MU Retirees Association

Retirement Plan Update
October 14, 2017

Retirement Plan - Returns by Asset Class

FY07 19.70%	FY08 -5.70%	FY09 -18.40%	FY10 12.70%	FY11 18.90%	FY12 1.10%	FY13 10.60%	FY14 16.20%	FY15 1.10%	FY16 -0.30%	FY17 12.40%
EM Eq 47.80%	TIPs 15.10%	Fixed Inc 0.90%	EM Eq 23.90%	US Eq 34.50%	TIPs 11.70%	US Eq 21.40%	US Eq 25.20%	Pvt EQ 14.60%	Real Est 10.80%	EM Eq 21.10%
Intl Eq 26.30%	Real Est 9.20%	TIPs -1.40%	Pvt EQ 18.50%	Intl Eq 32.80%	HY 8.00%	Intl Eq 17.70%	Intl Eq 25.10%	Real Est 13.60%	EM Debt 7.60%	Intl Eq 20.30%
US Eq 20.80%	Fixed Inc 7.30%	Pvt EQ -9.10%	US Eq 17.00%	EM Eq 26.90%	Pvt EQ 6.20%	HF 10.00%	Pvt EQ 18.70%	US Eq 7.40%	Pvt EQ 7.20%	US Eq 18.40%
Real Est 19.60%	HF 6.50%	HF -14.00%	HF 15.50%	Pvt EQ 15.90%	EM Debt 6.10%	Real Est 8.50%	EM Eq 14.70%	HF 3.70%	US Eq 2.30%	Pvt EQ 16.20%
HF 6.90%	Pvt EQ 0.60%	Real Est -19.80%	TIPs 10.90%	EM Debt 14.50%	Real Est 4.70%	HY 6.60%	Real Est 11.00%	Bank Lns 0.30%	TIPs 2.30%	HY 11.10%
Fixed Inc 4.60%	EM Eq -0.10%	US Eq -24.00%	Intl Eq 8.40%	HY 12.60%	Fixed Inc 4.70%	Bank Lns 5.90%	HY 10.40%	HY 0.20%	HY 0.20%	Real Est 9.80%
	Intl Eq -11.90%	EM Eq -24.70%	Fixed Inc 8.10%	HF 12.50%	US Eq 4.00%	Pvt EQ 5.80%	EM Debt 10.40%	Risk Par. -2.80%	Risk Par. -0.20%	HF 8.40%
	US Eq -15.10%	Intl Eq -32.90%	Real Est -20.80%	Fixed Inc 10.60%	HF 0.80%	EM Eq 3.20%	HF 9.70%	Fixed Inc -3.80%	Fixed Inc -0.80%	EM Debt 7.30%
				Real Est 8.30%	Intl Eq -13.90%	EM Debt 2.30%	TIPs 8.50%	Intl Eq -4.70%	HF -3.30%	Risk Par. 5.90%
				TIPs 8.20%	EM Eq -15.70%	Fixed Inc -1.60%	Fixed Inc 8.40%	EM Eq -4.80%	Intl Eq -8.50%	Fixed Inc 5.00%
						TIPs -6.90%	Bank Lns 5.80%	EM Debt -5.20%	EM Eq -10.00%	TIPs -1.00%
								TIPs -10.50%		Commod. -7.70%

Overview

Summary of FY17 Activity

(As of June 30, 2017 – in $ thousands)

	Beginning Balance	Contributions or Gifts	Benefits or Distributions	Investment Income	Ending Balance
Retirement	$3,221,000	$112,000	($231,000)	$384,000	$3,486,000

	Total Pension Liability	Plan Assets	Unfunded Liability	Funded Status
June 30, 2016	$3,879,000	$3,221,000	$658,000	83%
June 30, 2017	$4,008,000	$3,486,000	$522,000	87%

One Year Returns by Asset Sector

(as of June 30, 2017)

Asset Sector	1 Year Actual	1 Year Benchmark	Variance
Global Equity	21.7	18.1	3.6
Private Equity	16.2	12.5	3.7
Hedge Funds	8.4	4.2	4.2
Real Estate	9.8	7.4	2.4
Global Fixed Income	5.0	(2.2)	7.2
Opportunistic Debt	7.7	6.4	1.3
Inflation-Linked Bonds	(1.0)	(0.1)	(0.9)
Emerging Markets Debt	7.3	4.8	2.5
Risk Parity	5.9	5.2	0.7
Commodities	(7.8)	(8.1)	0.3

Total Portfolio Returns

(as of June 30, 2017)

	1 Year Actual	1 Year Benchmark	Policy Objective
Total Portfolio	**12.4**	**9.9**	**7.75**

- For Fiscal Year 2017, the Retirement Fund returned 12.4%, exceeding its benchmark by 2.5%. <u>This outperformance in the execution of the policy portfolio created additional value of approximately $84 million</u>.

- For the year, equities – both public and private – represented the largest absolute returns, with most other asset classes delivering solid returns. The only exceptions were TIPs and commodities which both experienced losses due to falling oil prices and diminished inflation expectations.

Longer-Term Returns

(as of June 30, 2017)

	Retirement Plan		
	Actual	Benchmark	Policy Objective
3 Year Return	**4.3**	**3.6**	**7.75**
5 Year Return	**7.8**	**7.7**	**7.75**
7 Year Return	**8.3**	**8.4**	**7.75**
10 Year Return	**4.3**	**4.5**	**7.75**

- For some perspective on the 10-year returns, the 60/40 Global Passive Proxy Portfolio annualized return was 4.4% over the same time period.

