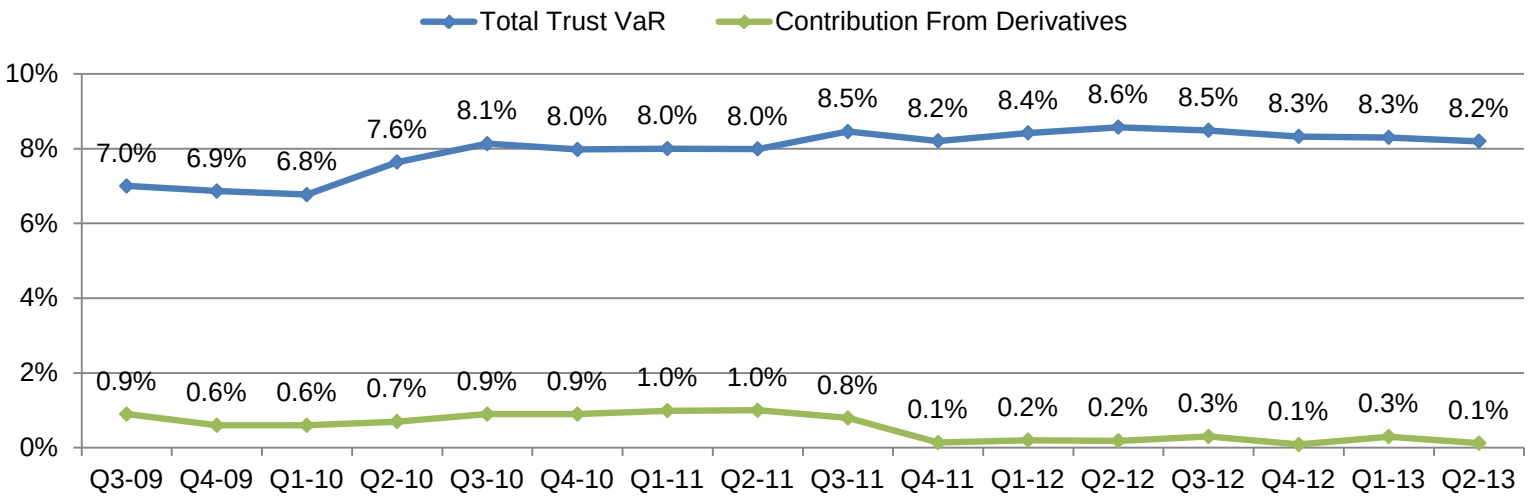


Source: State Street Bank

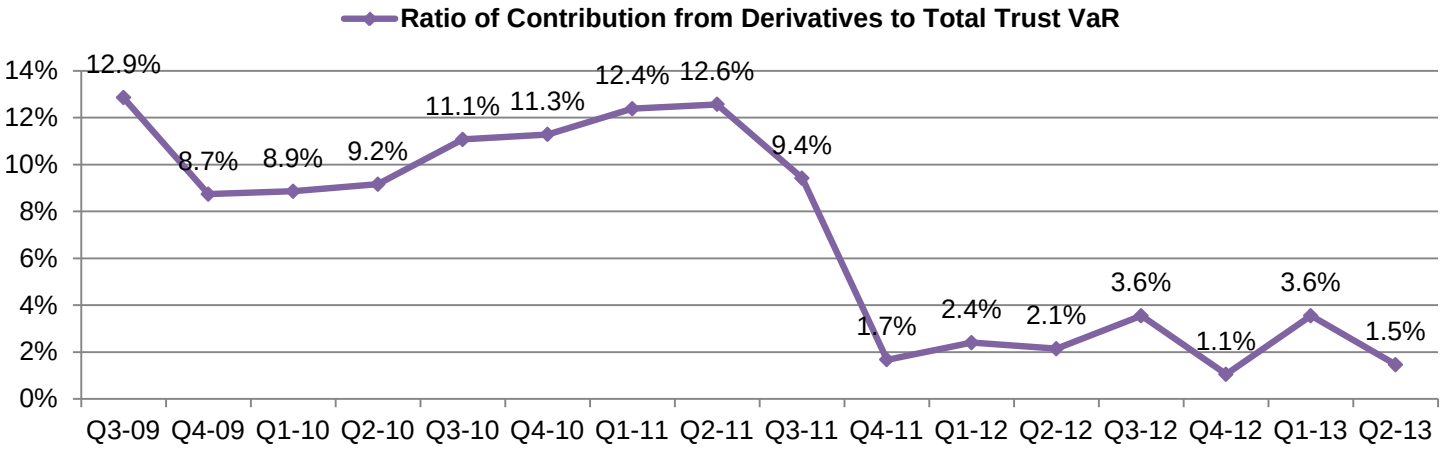
As of June 30, 2012

7. Derivatives

Value at Risk



As TAA has moved to a nearly net zero funded position, the contribution to Total Trust VaR from derivatives has decreased



Source: State Street Bank

As of June 30, 2013

7. Derivatives

Gross Notional and Net Notional

Gross Notional

($, millions)	TAA	Hedge Fund Replication	Enhanced Commodities	Other Internal	SPN	External Managers	Total
Futures	7,687.7	318.1	0.0	161.7	2,114.1	89.3	10,370.8
Forwards	2,756.9	435.0	0.0	51.8	1,728.3	591.5	5,563.5
Swaps	805.0	447.8	2,368.0	154.4	812.0	72.4	4,659.7
Options	0.0	0.0	0.0	17.6	0.0	28.4	46.0
Total	**$11,249.6**	**$1,200.8**	**$2,368.0**	**$385.**	**$4,654.4**	**$781.7**	**$20,640.0**

The bulk of derivatives usage is TAA ($11.3) and the SPNs ($4.7)

Net Notional

($, millions)	TAA	Hedge Fund Replication	Enhanced Commodities	Other Internal	SPN	External Managers	Total
Futures	643.1	-182.7	0.0	161.7	732.8	-67.3	1,287.6
