

Office of Investments

Joint Annual Meeting

Tim Barrett, CFA - CIO Tim Bruce, Partner - NEPC December 2017



Agenda

- 1. LTIF Overview
 - Governance
 - Objective
 - ➤ How Endowment Funds work
 - Performance
- 2. Macro Environment (NEPC)
- 3. How we invest
 - Overview
 - > Two Important Drivers of our Long Term Performance:
 - Overlay Program
 - MCA Program
- 4. Conclusion and Outlook



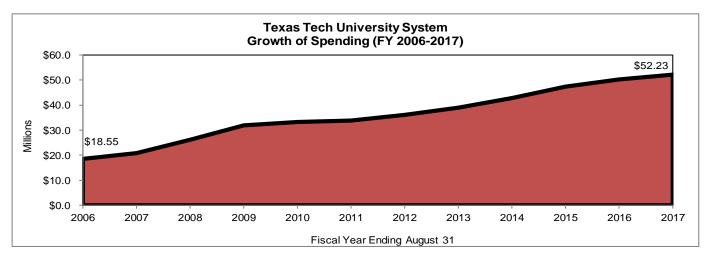
Governance

For Approval of:	CIO	IAC	Board of Regents
Investment Policy Ranges/Targets:	Recommend	Recommend	Approve
Tactical Allocation Ranges/Targets:	Recommend	Approve	Review
Asset Class Structures:	Recommend	Approve	
Manager Selection & Redemption:	Approve	Review	



Objective

Provide consistent, inflation adjusted growth above the spending rate, resulting in an increasing revenue stream for the Regents, Chancellor and Presidents to provide funding for student scholarships and academic chairs.

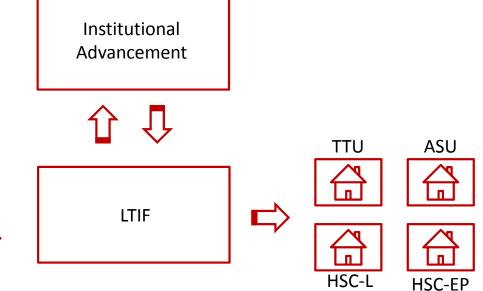


Cumulative spending since inception of \$509 million



Contributions:

Each month end, Institutional Advancement distributes a portion of *Donor Investments* to the LTIF.



Treasury



	2010	2011	2012	2013	2014	2015	2016	2017
Additions	44,519,412	23,791,545	41,941,880	44,502,486	77,866,318	50,453,041	33,777,495	38,436,379
Spending & Service Charge	37,021,089	37,742,917	39,846,443	42,691,812	46,919,600	53,415,262	57,955,355	59,247,430
Net Additions	7,498,323	(13,951,372)	2,095,436	1,810,674	30,946,718	(2,962,221)	(24,177,860)	(20,811,051)



The IAC, Consultant and Investment Staff work to invest globally to produce consistent, inflation adjusted growth above the spending rate.

Institutional Advancement

Treasury

LTIF

TTU ASU

TTU ASU

TTU ASU

TTU ASU

Historical Cash Flows

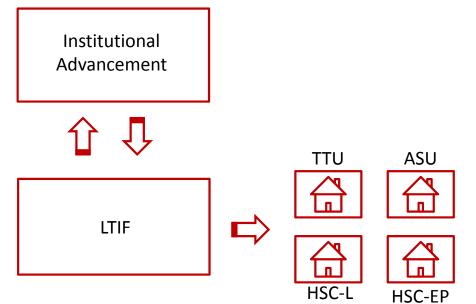
	2010	2011	2012	2013	2014	2015	2016	2017
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HSC-EP



Administration:

Each Quarter end, market value and performance is communicated to Treasury.



Treasury



	2010	2011	2012	2013	2014	2015	2016	2017
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Administration:

Treasury calculates spending based on rolling 12 Quarters, as well as an administrative service charge split between IA and LTIF. This is communicated back to the a LTIF.

Institutional Advancement



Treasury



LTIF



TTU



HSC-EP

ASU

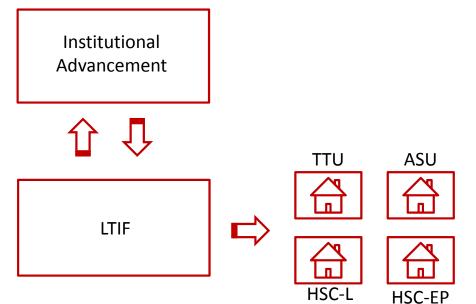
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	2010	2011	2012	2013	2014	2015	2016	2017



Administration:

LTIF wires out spending based on Treasury calculations, as well as a service charge to budget accounts for the LTIF and Institutional Advancement.

