



INVESTMENT MANAGEMENT COMMITTEE



September 2016

Minutes of the Investment Management Committee

June 16, 2016

The Investment Management Committee of the Board of Trustees of the Teacher Retirement System of Texas met on June 16, 2016, in the boardroom located on the fifth floor of the TRS East Building offices at 1000 Red River Street, Austin, Texas.

Committee members present:

Mr. David Kelly, Acting Chair
Mr. David Corpus
Mr. Chris Moss
Ms. Dolores Ramirez

Other TRS Board members present:

Ms. Karen Charleston
Dr. Greg Gibson
Ms. Anita Palmer

Others present:

Brian Guthrie, TRS
Britt Harris, TRS
Mike Pia, TRS
Courtney Villalta, TRS
Eric Lang, TRS
Neil Randall, TRS
Grant Walker, TRS
Carolyn Hansard, TRS
Leon Black, Apollo
Jim Zelter, Apollo

Investment Management Committee Acting Chair Mr. David Kelly called the meeting to order at 11:20 a.m. with a quorum of committee members present.

- 1. Consider the approval of the proposed minutes of the April 7, 2016 committee meeting – Acting Chair David Kelly.**

On a motion by Mr. Moss, seconded by Ms. Ramirez, the proposed minutes for the April 7, 2016, Investment Management Committee meeting were approved as presented.

- 2. Receive updates on the following concerning the Private Strategic Partnership – Mike Pia**
 - A. Partnership performance and market conditions - Courtney Villalta**
 - B. Apollo's portfolio and performance – Leon Black**

Mr. Britt Harris provided an overview of how each year there is a complete review of all of the major sections of the investment structure over the course of the year, the June report is on private market positions.

Mr. Mike Pia provided an overview of the private SPN concept. The private markets SPN is \$10 billion allocated to two firms across two portfolios. The larger portfolio is \$8 billion, the original private SPN has been rebranded as the Strategic Portfolio. This portfolio invests in traditional private asset classes across global equity and real return. Relative to other strategies within the Trust, these are high-returning strategies.

Mr. Pia reported the second portfolio is a \$2 billion portfolio, called Tactical Value, which was approved by the Board last year. The Tactical Value's mandate is a flexible mandate with an objective to find attractive risk-adjusted returns and opportunities that are below standard private market returns but above the Trust's actuarial return, which is 8 percent.

Mr. Pia highlighted the Strategic Partnership and Research Group. He announced two changes since the last time the Board was briefed in September. The first is a new associate to the private markets team, Blake Holman. The second is a new portfolio manager for the public SPN, J.B. Daumerie.

Mr. Pia shared a couple of high-level metrics on the two portfolios. The SPN Strategic Portfolio, of the \$8 billion allocated to that strategy, \$6.4 has been committed to active strategies, and \$3.2 billion of that is currently invested. As for Tactical Value, Mr. Pia, reported the \$2 billion is fully committed across three sub-strategies.

Ms. Courtney Villalta reported the details of the portfolios. Ms. Villalta noted that credit markets are increasingly attractive. She reported that the Tactical portfolio is relatively young, invested in originated credit, liquid opportunistic credit and contingent capital.

Ms. Villalta stated the recycling component of SPN is expected to kick in meaningfully around 2018.

Ms. Villalta reported at a high level, the existing portfolio in terms of performance, 87 percent of what has been invested to date is performing on or ahead of plan or simply too soon to tell.

In response to Mr. Kelly's inquiry, Ms. Villalta said the implementation of the tactical allocation is exceeding expectations at a high level, due to the inadvertent delayed entry into the market.

Mr. Leon Black provided a background on Apollo. Mr. Black reported they have under management about \$7 billion from TRS, about \$2 billion prior to the SPN which have returned something close to 16 percent, and \$4 billion with SPN and \$1 billion tactical portfolio. Mr. Black noted the approach as cautious, value investors, but will build value and are very confident that the rate of 13 is achievable.

Mr. Jim Zelter commented that the tactical value is the vehicle that will profit from any opportunities from the dislocation caused by Brexit. Mr. Zelter reported the effort in identifying three activities as a result of the banking crisis and the withdrawal of capital. Mr. Zelter recounted putting around \$300 million to work to date, the IRRs are strong, netting 30 percent. He reported not only high IRs, but created around \$40 million of actual profits for the fund in the first months of the year.

- 3. Receive updates on the following concerning External Private Markets – Eric Lang:**
 - A. Private equity – Neil Randall.**
 - B. Real assets – Grant Walker.**
 - C. Energy and Natural Resources – Carolyn Hansard.**

Mr. Eric Lang summarized the private markets at TRS is one of the largest private markets portfolios in the world, with a market value of \$35 billion, or 27 percent of the Trust. He further explained that it has a market value of \$35 billion with an exposure of well over \$55 billion. Mr. Lang indicated the asset allocation of the private equity being close to its target of 13 percent, real assets target of 16 percent and energy and natural resources (ENR) is below its target by almost 50%. As to performance, Mr. Lang noted the returns average around 14 percent for private equity and close to 13 percent on real estate, on a time-weighted return as well as an IRR basis. He also noted the principal investments is 17 percent, which is 700 basis points over the total portfolio return, that adds around 100 basis points of alpha to the portfolio. Mr. Lang touched upon the risk impact, noting the observed volatility is much less than our risk proxy, which is a good thing. Mr. Lang summed up the activity the team had in 2015. He noted they had reviewed hundreds of investments and received approval for 60 investments from the Internal Investment Committee.

Mr. Lang then reviewed the goals for the TRS London office. The main goal is to increase deal flow by 50 percent and the other is to have better information flow for due diligence. Other goals are better response for our global network of investors and lastly a cost savings to the Trust by doing more principal investments than fund investments. Mr. Lang reported since the office has opened over 40 investments have been vetted with a value of over \$4.5 billion. He stated three investments have closed with expected returns from 13 to 16 percent, the expected annual fee savings of those investments is estimated to be around \$9 million a year. The last item he reported was considering having more real assets expertise at the TRS London office (TRICOT).

Mr. Lang provided portfolio updates, noting the proposed consolidation of TRS infrastructure portfolio with the ENR team. The other update was the transfer of the data analytics team from operations to private markets.

Mr. Lang then provided a brief market overview on real assets, private equity and energy and natural resources. Mr. Neil Randall provided more detail regarding private equity. Mr. Randall reported that performance is in great shape on both an absolute and relative basis. On a relative basis he reported they were ranked number one versus peers on a ten year basis. And on an absolute basis, private equity has generated 13-15% net returns on a three and five year basis. Mr. Randall stated the team has been delivering on all the key goals and have added three new

individuals. Mr. Randall reported the top priority for the team is focused messaging to the market that they are the preferred destination for large attractive investments and to support a lot of activity in our principal investment portfolio. Mr. Randall then provided detail on the performance of private equity and the overall impact to the Trust. Mr. Randall reported that the private equity portfolio has generated an additional \$7.4 billion (or 650 basis points of return) for the Trust relative to a passive public market index. Mr. Randall then presented the capital plan, which is updated no less than one time a year. He described it as the roadmap for how private equity stays at 13 percent target of the total Trust. Mr. Randall provided a further review of 2015 accomplishments and 2016 priorities. The plan for 2016 is to be at \$4.6 billion, predicated on finding attractive investments at that level.