Forwards	896.8	22.4	0.0	-13.6	-273.5	-323.9	308.1
Swaps	-805.0	277.6	-0.4	44.1	115.5	-60.8	-429.1
Options	0.0	0.0	0.0	17.6	0.0	28.4	46.0
Total	**734.8**	**$117.3**	**-$0.4**	**$209.7**	**$574.7**	**-423.5**	**$1,212.6**

TAA's $11.2 billion gross notional nets to a much lower ($735 billion) net position.

The Trust's $20.6 billion gross notional nets to a much lower $1.2 billion net position.

[1]Other Internal includes Quantitative Vector Fund (QVF), Risk Parity, Low Volatility with Overlay and FX Forwards used for settlements.

Source: State Street Bank

As of June 30, 2012

7. Derivatives

Mark to Market and Tenor

Mark to Market

($, millions)	TAA	Hedge Fund Replication	Enhanced Commodities	Other Internal	SPN	External Managers	Total
Futures	-6.4	1.1	0.0	0.0	-13.6	0.2	-18.6
Forwards	-5.5	-1.6	0.0	0.1	9.2	13.3	15.5
Swaps	0.0	-1.1	0.5	0.9	27.1	-2.1	25.3
Options	0.0	0.0	0.0	0.2	0.0	-5.2	-5.0
Total	**-$11.9**	**-$1.6**	**$0.5**	**$1.2**	**$22.8**	**$6.3**	**$17.3**

The Trust's notional amount reduces to a $17.3 million mark-to-market position.