Treasury

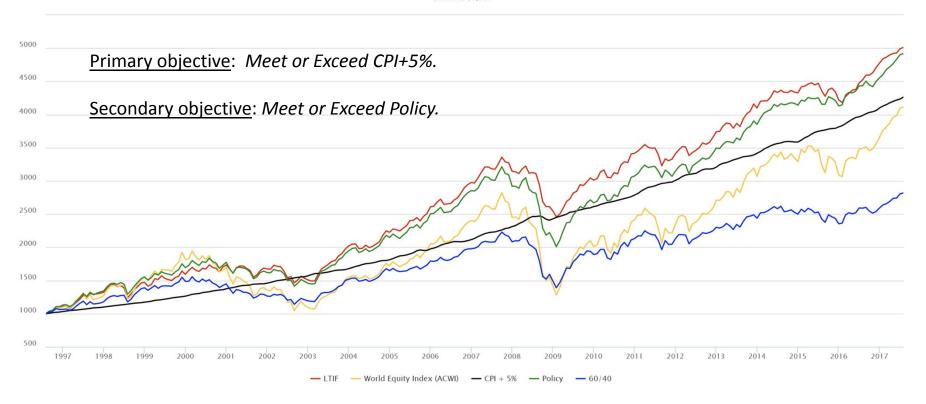


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Performance to August 31, 2017

Growth of \$1,000





Public Equity Performance

Equity
MSCI AWCI (Net)
MISCI AVVCI (INEI)

3 Mo.	Calendar YTD	Nacubo YTD	1 Year	3 Year	5 Year
4.57%	15.70%	3.99%	18.45%	6.39%	10.83%
3.71%	14.78%	3.11%	17.09%	5.68%	10.66%

Period ending August 31, 2017

Key Stats:

Number of Managers: 5 Number of Strategies: 6

Percent Actively Managed: 37% Percent in Overlay Program: 63%



Public Debt Performance

	3 Mo.	Calendar YTD	Nacubo YTD	1 Year	3 Year	5 Year
Debt	1.44%	6.88%	1.90%	13.51%	8.28%	7.45%
Barclays Global Aggregate	2.60%	7.22%	2.69%	0.19%	0.65%	0.91%

Period ending August 31, 2017

Key Stats:

Number Managers: 8 Percent of Strategies: 16

Percent Actively Managed: 100% Percent in Overlay Program: 0%



Public Diversifying Assets Performance

Diversifying Assets
HFRXGL Index

3 Mo.	Calendar YTD	Nacubo YTD	1 Year	3 Year	5 Year
0.64%	1.06%	0.04%	2.81%	-1.63%	-3.05%
1.44%	3.81%	1.22%	6.37%	5.24%	5.10%

Period ending August 31, 2017

Key Stats:

Number of Managers: 7 Number of Strategies: 8

Percent Actively Managed: 76% Percent in Overlay Program: 24%



Private Asset Performance (less liquid)

_	3 Mo.	Calendar YTD	Nacubo YTD	1 Year	3 Year	5 Year
Private Investments	0.11%	1.87%	0.62%	10.26%	4.45%	8.09%
Private Market Index	4.05%	8.44%	0.00%	16.70%	10.30%	12.09%
Private Equity	1.13%	-0.46%	0.32%	7.38%	4.41%	8.33%
Private Debt	0.91%	3.04%	0.32%	7.73%	4.27%	9.34%
Private Diversifying Assets	-1.14%	2.50%	1.13%	14.51%	3.92%	6.74%

Period ending August 31, 2017

Key Stats:		Private As	ssets:
	Equity	Debt	Diversifying
Number of Managers:	15	10	10
Number of Strategies:	19	17	18
Percent Actively Managed:	100%	100%	100%



Performance

Performance through 8/31/2017

Fund	MTD	3 Mo.	Calendar YTD	Fiscal YTD	Nacubo YTD	1 Year	3 Year	5 Year
LTIF	0.44%	1.98%	6.55%	10.96%	1.82%	10.96%	4.75%	7.47%
Policy	0.40%	3.21%	9.33%	10.97%	1.79%	10.97%	5.73%	8.31%
Alpha	0.05%	-1.23%	-2.79%	-0.01%	0.04%	-0.01%	-0.98%	-0.84%

^{*}periods greater than 1 year have been annualized

Key Stats:

Number of Managers: 55

Number of Strategies: 97



Investment Operations

Investment Operations consist of all aspects of the back and middle office activities. This includes all accounting and cash movements, reporting, Operational Due Diligence (ODD), legal reviews, contracting and MCA account structuring.