Mr. Grant Walker reported that real assets have achieved 12.9 percent time-weighted return on a three-year basis and 12.6 percent on a five-year basis, both of which put us in the top quartile among peers for that time period. Mr. Walker stated real assets as the highest-returning portfolio in the overall Trust in 2015, with a one-year return of 12.9 percent. Mr. Walker noted they started at \$7.7 billion five years ago and have returned over \$8.2 billion during that time, which is more than 100 percent of the original capital and the value of the portfolio is just under \$18 billion. Mr. Walker reviewed the team members and shared the capital plan for the next ten years. He noted in 2021 the portfolio could become self-funded based on these projections. Mr. Walker reported an average portfolio leverage of 40 percent, which is well within appropriate range based on the risk level of the portfolio. Mr. Walker reported that to date 54 principal investments were made, totaling over \$9 billion, producing a since-inception IRR of 16.4 percent. Mr. Walker provided a further review of 2015 accomplishments and 2016 priorities. In 2015, \$5 billion was committed to 22 investments, about \$3 billion to premier list funds and just under \$2 billion to principal investments. For the 2016 priorities, Mr. Walker stated they are researching a better way to look at the real assets performance benchmark to create a structure that would more accurately reflect the composition of the portfolio. Additionally, Mr. Walker reported they plan to commit up to \$4.1 billion for the year, this may decrease, especially if infrastructure is taken out of the portfolio. Mr. Walker then reviewed the breakdown of investments for 2016.

Ms. Carolyn Hansard provided the ENR portfolio update. She stated the ENR portfolio is relatively young, launched in October 2013. Ms. Hansard stated the portfolio has been impacted by the energy prices but they have outperformed the benchmark largely through diversification and through the principal investments program. Ms. Hansard reported the one-year return was down 16.6 percent, 5.1 percent on a three-year basis. To put it in perspective, she reported oil prices were down 30 percent during last year and down 60 percent since the launch of the portfolio. Ms. Hansard announced a new member to their team. She reviewed the capital plan where a steady state of self-funding is realized in 2019. Ms. Hansard provided a review of 2015 accomplishments and 2016 priorities. She stated the market is experiencing a cyclical correction, expecting there will still be some volatility, so the investment pace will be a little uncertain. For 2016, they will be working on integrating infrastructure and continuing to implement the Texas Way valuation. Ms. Hansard referenced the investment in a LNG facility in Freeport, Texas. The investment was sold in October 2014, closed on it last year, and it generated a 30 percent return. Mr. Harris provided historical background and perspective for the oil and gas market.

The Investment Management Committee adjourned at 1:23 p.m.

Approved by the Investment Management Committee of the Board of Trustees of the Teacher Retirement System of Texas on September 22, 2016

Katherine H. Farrell
Secretary of the TRS Board of Trustees

Date



Public SPN Deep Dive/Quarterly SPR Update

Mike Pia, Director

Jean-Benoit (JB) Daumerie, Investment Manager

September 2016



Agenda

- I. Strategic Partnership and Research Overview
- II. Public Strategic Partnership Network Deep Dive
- III. Accomplishments and Priorities

Strategic Partnerships & Research Group (SPR) Overview



Mike Pia, CFA, CAIA
Director
BS Mechanical Engineering, United States Naval Academy
MS Software Engineering, University of West Florida
MBA, Texas Christian University

INVESTMENTS TEAM

PUBLIC MARKETS



Jean-Benoit Daumerie, CFA
Investment Manager
BS Electrical Engineering,
University of Pennsylvania
MBA Finance, Rice University



Christopher White
Associate
BS Engineering Management,
United States Military Academy
MBA Finance, UT Austin

PRIVATE MARKETS



Courtney Villalta
Senior Investment Manager
BS Finance, St. Edward's University



Blake Holman
Associate
BA Communications, TX State
University
MBA, University of Colorado

MARKET INTELLIGENCE TEAM



Curt Rogers, CFA, CAIA, FRM
Director
BS & MS Aeronautical Engineering,
Massachusetts Institute of
Technology
MBA Finance, UT Austin



Phillip Auth, CFA
Investment Manager
BS Economics, University of
New Mexico
MBA International Finance, UT Austin



Matt Wey, CPA
Senior Analyst
BBA Accounting, Texas A&M
MS Finance, Texas A&M

ANALYTICS TEAM



Patricia Cantu
Senior Associate
AA Business Management, Austin
Community College



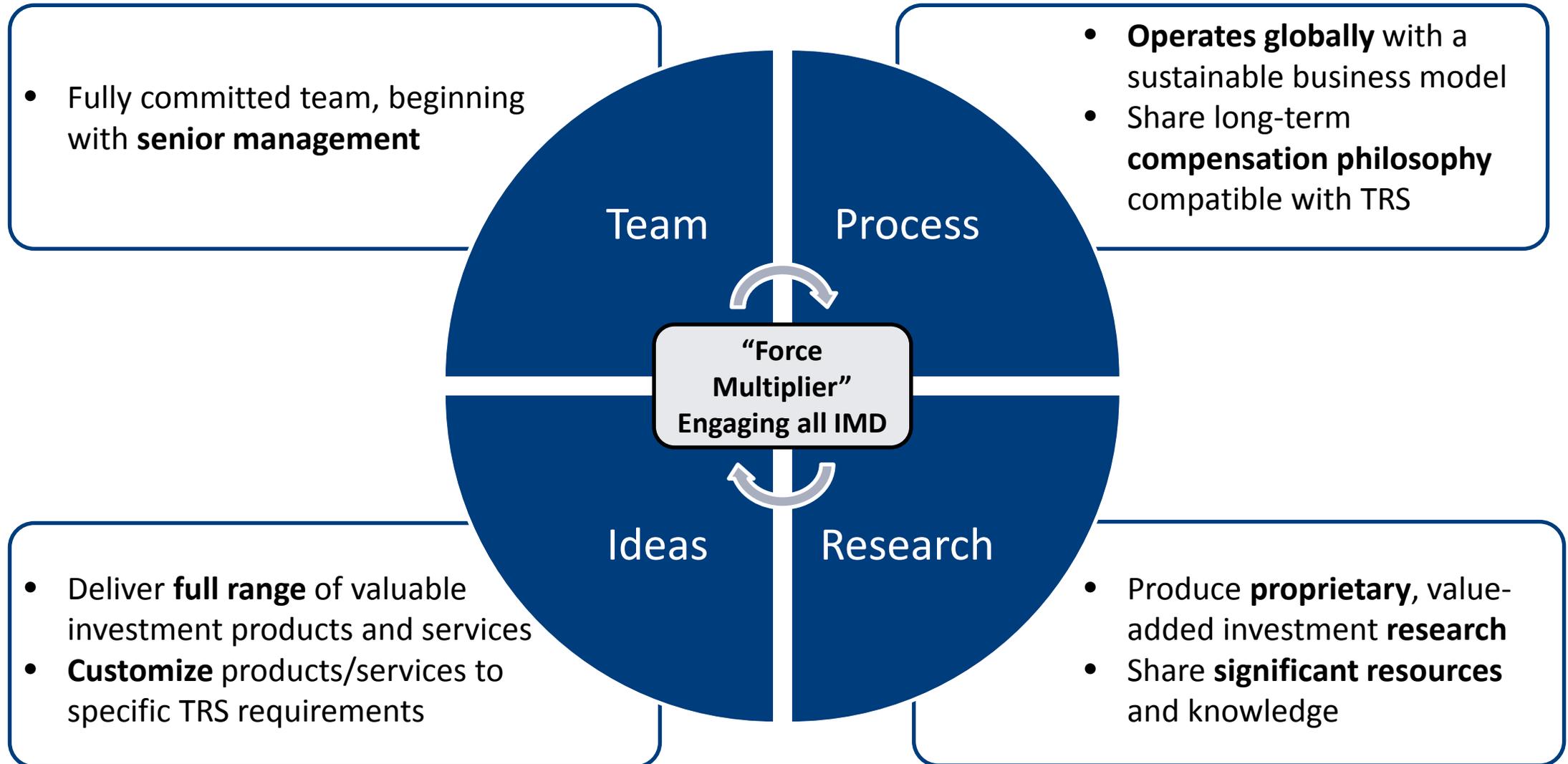
Susan White
Analytics and Support
BS French, The Pennsylvania State
University
Claritas Investment Certification
CAIA Fundamentals Certification