Average Tenor in Months

($, millions)	TAA	Hedge Fund Replication	Enhanced Commodities	Other Internal	SPN	External Managers	Total
Futures	2.1	2.4	0.0	2.2	2.8	2.2	2.3
Forwards	2.0	0.5	0.0	0.8	0.5	1.7	1.8
Swaps	0.8	10.3	2.1	4.1	7.9	5.1	3.8
Options	0.0	0.0	0.0	0.2	0.0	5.1	3.2
Total	**2.0**	**4.6**	**2.1**	**2.7**	**2.8**	**2.2**	**2.8**

HF Replication and SPN average tenor is longer than average due to interest rate swaps (typically 5-10 years maturity)

The low mark-to-market is mainly due to the short term maturity of the derivatives positions – on average 2.8 months

[1]Other Internal includes Quantitative Vector Fund (QVF), Risk Parity, Low Volatility with Overlay and FX Forwards used for settlements

Source: State Street Bank

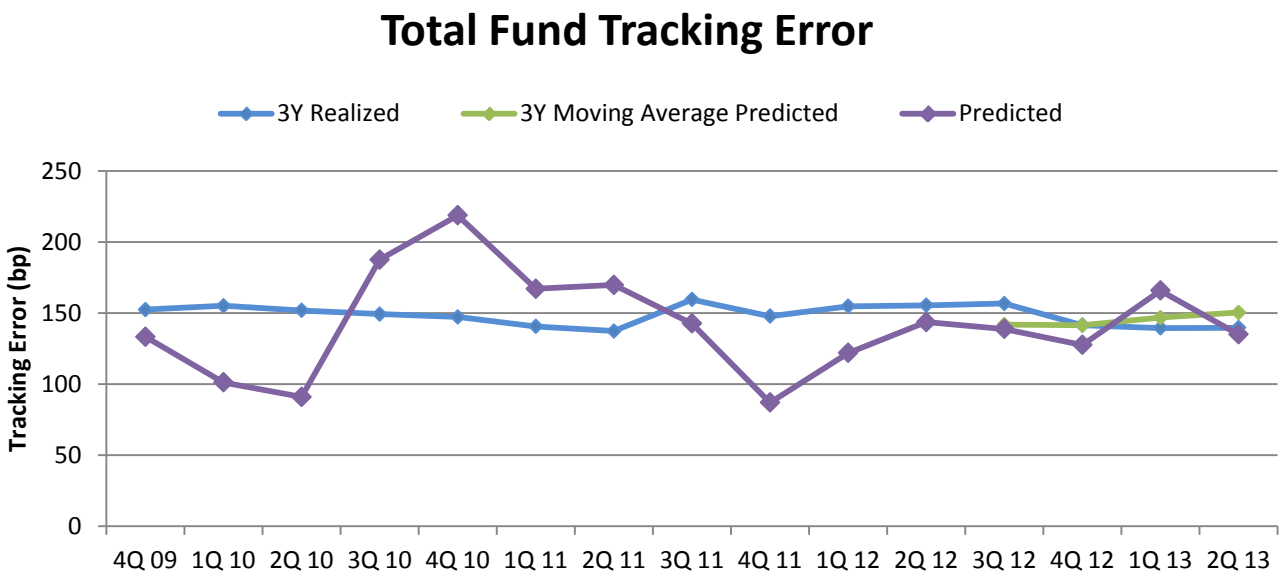
As of June 30, 2012

Improved Risk Model

Introduction

Why improve the Risk Model?

- Our primary motivation for improving the risk model is more detailed modeling of Private Markets Assets
- For example, this additional detail now allows us to calculate tracking error for all of the assets (public and private) of the Fund



- Previously, we could only calculate tracking error for the publicly traded assets

Improved Risk Model

Two Improvements

Our current Risk Model was implemented in 2009

- The model calculates Value at Risk (VaR) and Tracking Error
- The model uses daily data and a five year lookback period

We have made two improvements to the Risk Model

Issue 1: The industry standard approach to modeling private markets assets does not model those assets as well as we'd like

Solution: **A more detailed approach to private markets** as described herein

Issue 2: The valuable risk data from the 2008 Global Financial Crisis will drop out of our five year lookback period

Solution: Use an **expanding lookback period** that starts on January 1, 2008 and grows longer through time