The following were completed in fiscal year 2017

- ➤ Completed and audited 498 cash transactions within the portfolio.
- ➤ All transactions represent more than \$850 million. These include all fundings, redemptions, calls, distributions, additions and spending.
- Completed full due diligence and legal reviews on 10 firms, which resulted in 8 that were executed and hired.
- ➤ 5 Managed Custody Accounts (MCA) were negotiated and set up with accounting and reporting structures.
- ➤ Fully implemented a cloud based document management and performance tracking software platform.



Historical Ranking vs. Peers

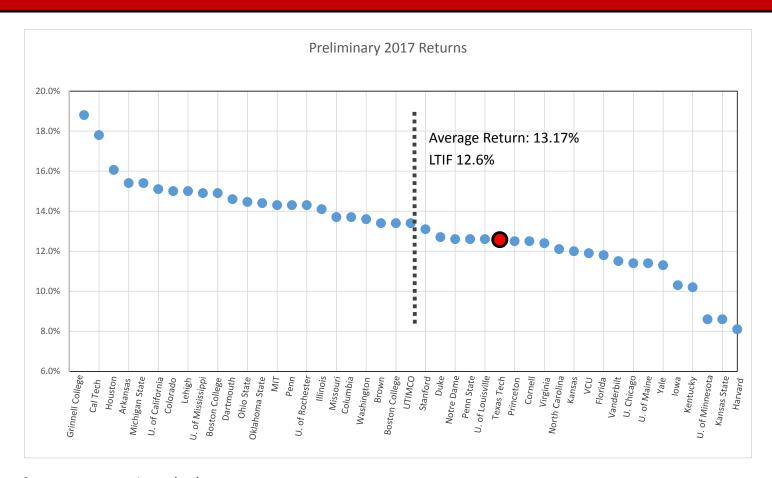
TTUS NACUBO Percentile Ranking - 750M-1.5B										
	1 Year 3 Year 5 Year 10 Year									
2016	50.8% 🛨	74.6% 👚	88.1% 🖜	66.0%						
2015	63.1% 👚	74.6% 🕈	92.3% 🛨	42.9%						
2014	68.8% 👚	84.1% 🕈	93.7%	29.3% 🛊						
2013	77.4%	100.0%	76.9%	45.1%						

TTUS NAC	TTUS NACUBO Percentile Ranking - All E&F											
	1 Year	1 Year 3 Year 5 Year 10 Year										
2016	43.8% 🖜	59.6% 🖜	72.1%	54.9%								
2015	52.3% 👚	68.4% 👚	90.6%	32.6%								
2014	66.0% 🛊	80.8% 🖜	89.2%	18.6% 🛊								
2013	68.6%	96.8%	84.5%	28.5%								

- **★** IMPROVED RANKING
- 3-year rankings have improved from bottom to third quartile.
- We have achieved consistent improvement in our <u>one-year performance rankings</u>, improving by 8.5% and 12.3% over the last year in the "All E&F and "\$750m-\$1B peer universe