SPR Team Experience Summary

8 Master's Degrees
5 Engineering Degrees
4 CFAs, 2 CAIAs, 1 FRM, 1 CPA

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Common Principles of a Strategic Partner



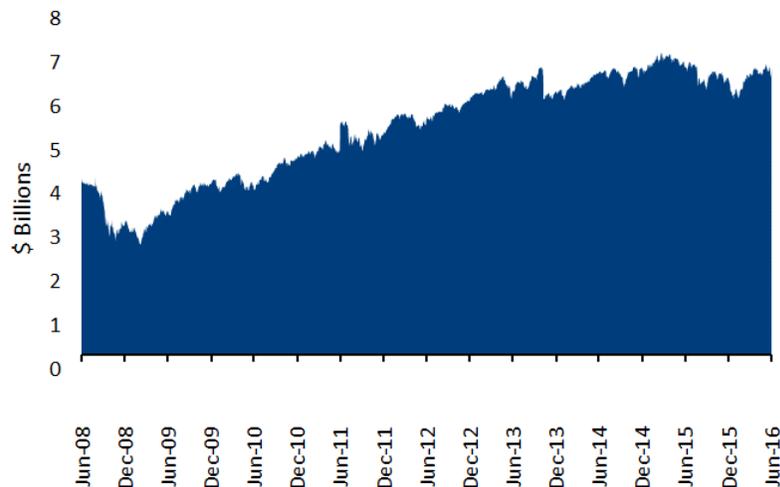
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Public Markets SPN Performance

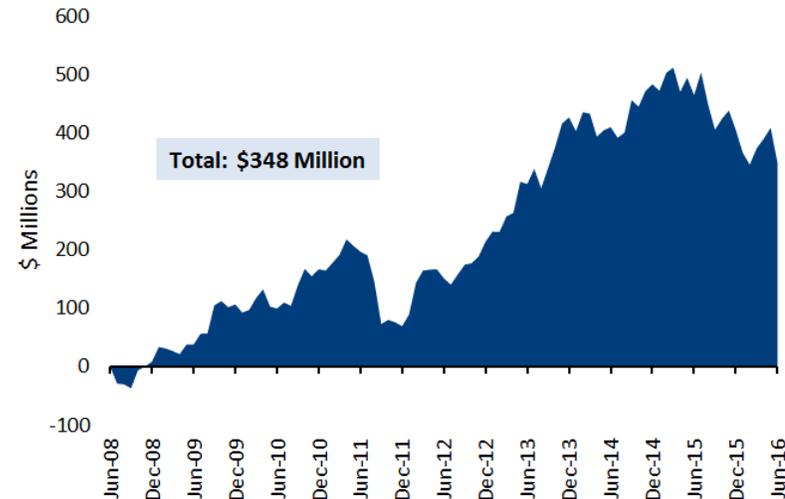
As of June 30, 2016

Program	Assets		Annualized Return %			Annualized Alpha %			Tracking Error %			Information Ratio		
	NAV (\$ millions)	% of Trust	1-Year	3-Year	Since Incept.	1-Year	3-Year	Since Incept.	1-Year	3-Year	Since Incept.	1-Year	3-Year	Since Incept.
BlackRock	1,636	1.3%	0.9	7.3	6.0	-0.5	1.0	0.8	2.0	2.1	2.0	-0.2	0.5	0.4
JP Morgan	1,737	1.3%	1.1	6.9	6.7	-0.2	0.6	1.4	1.5	1.8	2.2	-0.2	0.3	0.6
Morgan Stanley	1,589	1.2%	-2.1	5.2	5.6	-3.4	-1.1	0.4	2.2	2.5	2.0	-1.6	-0.4	0.2
Neuberger Berman	1,585	1.2%	-2.1	5.0	5.5	-3.4	-1.3	0.3	2.8	2.1	2.2	-1.2	-0.6	0.1
Total Public SPN	6,548	5.1%	-0.5	6.1	6.0	-1.9	-0.2	0.8	1.6	1.5	1.5	-1.2	-0.1	0.5
Targets						Portfolio/Firm:		2.0	Firm:		2.5	Firm:		0.8