Improved Risk Model

Private Markets Assets

Private markets assets are not as easy to model as public markets assets

- For public markets assets, obtaining five years of daily data is straightforward – there is usually a daily price for every security
  - Certain assets without five years of data, such as initial public offerings, must have a "proxy" (e.g., S&P 500 Information Technology Index as a proxy for Facebook (FB))

- For private markets assets, daily data is not available because these assets are priced quarterly rather than daily.
  - In addition, the pricing can be lagged one or more quarters

- There is an industry standard approach to the lack of daily data for private markets assets
  - Proxy Real Estate with a public REITS index such as the NAREIT US REITS index
  - Proxy Private Equity with a public equity index such as the Russell 3000
  - Both the actual holdings and the index are modeled with the same proxy
    - As a result, tracking error is not modeled

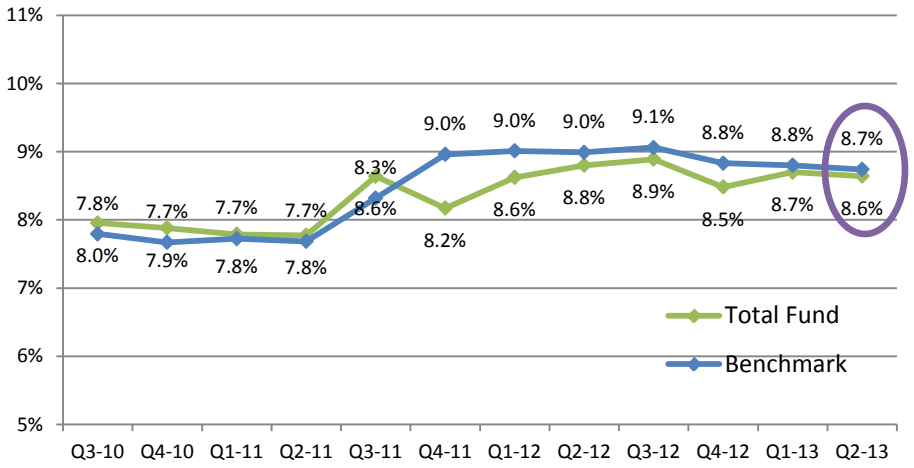
- Our improved model looks through to actual investments and proxies them by Asset Type, Country and Currency
  - Real Estate Asset Types: Core, Value-Add, Opportunistic, Special Situations
  - Private Equity Asset Types: Buy-Out, Venture/Growth Equity, Credit/Special Situations

TRS

Improved Risk Model

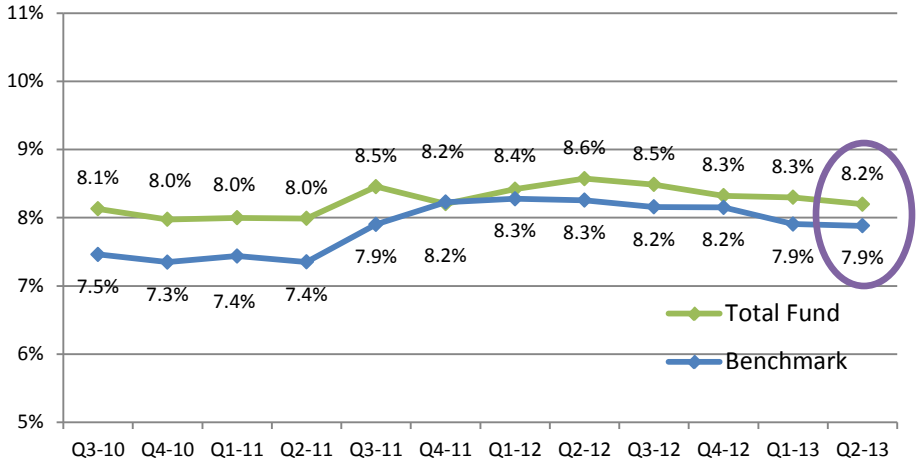
Value at Risk

Existing Model
Value at Risk (VaR)