Projected Performance vs. Peers





Market Returns – Aug 2017

• In the previous section you saw the strong performance of the LTIF

TTUS benefited by maintaining exposure to undervalued areas like non-US equity

1 105 beneficed by maintaining exposure to undervalued areas like non-05 equity													
	2009	2010	2011	2012	2013	2014	2015	2016	Q1	Q2	July	Aug	YTD
EM Equity	78.5%	18.9%	-18.4%	18.2%	-2.6%	-2.2%	-14.9%	11.2%	11.4%	6.3%	6.0%	2.2%	28.3%
Int'l Developed Equity	31.8%	7.8%	-12.1%	17.3%	22.8%	-4.9%	-0.8%	1.0%	7.2%	6.1%	2.9%	0.0%	17.0%
EM Local Credit	22.0%	15.7%	-1.8%	16.8%	-9.0%	-5.7%	-14.9%	9.9%	6.5%	3.6%	2.1%	1.8%	14.7%
US Large Cap	26.5%	15.1%	2.1%	16.0%	32.4%	13.7%	1.4%	12.0%	6.1%	3.1%	2.1%	0.3%	11.9%
US Long Treasuries	-12.9%	9.4%	29.9%	3.6%	-12.7%	25.1%	-1.2%	1.3%	1.4%	4.0%	-0.6%	3.4%	8.4%
Global Credit	-6.5%	-5.3%	-5.3%	-4.1%	2.7%	-0.6%	3.3%	2.1%	1.8%	2.6%	1.7%	1.0%	7.2%
US Small/Mid Cap	34.4%	26.7%	-2.5%	17.9%	36.8%	7.1%	-2.9%	17.6%	3.8%	2.1%	1.0%	-0.8%	6.2%
US High Yield	58.2%	15.1%	5.0%	15.8%	7.4%	2.5%	-4.5%	17.1%	2.7%	2.2%	1.1%	0.0%	6.1%
US Credit	5.9%	6.5%	7.8%	4.2%	-2.0%	6.0%	0.5%	2.6%	0.8%	1.4%	0.4%	0.9%	3.6%
Commodities	18.9%	16.8%	-13.3%	-1.1%	-9.5%	-17.0%	-24.7%	11.8%	-2.3%	-3.2%	2.3%	0.4%	-2.7%

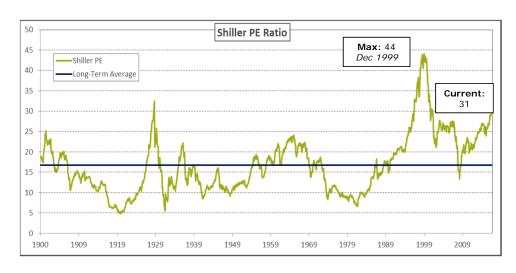
S&P 500 = US Large Cap
Russell 2500 = US Small/Mid Cap
MSCI EAFE = International Developed Equity
MSCI EM = Emerging Market Equity
Barclays Agg = US Credit
Barclays Long Treasury = US Long Treasuries
Barclays High Yield = US HY
Barclays Global Agg = Global Credit
GBI-EM Global Diversified = EM Local Credit
Bloomberg Commodity = Commodities

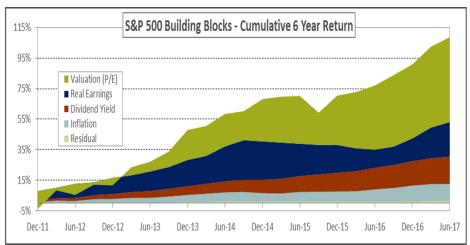
Source: Bloomberg, Barclays, S&P, Russell, MSCI, JP Morgan, Credit Suisse



Where to Invest: Equities

- With equity markets up across the board and the US on it's 9th year of a bull market there are few cheap areas for investment
- We show the Shiller PE below as well as the composition of the returns for the S&P 500 over the past 6 years



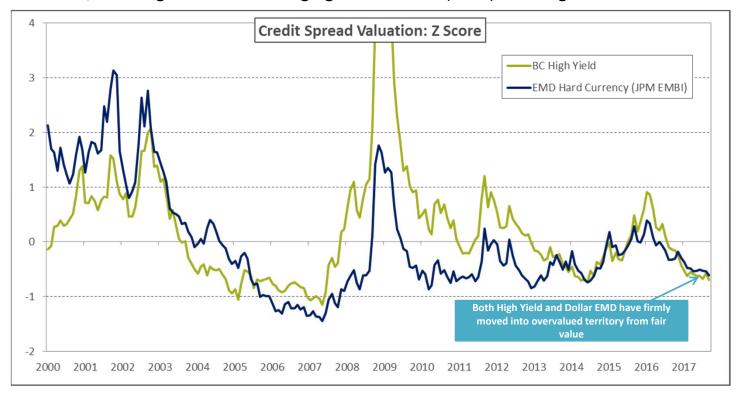


Source: Bloomberg, S&P, Shiller



Where to Invest: Credit

- Equities are not the only asset class that seems expensive
- As noted below, both High Yield and Emerging Market Debt (EMD) have high valuations