Asset Allocation Objectives

- Reduce public equity allocation
- Reduce credit risk exposure
- Increase US TIPs and US Treasuries
- Expand portable alpha program
- Improve portfolio balance
- Reduce portfolio risk

Asset Allocation Changes

(approved by the Board of Curators – September 28, 2017)

	Prior	New
Global Equity	**37%**	**32%**
Private Equity	**10%**	**10%**
Private Debt	**0%**	**3%**
Global Fixed Income	**4%**	**0%**
Sovereign Bonds	**0%**	**15%**
Inflation-Linked Bonds	**4%**	**17%**

	Prior	New
Emerging Markets Debt	**6%**	**0%**
Opportunistic Debt	**12%**	**0%**
Hedge Funds	**6%**	**0%**
Real Estate	**8%**	**8%**
Risk Balanced	**10%**	**10%**
Commodities	**3%**	**5%**

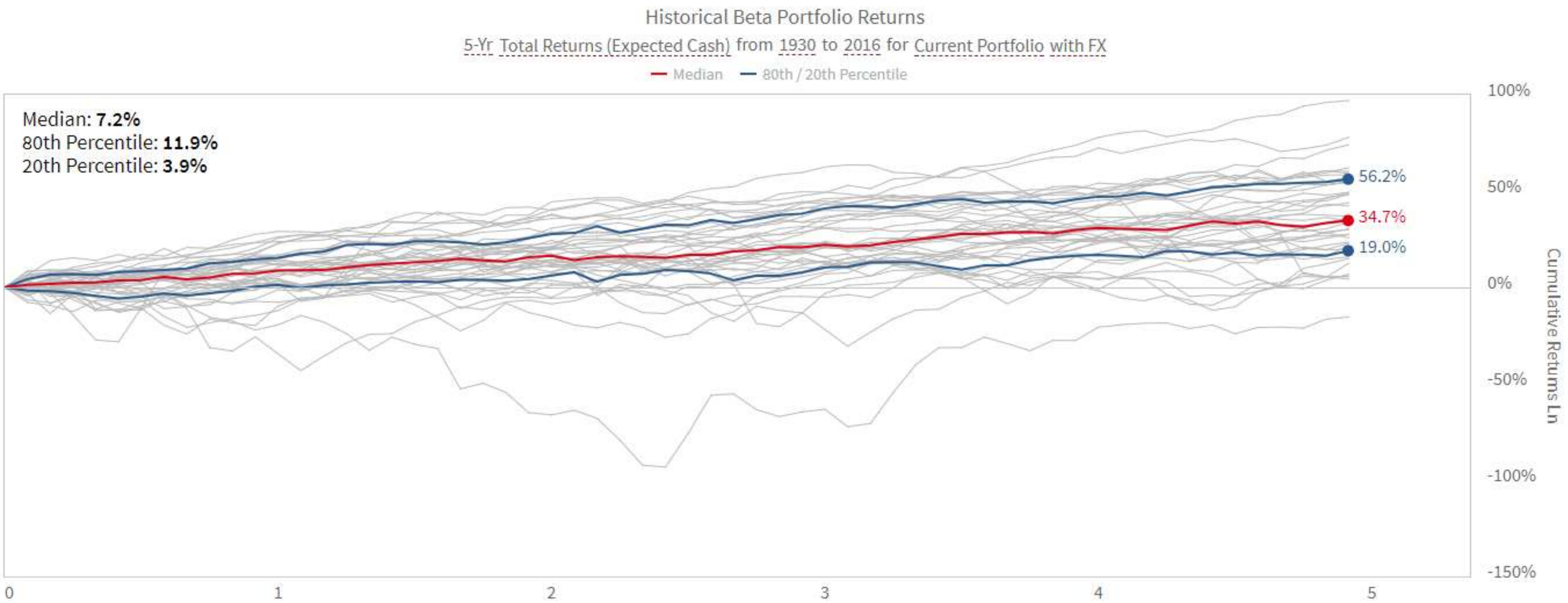
*Portable alpha program increases from 7% to 20% of capital.

Asset Allocation Changes

	Prior	New
Mean Expected Return	6.8%	7.2%
Standard Deviation	11.5%	10.2%
Sharpe Ratio	0.46	0.54
Actuarial Return Assumption	7.75%	?

* Revisions to actuarial assumptions will be considered by the Board of Curators at the December 2017 meeting.

New Portfolio Mix - Range of Outcomes



New Portfolio – Range of Rolling Five Year Outcomes (1930-2016)

Retirement Plan Investment Objectives

(approved by the Board of Curators – September 28, 2017)

Retirement Plan investments should be managed in a manner that maximizes returns ***while attempting to minimize losses during adverse economic and market events****, with an overall appetite for risk governed by the Plan's liability structure and the need to make promised benefit payments to members over time. This will be accomplished through* ***a more 'risk-balanced' portfolio that seeks meaningful diversification of assets, which necessarily means less equity risk and more long-term bond exposure relative to peers****. To offset potentially lower returns from a more risk-balanced portfolio, a key component of this strategy includes a less common, yet prudent, program of return enhancement commonly referred to in the investment industry as portable alpha. These investment objectives seek to prioritize the long-term structural needs of the Retirement Plan over short-term performance comparisons of the investment portfolio relative to peers.*