Improved Model VaR

- **Both Total Fund and Benchmark are lower**
- **Total Fund is marginally higher than the Benchmark**

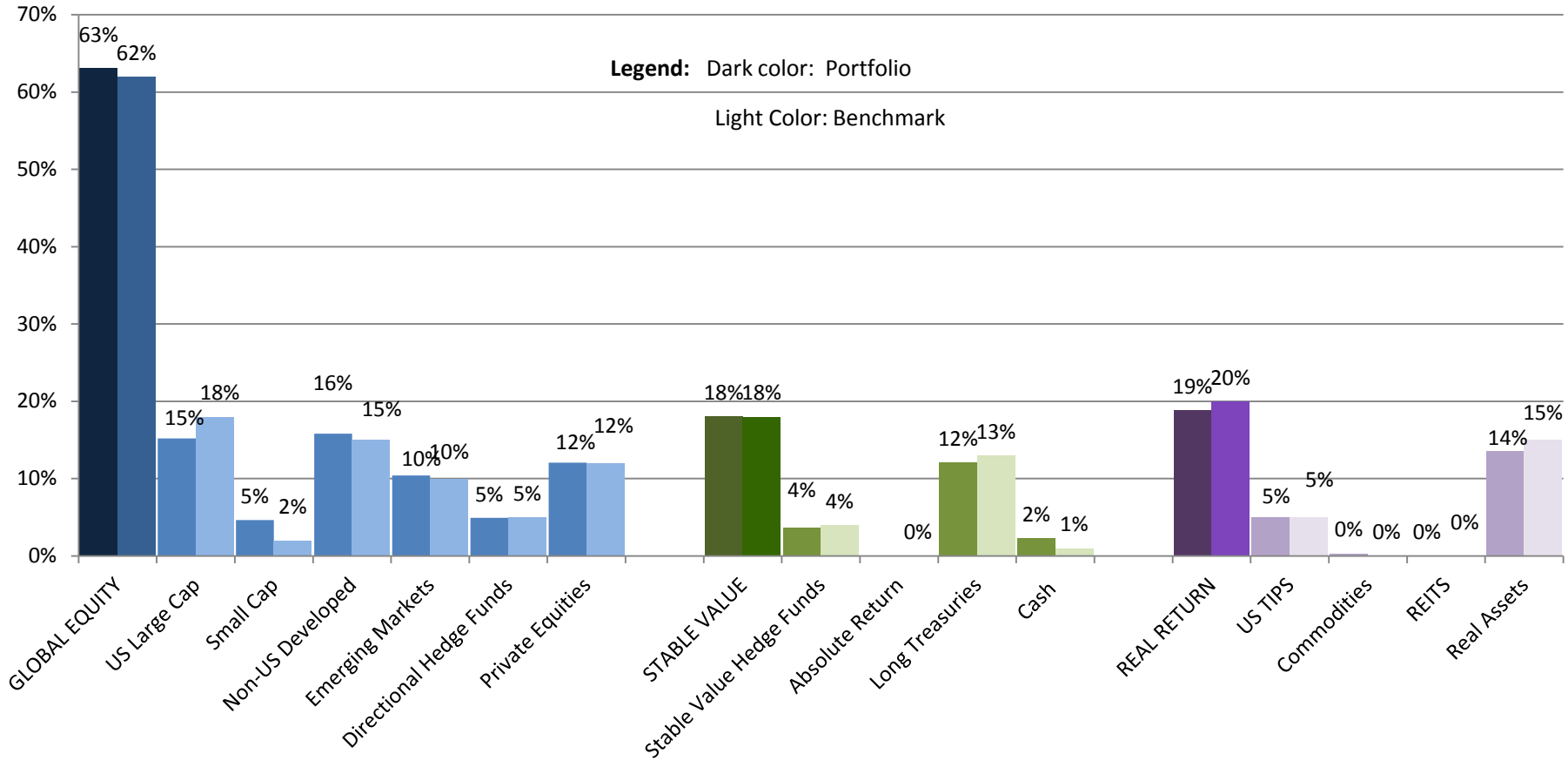


Conclusion

- As of June 30, 2013, TRS investment exposures are in compliance with the Investment Policy Statement with one exception noted with respect to Absolute Return asset allocation.
    - Absolute Return is -0.06% underweight versus its 0% minimum requirement
    - At the end of the second quarter, TRS was overweight Global Equity (+1.1%) and Stable Value (+0.1%) and underweight Real Return (-1.1%)
    - At the asset class level, TRS was overweight Small Cap, Cash and Non-US Developed while underweight US Large Cap, Real Assets and Long Treasuries
- We have implemented an improved risk model that more accurately captures the risk of the private markets assets

APPENDIX

Portfolio Weights vs. Long Term Policy Weights



Source: State Street Bank

As of June 30,2013

Derivative Exposure

Swap Notional[1,2]

Swap by Asset Class	Number of Contracts	Gross Exposure ($, millions)	Gross Exposure (% of Asset Class)	Gross Exposure (% of Total Trust)
US Large Cap	8	61.8	0.6%	0.1%
Small Cap	1	34.0	0.8%	0.0%
Non-US Developed	14	295.0	1.7%	0.3%
Emerging Markets	2	212.3	1.8%	0.2%
Directional Hedge Funds	26	507.3	8.7%	0.4%
US Treasuries	4	18.5	0.1%	0.0%
Absolute Return	17	899.9	880%	0.8%
Global Inflation Linked	18	72.4	1.2%	0.1%