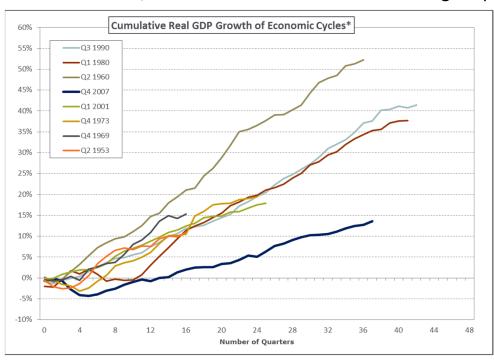


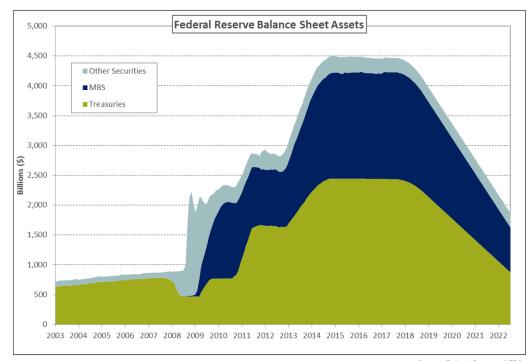
Source: Bloomberg, NEPC



Central Bank Stimulus

- Economic conditions have improved and certainly have helped drive growth
- However, Central Bank stimulus has been a large supporter of returns for risk assets





Source: Federal Reserve Bank of St. Louis *Cumulative Real GDP growth from recession start Source: Federal Reserve, NEPC
Forecast based on data from the June Fed Minutes:
MBS: \$48 per month initially and increasing by \$48 at 3-month intervals over 12 months until \$208
Treasuries: \$6B per month initially and increasing by \$6B at 3-month intervals over 12 months until \$308



Looking Forward

 With strong returns over the past number of years, forward looking expectations are lower for most asset classes

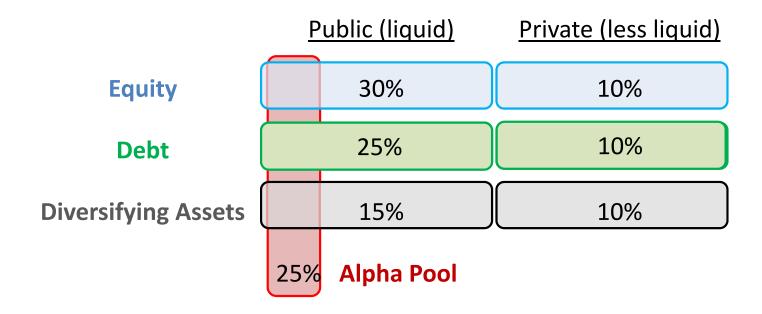
5-7 Year Forward Looking Exp	pected Returns
Asset Class	2017
Cash	1.75%
Treasuries	2.00%
IG Corp Credit	3.75%
Core Bonds	2.65%
TIPS	3.00%
Municipal Bonds	2.25%
High-Yield Bonds	4.75%
Bank Loans	5.25%
Global Bonds (Unhedged)	1.00%
EMD External	4.75%
EMD Local Currency	6.75%
Large Cap Equities	5.75%
Small/Mid Cap Equities	6.00%
Int'l Equities (Unhedged)	7.25%
Emerging Int'l Equities	9.50%
Real Estate	6.00%
Commodities	4.75%

Source: NEPC



Asset Allocation

The Foundation of Portfolio Construction





Program Drivers

There are two drivers that set the LTIF apart from our peers and have allowed us to consistently improve performance over the last four years.

- ➤ Overlay Program: comprises 25% of Assets.
- ➤ Master Custody Accounts: comprises 30% of Assets.



Overlay Program

The Beta Overlay and Alpha Pool program, at 25% of the LTIF assets, have consistently added value to our broad market exposures in public equities, public debt and public diversifying assets.

How it works:

- 1. Purchase S&P 500 Futures Contract giving the LTIF \$10 million of exposure (note: costless transaction).
- 2. Invest \$8 million in the Alpha Pool.
- 3. Hold \$2 million in Cash.

The Futures contract gives you the return of the S&P 500. The Alpha Pool is expected to produce a return of 3-10% annually. Cash is held to settle daily fluctuations in the futures contract.

<u>Result:</u> Equity market return with a substantially more diversified alpha component than traditional active equity managers relying solely on stock selection skill. Additional ability to add downside protection.



Overlay Program

The Beta Overlay and Alpha Pool program, at 25% of the LTIF assets, have consistently added value to our broad market exposures in public equities, public debt and public Diversifying Assets. The LTIF US Large Cap equity exposure is detailed below.