Public Markets SPN Assets Under Management



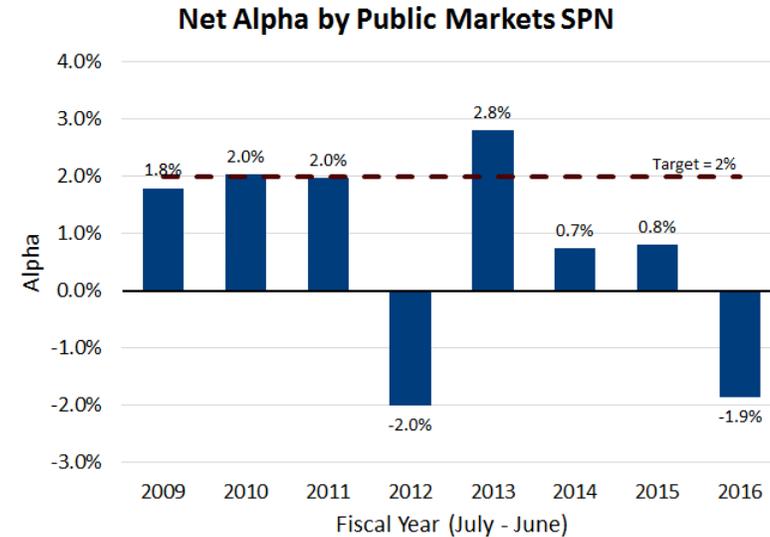
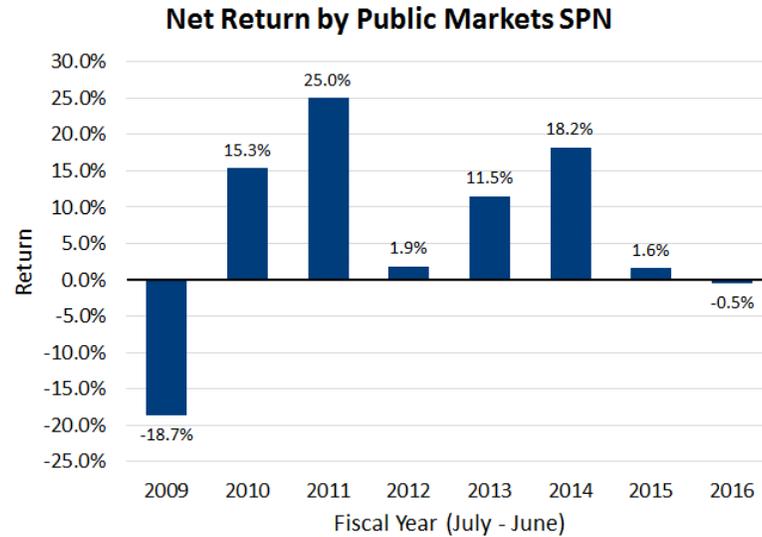
Total Public SPN Cumulative Alpha



Source: State Street Bank and TRS IMD.

Public Markets SPN Performance

As of June 30, 2016



Key Drivers for Recent Short Term Underperformance:

- “Lower for longer” growth and rates represent new macro regime
- Miscalculated pace / impact of reflationary monetary policies in Japan, Europe
- Underweight assets where momentum persists at valuation extremes (Treasuries)
- US stock selection opportunities scarce: dispersion between best and worst performing stocks is low

Public Markets SPN Performance

As of June 30, 2016

TUCS Public Markets SPN Performance Comparison

Public Plans > \$1 Billion for Period Ending June 30

Time Period	Percentile Rank
1 Year	78
3 Year	75
7 Year	15

Key Drivers of Recent Underperformance Versus Peers:

- Private asset classes outside Public SPN mandate
 - Private asset classes rally: no allocation drags on relative performance
- Below average allocation to real estate
 - Private and public real estate rally: relative underweight drags on relative performance
- Above average allocation to non-US equities relative to peers
 - Emerging Markets and EAFE sell off: relative overweight drags on absolute performance

Investment Environment

Market Expectations vs. Actual

	Actual (6/30/15)	1-Year Forecast (6/30/15)	Actual (6/30/16)
Fed Policy			
Fed Fund Future	0.13%	0.63%	0.38%
Interest Rates			
US	2.4%	2.9%	1.5%
Germany	0.8%	1.1%	-0.1%
Japan	0.5%	0.6%	-0.2%
UK	2.0%	2.5%	0.9%
Currencies			
Japanese Yen	122.12	127.00	103.19
Euro	1.12	1.05	1.11
12-Month EPS Growth			
US	0.9%	6.8%	-5.7%
Europe	-15.2%	8.1%	-11.4%
Japan	-9.2%	10.8%	-4.5%
China	0.4%	7.6%	-17.1%

Key Observations:

- Market overly hawkish with Fed hikes and rising interest rates
- Expected dollar strengthening versus yen and euro, but flat euro and dollar weakening versus yen
- Analysts overly optimistic on earnings and weak global earnings growth in 2016
- Stock multiples not contracting

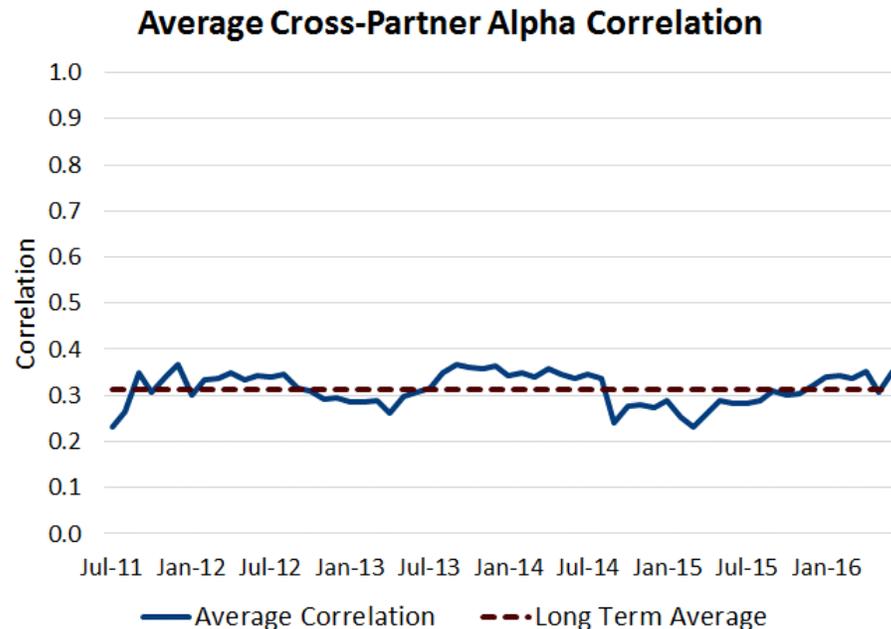
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Public Markets SPN Diversification

Tracking Error						
	BR	JPM	MS	NB	SPN	Diversification Effect
1-Year	2.0%	1.5%	2.2%	2.8%	1.6%	0.5%
3-Year	2.1%	1.8%	2.5%	2.1%	1.5%	0.6%
ITD	2.0%	2.2%	2.0%	2.2%	1.5%	0.7%

Key Observations:

- Diversification remains a hallmark for the portfolio:
 - Tracking error of total portfolio is lower than average of individual partners
 - Average cross-partner alpha correlation is low (0.3)
 - Due to variations in:
 - Process and implementation
 - Views and insights



Source: Average cross-partner alpha correlation calculated as average of the 6 pairs of correlations (lookback window 36 month trailing window).
 Diversification effect calculated as difference between tracking error of total portfolio and average tracking error of partners (using monthly alpha over appropriate time horizons).