Commodities	20	2,558.4	576.7%	2.2%
Swap Total	**110**	**$4,659.7**		**4.0%**

Futures Notional[1,2]

Futures by Asset Class	Number of Contracts	Gross Exposure ($ millions)	Gross Exposure (% of Asset Class)	Gross Exposure (% of Total Trust)
US Large Cap	31	5,024.2	49.4%	4.3%
Small Cap	11	1,858.2	41.9%	1.6%
Non-US Developed	73	1,203.7	6.9%	1.0%
Emerging Markets	12	526.0	4.4%	0.5%
Directional Hedge Funds	21	479.8	8.3%	0.4%
US Treasuries	21	752.9	5.3%	0.6%
Absolute Return	2	11.6	192.4%	0.0%
Global Inflation Linked	43	514.5	8.8%	0.4%
Future Total	**214**	**$10,370.8**		**8.9%**

[1]Exposures include TRS internally managed portfolios and externally managed separate accounts.
[2]Percent of Absolute Value.

Source: State Street Bank

As of June30, 2012

Derivative Exposure

Forwards and Options Notional[1,2]

Non-Currency Forwards by Asset Class	Number of Contracts	Gross Exposure ($, millions)	Gross Exposure (% of Total Trust)
Non-US Developed	2	55.7	0.0%
Emerging Markets	6	190.6	0.2%
Total Absolute Return	0	0.0	0.0%
Non-Currency Forward Total	**8**	**$246.3**	**0.0%**
Non-US Developed	3	16.0	0.0%
US Large Cap	2	17.6	0.0%
Small Cap	3	12.4	0.0%
Options Total	**8**	**$46.0**	**0.0%**
Euro Currency	89	1,261.8	1.1%
Japanese Yen	62	953.2	0.8%
Pound Sterling	40	594.1	0.5%
Canadian Dollar	32	334.8	0.3%
Other Non-US Developed	200	1,696.8	1.5%
Emerging Markets	30	476.5	0.4%
Forwards Total	**453**	**$5,317.2**	**0.0%**