	Trade Term	3 Months	1 Year	ITD-Ann.	ITD-Cum.
US Lareg Cap		2.54%	14.52%	8.75%	32.26%
Alpha Pool		1.57%	4.80%	3.08%	10.65%
LTIF Large Cap Equity	May'14-Aug'17	4.11%	19.32%	11.83%	42.91%
S&P 500		2.48%	13.85%	8.49%	31.20%
ALPHA		1.63%	5.47%	3.35%	11.71%

- ➤ Over this same time period, leading industry database providers, Morningstar and eVestment reported active large cap managers top quartile results were 10.54% and 11.56%, respectively.
- ➤ The universes for the two database providers were 1,079 and 1,054, covering virtually all active managers in the US.



Overlay- Alpha Pool Program

Is the complexity worth it? Yes.

For the Fiscal year, our total overlay produced a 13.08% return. When coupled with the collateral, or alpha pool, that return jumps to 17.88%. That is 5.83% excess return above the weighted benchmark.

	Trade Term	3 Months	1 Year	ITD-Ann.	ITD-Cum.
Total Synthetic		2.23%	13.08%	4.58%	16.55%
Alpha Pool		1.57%	4.80%	3.04%	10.77%
LTIF Syn+Alpha Pool	May'14-Aug'17	3.81%	17.88%	7.62%	27.32%
Benchmark		2.98%	11.92%	4.35%	15.67%
ALPHA		0.83%	5.83%	3.27%	11.64%



Master Custody Account

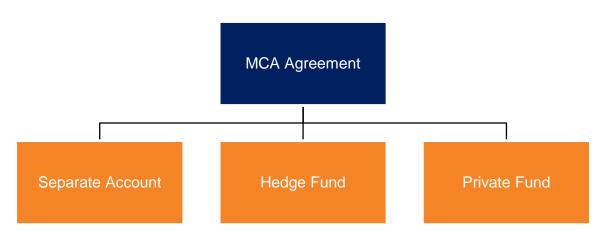
MCA's are strategic partnerships that benefit the manager and client.

Key Attributes:

- ➤ Better alignment of interest between the parties.
- Fiduciary standards at relationship versus at the fund level.
- ➤ Ability to invest in best ideas through separate accounts.
- > Fee savings



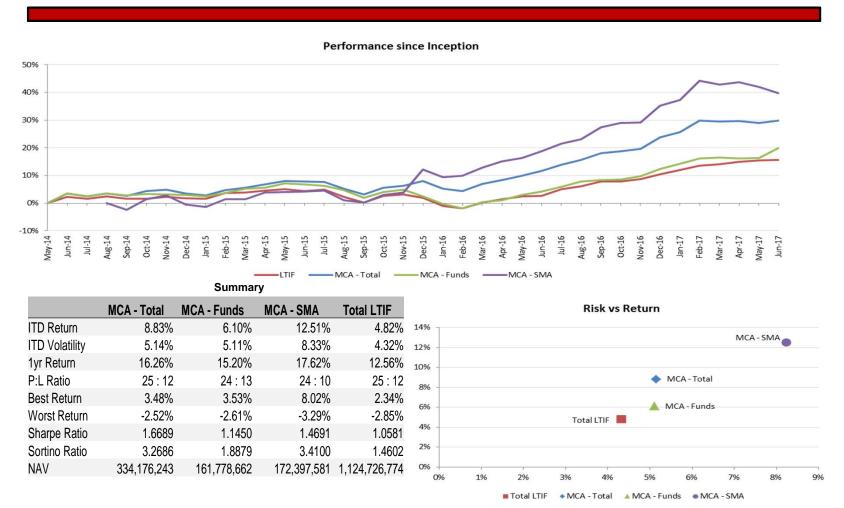
Master Custody Account



- ➤ MCA governs the entire relationship with a manager, making him a fiduciary at the aggregate level.
- > Standard fees are paid for the Hedge Fund and Private Fund based on performance quarterly.
- ➤ The Separate Account pays no fees quarterly.
- ➤ At year end, the net performance of all three accounts is calculated based on a lower relationship level fee, saving the LTIF money.
- ➤ In addition to fee savings, the separate accounts allow LTIF staff to invest additional capital in a manager's best ideas.