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Accomplishments and Priorities

Accomplishments Since Sept '15

- Transitioned Public SPN portfolio manager role
- Successfully delivered 4 value-add research projects
- Significantly improved Public SPN signals for TAA
- Successfully executed three SPN Summits
 - One Public/Private Joint
 - Two Public Only

Current Priorities

- Generate 2% annualized alpha
- Complete “Blank Canvas” research project
- Develop attribution framework
- Enhance deep dive framework
- Improve portfolio monitoring and data analytics within SPN portfolios to provide greater asset-level transparency

APPENDIX

SPR Mandates

Public Investments	<ul style="list-style-type: none">• Manage, oversee and monitor four unique long-term investment relationships in the public markets around the world
Private Investments	<ul style="list-style-type: none">• Work closely with two industry-leading private markets specialist partners to identify and allocate capital to attractive private opportunities
Market Intelligence	<ul style="list-style-type: none">• Integrate global-macro-based products and services into public and private investment decisions across the Trust to enhance returns
Research Provider	<ul style="list-style-type: none">• Work with heavily resourced partners to provide customized, timely investment research and training that meets the needs of the IMD
Headlight Systems	<ul style="list-style-type: none">• Use and disseminate views and positioning data from partners to provide insight and support to other groups in the Trust
Center of Excellence	<ul style="list-style-type: none">• Leverage the TRS investment network to develop new products and superior processes to help ensure that the IMD is world-class in every respect

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Market Intelligence

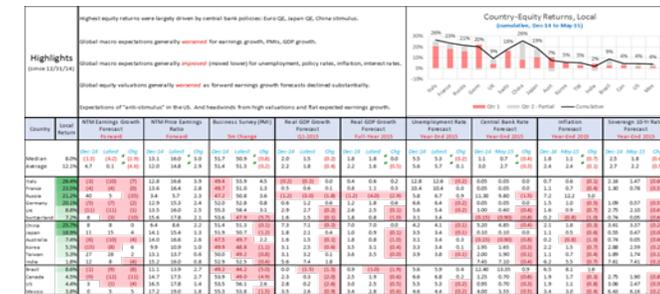
Analyze Global Macro Events

- Publish Flash Notes and Daily Summaries that explain global macro events and daily economic releases.
- Focus on placing events in context of the big picture.



Build Models & Dashboards

- Building macro models and dashboards that support IMD's investment evaluation process.



Develop Innovative Alpha Strategies

- Co-develop innovative alpha generating investment strategies through the SPR Incubator.
- Conduct the annual "Best Ideas" survey of IMD external managers.



Support Investment Analysis

- Analyze investment global macro assumptions for select private market opportunities.
- Support IPM during allocation/rebalancing efforts.





External Public Markets

Dale West, Senior Managing Director

Susanne Gealy and Brad Gilbert, Directors

September 2016



Agenda

- I. Executive Summary
- II. External Public Markets Team
- III. 2015 Accomplishments and 2016 Priorities
- IV. Long-Oriented Update
- V. Hedge Fund Update

Executive Summary

As of June 30, 2016

EXTERNAL PUBLIC MARKETS							
Total Assets (\$ millions)	Percent of Trust	1-Year Return	3-Year Return	5-Year Return	1-Year Alpha	3-Year Alpha	5-Year Alpha
\$35,229	27.2% ¹	-5.4%	4.1%	4.3%	-0.4%	-0.1%	0.2%

PERFORMANCE									
Program	1-Year Return	3-Year Return	5-Year Return	1-Year Alpha	3-Year Alpha	5-Year Alpha	1-Year TUCS Peer Quartile	3-Year TUCS Peer Quartile	5-Year TUCS Peer Quartile
US Portfolio	-1.7%	8.5%	9.9%	-3.9%	-2.7%	-1.9%	3 rd	3 rd	3 rd
Non-US Developed	-8.4%	3.7%	2.7%	1.5%	1.9%	1.4%	2 nd	2 nd	2 nd
Emerging Markets	-9.8%	-1.2%	-2.9%	2.2%	0.4%	0.9%	3 rd	3 rd	3 rd
World Equity	-5.7%	5.3%	6.0%	-2.3%	-0.9%	0.5%	3 rd	3 rd	2 nd
Total Hedge Funds	-4.0%	2.7%	3.1%	0.5%	0.8%	0.3%			
Stable Value Hedge Funds	2.5%	4.2%	n/a	5.8%	2.3%	n/a			
Directional Hedge Funds	-9.2%	1.4%	n/a	-3.9%	-0.5%	n/a			
Absolute Return	15.8%	24.9%	28.7%	13.3%	22.5%	26.4%			

ASSETS				
Program	June 2015 Assets	June 2016 Assets	June 2016 % of Trust	Long-Term Target % of Trust
	(\$ millions)			
External Managers	\$27,685	\$24,348	18.8%	16.9%
US Portfolio (14 portfolios)	8,444	5,801	4.5%	4.2%
Non-US Developed (8 portfolios)	5,387	5,217	4.0%	3.9%
Emerging Markets (9 portfolios)	7,717	8,113	6.3%	5.2%
World Equity (4 portfolios)	6,136	5,217	4.0%	3.6%
Hedge Funds	\$11,778	\$10,756	8.3%	8.0%
Stable Value (26 portfolios)	5,374	5,496	4.2%	4.0%
Directional (22 portfolios)	6,404	5,260	4.1%	4.0%
Absolute Return (2 portfolios)	\$155	\$125	0.1%	0.0%

Source: Wilshire TUCS, State Street Bank - Performance is annualized and net of fees.

¹Fund-based investments, including hedge funds, are part of the 27.2% EPU total. 19.5% of the 30% Agency Agreement authority is currently utilized (see Appendix).



Performance

Accomplishments and Priorities

2015 Accomplishments

- Value added in international, emerging market and stable value portfolios
 - Offset by US and Directional Hedge Fund underperformance
- Renegotiated and improved terms with 16 managers
 - Working toward achieving a 70/30 split of value add in all environments
- Support to Special Opportunities portfolios
 - 15.8% return on these opportunistic investments with EPU managers
- Five-year value added of \$485 million versus passive benchmarks

2016 Priorities

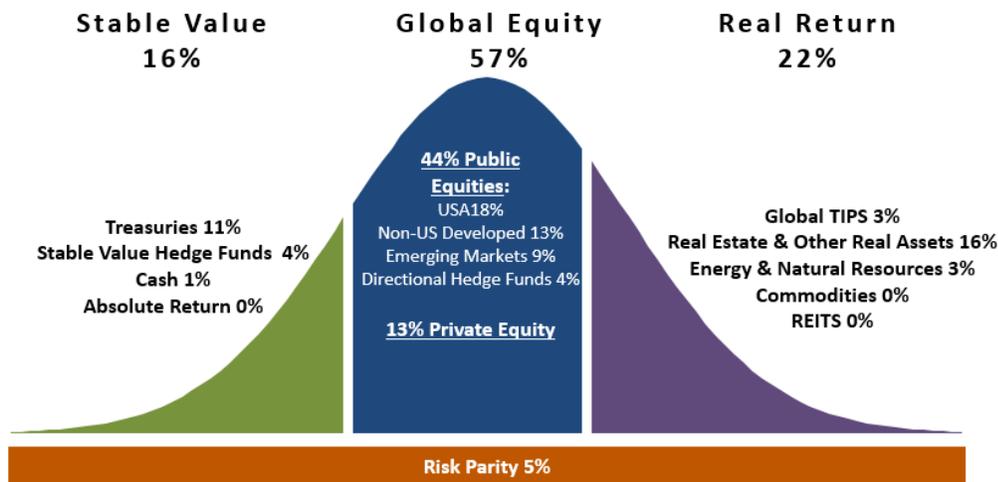
- Continue to reduce assets in US active portfolio
 - Position remaining assets for improved performance as value and small-cap strategies rebound
- Lead the industry in improving terms for better alignment in a low-return environment
- Customize investment strategies where appropriate to better reflect TRS needs versus “off-the-shelf” products
- Adhere to Texas Way investing principles