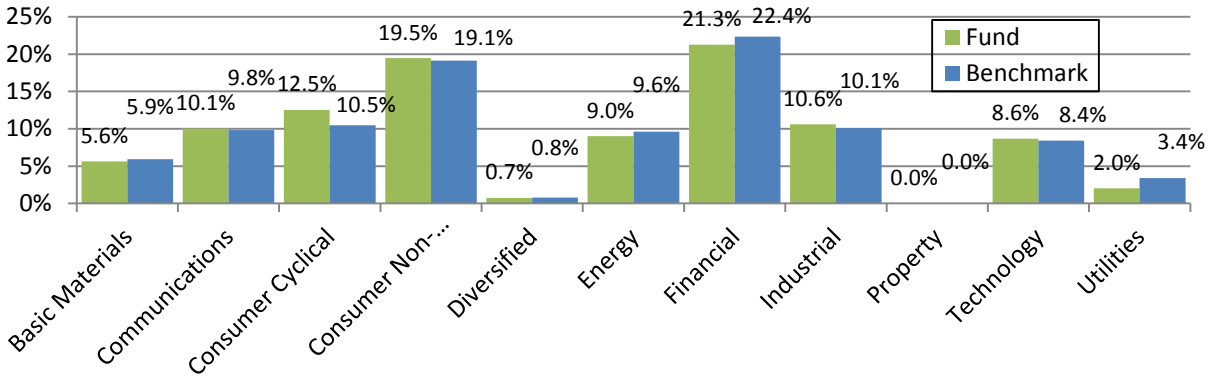
[1]Exposures include TRS internally managed portfolios and externally managed separate accounts.
[2]Percent of Absolute Value.

Source: State Street Bank

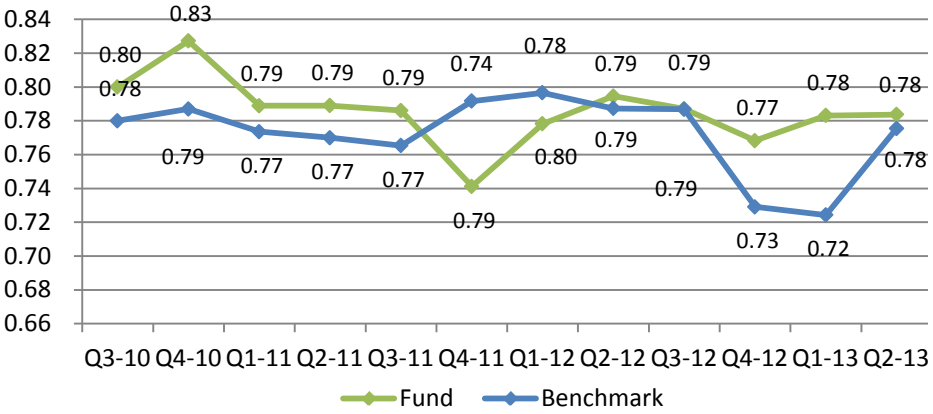
As of June 30, 2012

Sector Allocation: Beta & Scenario Analysis

Equity Sector Allocation

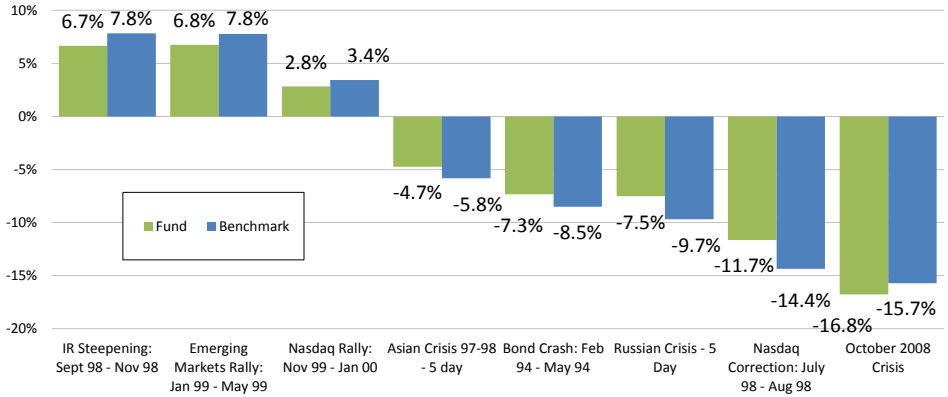


Beta Analysis
MSCI World Index



For every 1% the MSCI World Index rises, the Fund may rise by 0.8%.