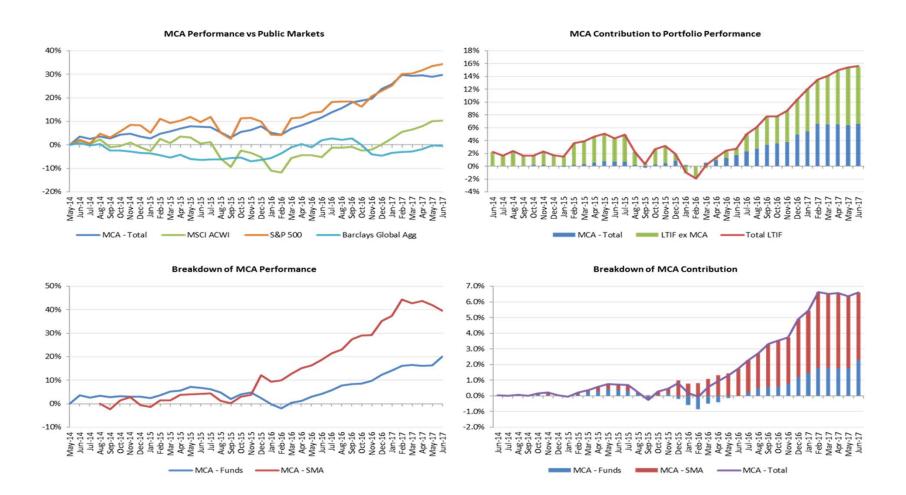


MCA Program Overview





MCA Program Overview





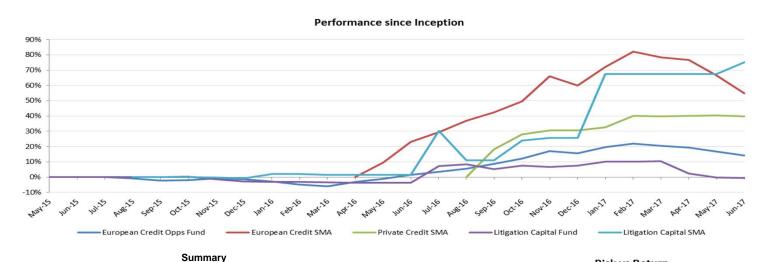
Incentive Fee

Hard Hurdle

20.00%

N/A

MCA Program Overview



	European Credit Opps Fund	European Credit SMA	Private Credit SMA	Litigation Capital Fund	Litigation Capital SMA	Total
NAV	11,204,087	23,615,992	4,029,006	5,772,814	1,932,858	46,554,757
ITD Return	5.61%	31.28%	39.88%	-1.91%	30.89%	7.32%
ITD Volatility	7.02%	22.78%	18.85%	10.26%	33.39%	11.33%
1yr Return	8.43%	8.59%	n/a	-10.60%	28.71%	5.88%
P:L Ratio	12 : 13	9:6	8:3	8 : 17	8 : 11	12 : 13
Best Return	4.16%	12.42%	18.29%	11.56%	33.19%	7.99%
Worst Return	-2.26%	-9.14%	-0.42%	-7.15%	-14.67%	-5.82%
Sharpe Ratio	0.7487	1.3510	2.0854	-0.2193	0.9138	0.6205
Sortino Ratio	2.2753	3.1138	64.4912	-0.3564	2.0801	1.2029
ITD \$ P&L	1,204,087	2,230,940	1,029,006	-3,425	977,036	5,437,644
Management Fee	2.00%	0.00%	1.00%	1.50%	0.00%	1.50%