Source: State Street Bank and TRS IMD
Note: Performance and DVA are net of fees

External Public Markets Portfolio Role

- Legislative cap for Agency Agreements: 30%
 - Does not include fund-based investments such as hedge funds
- Legislative cap for Hedge Funds: 10%
- Target tracking error for external Global Equity portfolios: 3-5%
 - Internal Global Best Ideas (GBI): 0-2%



Agency Agreements (Investment Management Agreements)	
Program	Percent of Trust
External Managers	
External Public Long-Oriented	14.1% ¹
Public SPN	5.1%
Other	0.3%
Total	19.5%

Program	Percent of Trust
Total Hedge Funds	8.3%



Source: State Street Bank

¹4.7% of External Public Long-Oriented Portfolio is held in commingled funds and does not count toward the 30% limit.

External Public Markets



Dale West, CFA
Sr. Managing Director
 MBA, Stanford

INVESTMENTS TEAM



Susanne Gealy, CAIA
Director, Global Equity
 MBA, University of Chicago



Brad Gilbert, CFA, CAIA
Director, Hedge Funds
 BBA, UT Austin



Joel Hinkhouse, CFA
Sr. Investment Manager
 MBA, University of Chicago



Lulu Llano, CFA
Investment Manager
 BBA, UT Austin



Steven Wilson, CAIA
Investment Manager
 MBA, Rice University



Scott Gonsoulin, CFA
Sr. Associate
 MS, Texas A&M



Rachel Clark, CAIA
Associate
 BA, UT Austin



Nick Croix
Associate
 MS, UT Austin



Mikhael Rawls
Sr. Analyst
 AB, Harvard



Ben Wechter
Sr. Analyst
 MS, UT Austin

ANALYTICS



Joe Tannehill, CFA
Sr. Investment Manager
 MBA, UNC Chapel Hill



Kevin Taylor
Associate
 MS, UT Austin



Patty Steinwedell
Analyst
 BA, North Carolina State



Courtney Dunn, CFA
Analyst
 BBA, UT San Antonio

RELATIONSHIP MANAGEMENT



Jon Klekman
Analyst
 BA, SUNY Binghamton

ADVISORS

Albourne
 Aon Hewitt
 The Rock Creek Group

EXPERIENCE SUMMARY

Experienced investment team
 Strong analytics
 7 CFAs, 4 CAIAs, 9 Master's Degrees



Long-Oriented Global Equity Update

Long-Oriented Global Equity Portfolios					
As of 06/30/2016					
		1-Year		3-Year	
	Assets (\$ millions)	Return	Alpha	Return	Alpha
US Portfolio	\$5,801	-1.7%	-3.9%	8.5%	-2.7%
MSCI USA IMI		2.3%		11.2%	
Non-US Developed	\$5,217	-8.4%	1.5%	3.7%	1.9%
MSCI EAFE + Canada		-9.8%		1.9%	
Emerging Markets	\$8,113	-9.8%	2.2%	-1.2%	0.4%
MSCI Emerging Markets		-12.1%		-1.6%	
World Equity	\$5,217	-5.7%	-2.3%	5.3%	-0.9%
MSCI AC World		-3.7%		6.2%	
Total	\$24,348				

- Weak equity markets globally, primarily in Q3 of 2015
- US stock selection detracted from overall results
 - US portfolio reduced by \$2.6 billion during the year as several managers were terminated
 - Positive results in 1H 2016 as value premium has reappeared in the US market
- Good 1- and 3-year alpha from Non-US Developed managers
- Emerging Markets managers have generated alpha over the past year as China's equity market bubble unwound
- US market was the main detractor in the World portfolio during the last 12 months
- Manager turnover at roughly 8%