Scenario Analysis
(% Gain/Loss in Market Value)



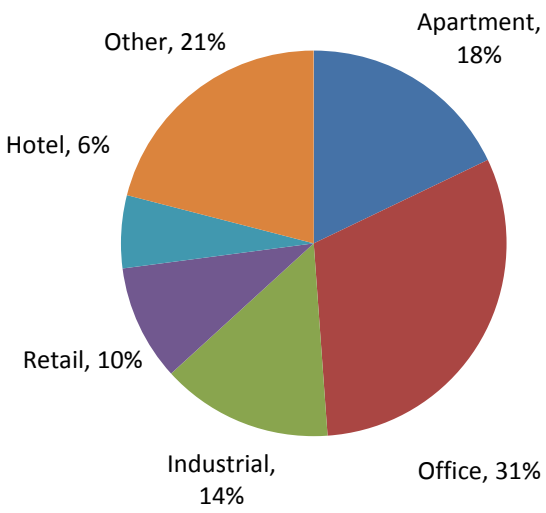
If the markets experienced another Nasdaq 25% correction identical to the one in July 1998, the Fund may lose 13.7% of its market value. The effects on the Fund and Benchmark are quantified for each scenario indicated.

Source: State Street Bank

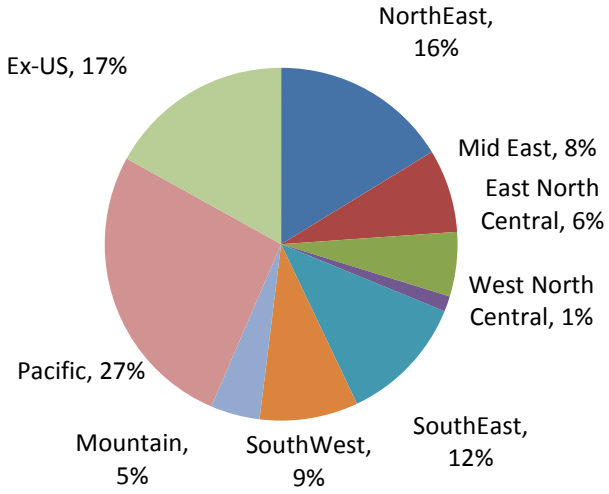
As of December 31, 2012

Real Estate Diversification

Property Type Diversification



Geographic Diversification



Source: Townsend Group

As of December 31, 2012

Improved Risk Model

Real Assets

New Real Assets Model

- Proxies real assets by classifying fund underlying investments

Attribute	Examples	Public Markets Proxy
Investment Type	Core, value-add, opportunistic, other	Applying an appropriate "beta" to the proxy
Property Type	Apartment, office, industrial, hospitality, retail	MSCI US Apartment REITS, MSCI US Office REITS, etc.
Country	USA, Germany, Mexico	MSCI Germany, MSCI Mexico, etc.
Currency	US dollar, Euro, Mexican peso	Currency exchange rate data

- $Return_{proxy} = Beta * [Return_{US\ Property\ Type\ Index} + (Return_{country} - Return_{USA})] + Return_{currency}$

Improved Risk Model

Private Equity

New Private Equity Model

- Proxies private equity by classifying fund underlying investments

Attribute	Examples	Public Markets Proxy
Investment Type	Buyouts, Venture/Growth Equity, Credit/Special Situations	Applying an appropriate "beta" to the proxy
Industry	Energy, healthcare, info tech, industrials	MSCI Energy, MSCI Healthcare, etc.
Country	USA, Germany, Mexico	MSCI Germany, MSCI Mexico, etc.
Currency	US Dollar, Euro, Mexican Peso	Currency exchange rate data

- $Return_{proxy} = Beta * [Return_{US\ Industry\ Index} + (Return_{country} – Return_{USA})] + Return_{currency}$