15.00%

N/A

20.00%

N/A

0.00%

N/A

20.00%

N/A

0.00%





MCA Program Overview

Fee Savings

	Investment		Performance	Performance N			ard Hurdle A	pprox. Mgt A	pprox. Perf	Approx.
	Date	Allocation	ITD	Annualized %	t Fee	Fee		Fees	Fees	Total Fees
Manager 1										
European Credit Opportunities Fund, LP	06/30/2015	10.305.588	19.64%	11.99%	2.00%	20.00%	n/a	323,069	555,005	878,074
European Credit SMA	04/30/2016	18.512.954			0.00%	0.00%	n/a	0	0	(
Litigation Capital	05/31/2015	6,068,371			1.50%	20.00%	n/a	144,284	234,531	378,814
Litigation Capital SMA	08/31/2015	2,412,650			0.00%	0.00%	n/a	0	0	,
Private Credit SMA	08/31/2016	3,684,060	32.52%	32.52%	1.00%	15.00%	n/a	14,670	136,106	150,776
MCA Wrapper	08/31/2016	27,161,277			1.50%	20.00%	n/a	0	0	(
							Savings	482,023	925,642	1,407,664
Manager 2										
Using Standard Terms	09/30/2014	8,168,779	14.83%	6.11%	1.50%	20.00%	n/a	284,517	202,116	486,632
Using Negotiated Terms	09/30/2014	8,168,779	14.83%	6.11%	1.50%	15.00%	5.00%	284,517	44,345	328,863
							Savings	0	157,771	157,773
Manager 3										
Fund 3.1 (Standard)	03/31/2015	13,297,689	13.03%	6.91%	0.75%	20.00%	n/a	184,155	160,525	344,680
SMA 3.1 (Negotiated)	03/31/2015	13,519,745	34.33%	17.47%	1.00%	20.00%	5.00%	252,038	664,438	916,476
MCA Wrapper	03/31/2015	26,817,435	23.68%	12.29%	1.00%	15.00%	5.00%	497,579	560,471	1,058,050
							Savings	(61,385)	264,492	203,107
Manager 4										
Fund 4.1 (Standard)	11/30/2014	10,058,088	9.97%	4.48%	1.50%	20.00%	n/a	325,642	299,379	625,023
SMA 4.1 (Negotiated)	12/31/2014			1.26%	1.00%	15.00%	6.00%	229,461	0	229,463
MCA Wrapper	11/30/2014	20,976,053	7.65%	3.46%	1.00%	15.00%	6.00%	440,889	137,457	578,346
							Savings	114,214	161,922	276,136
Manager 5										
Using Standard Terms	02/29/2016	3,362,848	2.83%	2.83%	2.00%	20.00%	n/a	58,456	43,544	102,000
Using Negotiated Terms	02/29/2016	3,352,455	-0.19%	-0.19%	0.00%	0.00%	n/a	0	0	(
							Savings	58,456	43,544	102,000
Manager 6										
Using Standard Terms	04/30/2016	4,667,853			1.50%	15.00%	n/a	50,366	99,091	149,458
Using Negotiated Terms	04/30/2016	4,732,056	26.61%	26.61%	0.00%	0.00%	n/a	0	0	(
							Savings	50,366	99,091	149,458
Manager 7										
Using Standard Terms	07/31/2014	20,108,479			1.75%	20.00%	n/a	867,949	1,383,533	2,251,482
Using Negotiated Terms	07/31/2014	20,106,226	27.12%	10.07%	1.25%	20.00%	6.50%	619,963	1,037,804	1,657,768
							Savings	247,985	345,729	593,715
Manager 8										
Using Standard Terms	08/31/2014				1.50%	20.00%	n/a	1,178,138	2,841,949	4,020,087
Using Negotiated Terms	08/31/2014	32,786,160	27.63%	10.62%	1.00%	20.00%	n/a	785,425	2,769,295	3,554,720
							Savings	392,713	72,655	465,367
Total		102,755,484	27.95%	10.36%				1,284,372	2,070,846	3,355,217



Appendix - Staff

Name	Title	Responsibilities	Educational Degrees	Professional Certifications	Years of Experience
Tim Barrett	Associate Vice Chancellor & Chief Investment Officer	Hired in 2013. Responsibilities include investment oversight for \$1 billion total return pool of endowments. Work with the IAC to set risk profile, benchmarks and asset allocation; supervises the team's identification of external investment managers. Prior experience includes serving as CIO for a large public pension and a large corporate pension.	BS - University of Montana MSBA - San Diego State University	CFA	21
Dan Parker	Deputy CIO	Hired in 2016. He shares broad responsibility across the portfolio and focuses on public and private equity. Prior experience includes a large endowment, a top-tier asset manager and bulge-bracket investment banking.	BA - Tulane University MBA - William & Mary		18
Michael Nichols	Senior Investment Officer	Hired in 2010. Has been involved across asset classes, establishment of MCA contracts and assists in portfolio analytics. Currently focused on credit and diversifying assets. Prior experience in electronics and financial database solutions.	BS – University of Texas in Dallas MSBA - Texas Tech University	CAIA	6
Chris Gailey	Operations Manager	Hired in 2003. Oversees all aspects of cash management, contracting and administration of the LTIF, including relationships with custodian, consultant, performance reporting and legal counsel.	BS - Texas Tech University		18
David Barlow	Senior Analyst	Hired in 2012. Performs analysis and due diligence on current and prospective investments. Assists in monitoring investments across public and private equity and private real assets. Maintains many of the back office processes.	BA - University of Texas in Austin MSBA - University of North Texas	CAIA	5
Leslie Perrydore	Associate	Hired in 2014. Provides executive and administrative assistance to the Chief Investment Officer and the Office of Investments to ensure the smooth operation and functioning of the office.			