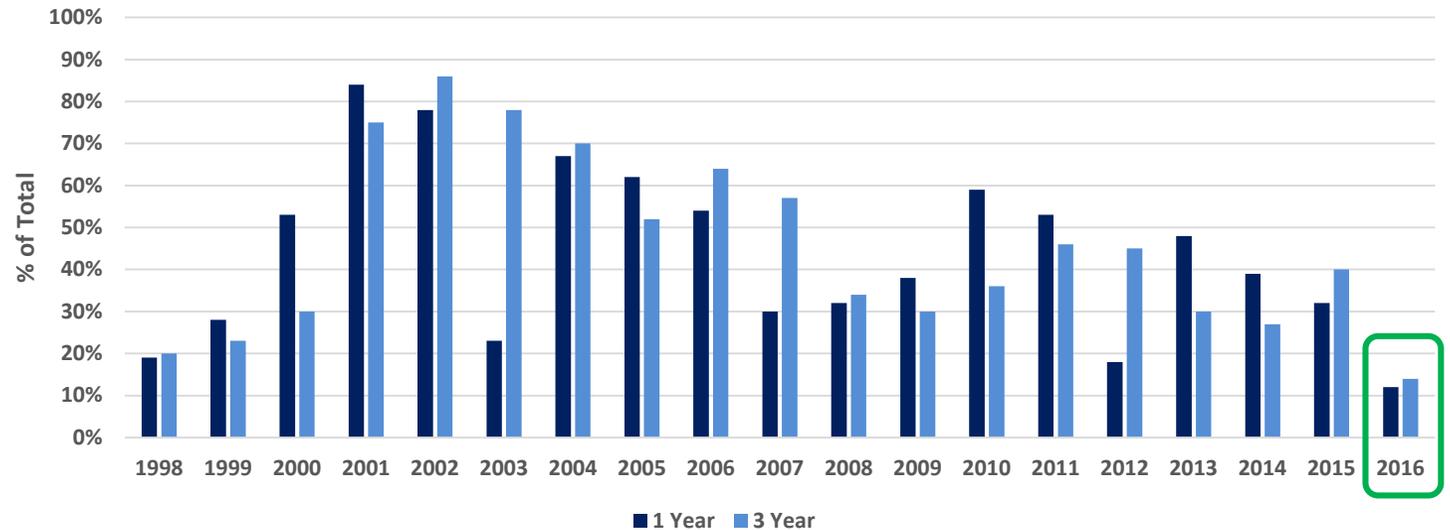


Source: State Street Bank
Note: Performance is net of fees

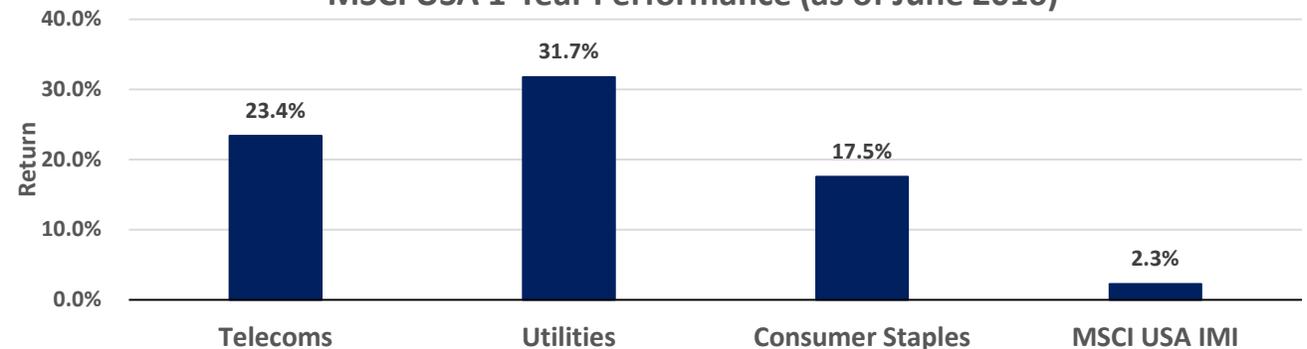
US Active Management

- The year to June 2016 was the worst period for US active managers since at least 1998
- Active manager preference for small- and mid-cap stocks has been a large headwind over the past year
 - MSCI USA Large Cap: 3.9%
 - MSCI USA Mid Cap: -0.5%
 - MSCI USA Small Cap: -3.5%
- Low volatility/high yield sectors have outperformed

Percent of Institutional Managers Outperforming US Benchmark (June Year-end)



MSCI USA 1-Year Performance (as of June 2016)



Hedge Fund Update

Hedge Fund Portfolios As of 6/30/2016							
	Assets (\$ millions)	1-Year		3-Year		Since Inception (Oct. 2011)	
		Return	Alpha	Return	Alpha	Return	Alpha
Directional Hedge Funds	\$5,260	-9.2%	-3.9%	1.4%	-0.5%	4.0%	1.2%
<i>HFRI Fund of Funds Composite</i>		-5.4%		1.9%		2.8%	
Stable Value Hedge Funds	\$5,496	2.5%	5.8%	4.2%	2.3%	3.7%	0.8%
<i>HFRI Fund of Funds Conservative</i>		-3.3%		1.9%		2.9%	
Total Hedge Funds	\$10,756	-4.0%	0.5%	2.7%	0.8%	3.8%	1.0%
<i>Total Hedge Funds Benchmark</i>		-4.5%		1.9%		2.8%	

- Hedge funds 2% below legislative cap
 - Split into two types of funds
- Stable Value performing well
 - Recent issues in Directional strategies
- Diversification effect has been additive
 - Hedge funds contribute 2.5% to trust-level VaR at 8.3% of assets

Directional Hedge Fund Portfolio

Directional Hedge Fund Objectives	Status	Details
Focus on equity and market sensitive hedge funds		<ul style="list-style-type: none"> Correlation to MSCI AC World: 0.8 Average Sharpe Ratio: 0.7
Core strategies have moderate market sensitivity, lower volatility than equities		<ul style="list-style-type: none"> Beta to MSCI AC World: 0.3 Directional HF Volatility: 5.3% MSCI AC World Volatility: 12.5%
Expected to outperform equities when markets are down, but will underperform strong markets		<ul style="list-style-type: none"> 87% hit rate vs. equity in equity down months Average monthly excess return over equities in down months: 1.4% Inception to date return of 4.0% versus MSCI AC World 10.4%
Expected to outperform US Treasuries over the long term		<ul style="list-style-type: none"> 4.0% vs. Treasuries¹ 5.9% Current 10-year Treasury yield-to-maturity: 1.5%
HFRI Fund of Funds Composite benchmark with target tracking error of 6%		<ul style="list-style-type: none"> 1.2% ahead of HFRI benchmark since inception Tracking Error: 2.4%

Sources: State Street Bank, Bloomberg

Dates: October 2011 (inception) to June 2016

Note: Performance is annualized except where noted and is net of fees.

¹Return of Barclays Capital (BarCap) Long Treasury Index from October 2011 to June 2016



Stable Value Hedge Fund Portfolio

Stable Value Hedge Fund Objectives	Status	Details
Focus on absolute return hedge funds		<ul style="list-style-type: none"> Return: 3.7% Stable Value HF Volatility: 2.4% Average Sharpe Ratio: 1.5
Core strategies have low to negative market sensitivity		<ul style="list-style-type: none"> Correlation to MSCI AC World: 0 Beta to MSCI AC World: 0
Expected to have positive returns when markets are down		<ul style="list-style-type: none"> Hit rate of 100% versus world equities in down months, outperforming by an average of 2.6%. Positive returns in 61% of 23 down equity months since the split
Expected to outperform US Treasuries over the long term		<ul style="list-style-type: none"> 3.7% return vs. Treasuries¹ 5.9% 2.4% volatility vs. Treasuries¹ 10.7% Current 10-year Treasury yield-to-maturity: 1.5%
HFRI Fund of Funds Conservative benchmark with target tracking error of 4%		<ul style="list-style-type: none"> Return of 3.7% vs. the HFRI benchmark of 2.9% Tracking Error: 2.6%

Sources: State Street Bank, Bloomberg

Dates: October 2011 (inception) to June 2016

Note: Performance is annualized except where noted and is net of fees.

¹Return of Barclays Capital (BarCap) Long Treasury Index from October 2011 to June 2016



TRS Hedge Fund Portfolios: Alpha and Beta

- Analysis to separate the risk-free (cash) return, equity market (beta) return and alpha returns of the hedge fund portfolios reveals that both portfolios have produced a positive alpha return
- As expected, the Directional portfolio has a positive beta return while the Stable Value portfolio has a negligible beta return

October 2011 - June 2016 (Returns are Annualized)	Beta to MSCI ACWI Net w USA Gross	Risk-Free Return	Beta Return	Alpha Return	Total Return
HF Directional Portfolio	0.34	0.1%	3.5%	0.4%	4.0%
HFRI FOF Composite	0.22	0.1%	2.3%	0.5%	2.8%
Active Return			1.2%	0.0%	1.2%
MSCI ACWI Net w USA Gross					10.4%
Barclays US Long-Term Treasury					5.9%

October 2011 - June 2016 (Returns are Annualized)	Beta to MSCI ACWI Net w USA Gross	Risk-Free Return	Beta Return	Alpha Return	Total Return
HF Stable Value Portfolio	0.01	0.1%	0.1%	3.6%	3.7%
HFRI FOF Conservative	0.13	0.1%	1.3%	1.5%	2.9%
Active Return			-1.3%	2.1%	0.8%
MSCI ACWI Net w USA Gross					10.4%
Barclays US Long-Term Treasury					5.9%



Source: State Street Bank, Bloomberg and TRS IMD

Note: Performance is annualized since October 2011 portfolio split. Performance is net of fees. Due to rounding, total return and active return might not equal the sum or difference of values displayed here.

Conclusion

- 12 months ending June 2016 were unusually difficult for active management, especially in the U.S.
 - 88% of US institutional portfolios underperformed the broad market
 - Directional hedge funds underperformed expectations
- External Public portfolios are positioned to benefit from a rebound in the alpha cycle
 - Positive alpha from the US portfolio year to date through August
- TRS will take a leadership position in reforming hedge fund compensation

APPENDIX

Delegation Authority Detail

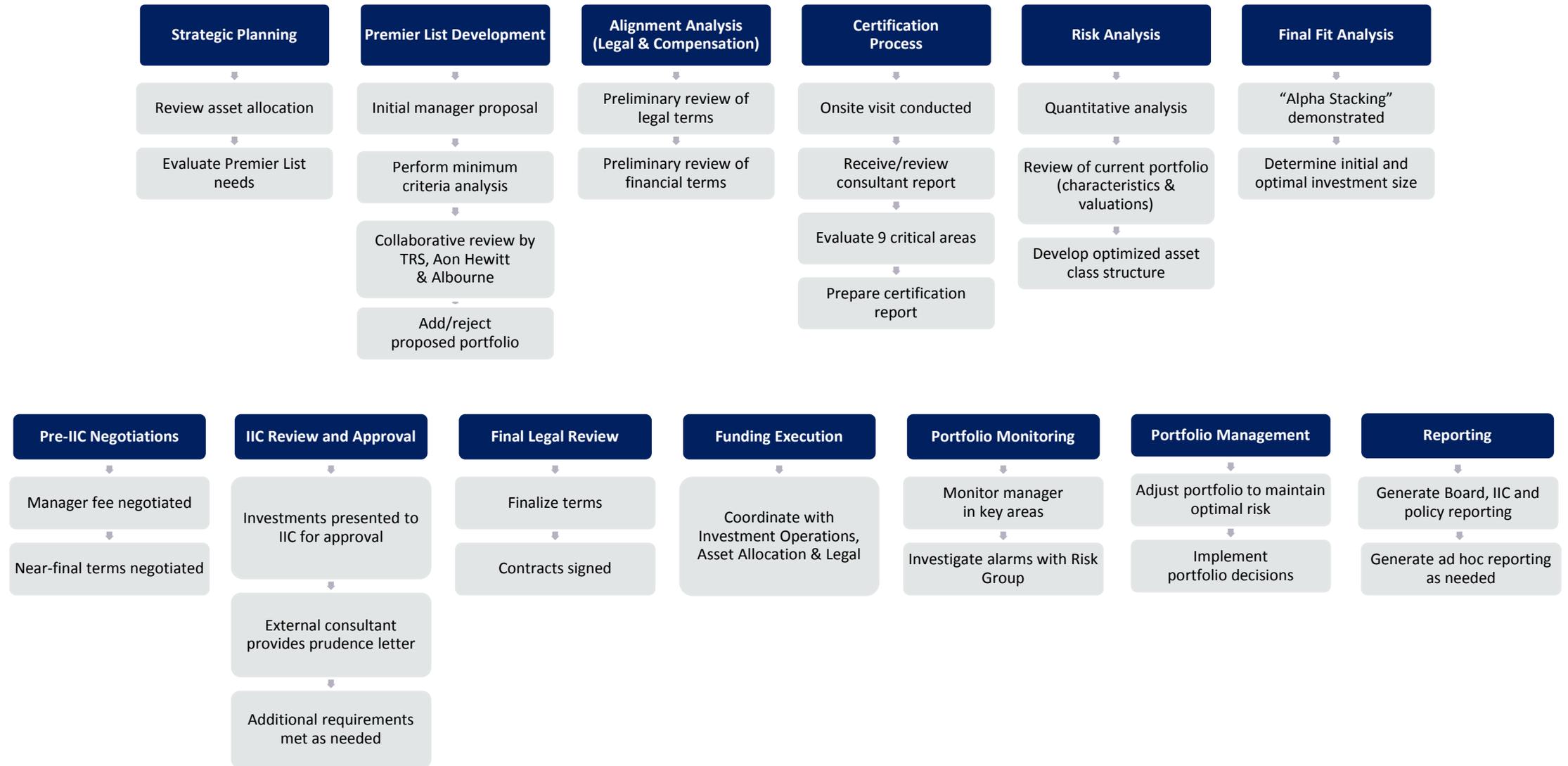
As of June 30, 2016

External Managers	# of Portfolios			Assets (\$ billions)			Percentage of Trust		
	Agency	LP	Total	Agency	LP	Total	Agency	LP	Total
US Portfolio	9	5	14	\$4.2	\$1.6	\$5.8	3.2%	1.3%	4.5%
Non-US Developed	5	3	8	2.9	2.3	5.2	2.3%	1.8%	4.0%
Emerging Markets	8	1	9	7.0	1.1	8.1	5.4%	0.8%	6.3%
World Equity	3	1	4	4.2	1.0	5.2	3.2%	0.8%	4.0%
Total Equity	25	10	35	\$18.3	\$6.0	\$24.3	14.1%	4.7%	18.8%
Public Market SPN	4		4	\$6.5		\$6.5	5.1%		5.1%
Other	3		3	\$0.4		\$0.4	0.3%		0.3%
Totals	32	10	42	\$25.2	\$6.0	\$31.3	19.5%	4.7%	24.2%

- 19.5% of the 30% Agency Agreement authority is currently utilized

External Public Critical Processes

Texas Way



Investment Process

Texas Way

Organization	Investment Process	Performance	Portfolio Exposure
History	Benchmark	Beta	Country
Investment Philosophy	Objective	Correlation	Market Capitalization
Culture	Style	CUSUM	Policy Violations
Competitive Advantage	Region	Environmental Analysis	Fund Positions
Key Personnel	Instruments	Fund Track Record	
Professional Team	Idea Generation	Hit Ratio	
Ownership	Portfolio Construction	Information Ratio	
Compensation Philosophy	Strategy Implementation and Research	Maximum Drawdown	
Conflicts of Interest	Portfolio Concentration	Performance	
Employee Turnover	Portfolio Monitoring	Portfolio Volatility	
Succession Plan	Hedging	Up/Down Capture	
Firm Infrastructure		Sharpe Ratio	
Long-term Solvency			
Firm Assets			
Target Assets			
Subscription Capacity			
Client Base			
Placement Agent			

Risk Management	Diversification Impact	Fund Terms	Operation Check	Transparency
Market Risk Factors	Versus Peers	Fees	Pricing	Transparency Level
Leverage	Versus Asset Class	Hurdle Rate	Settlement Process	Transparency Frequency
Drawdown History	Versus Internal	Lock Up Period	Back Office	
Liquidity	Versus Fund	Early Redemption Penalty	Prime Brokers	
Risk Management Systems		High Water Mark	Administrator	
Audit History		Redemption Gate	Counterparty Exposure	
		Redemption Notice	Legal Resources	
		Redemption Period	Consultant Report	
		Subscription Period	Reference Check	
		Hedge Fund Test	Background Check	

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STAR Report Example (7/2009 – 6/2016)

