



TMRS Quarterly Summary

Period Ended: December 31, 2018

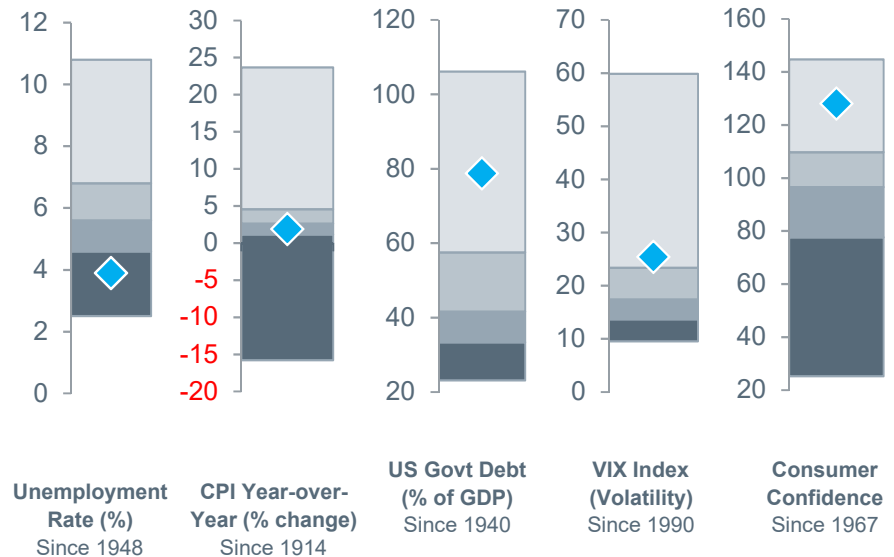


Fourth Quarter Economic Environment

Key Economic Indicators

The fourth quarter of 2018 was characterized by a heightened level of volatility and negative returns for the majority of risk assets. Though equity markets experienced an initial decline in October, the strongest risk-off environment emerged in December as global growth forecasts, inflation expectations, and corporate earnings expectations began to roll over in unison. During the quarter, the Federal Reserve, European Central Bank, and International Monetary Fund lowered 2019 GDP growth forecasts across regions, and the 5Y/5Y inflation expectation rate fell from nearly 2.3% at the start of the quarter to 1.9% at quarter-end. In a move that proved to be more controversial than many anticipated, the FOMC raised the target range for the federal funds rate by 0.25% for the fourth time in 2018 during its December meeting, resulting in a target range of 2.25% to 2.5%. US Economic data remained strong, with non-farm payrolls up 312,000 in December on a 3.9% unemployment rate. While the odds of a recession occurring in 2019 remain low, leading indicators such as falling oil prices, a flattening yield curve, declining consumer confidence and a subdued housing market contributed to negative investor sentiment at year-end.

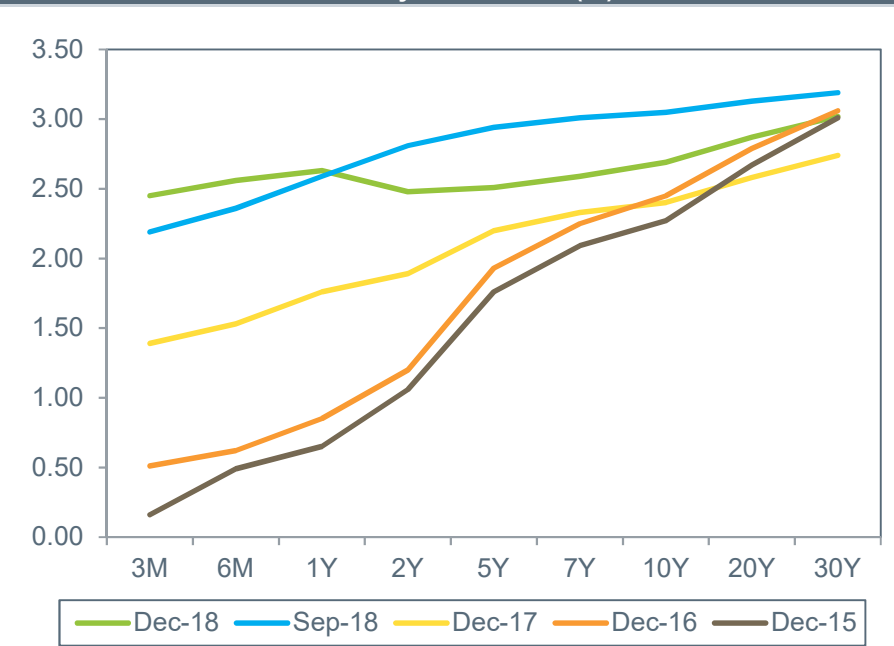
Key Economic Indicators



Economic Indicators

	Dec-18	Sep-18	Dec-17	Dec-15	20 Yr
Federal Funds Rate (%)	2.40 ▲	2.18	1.33	0.20	1.94
Breakeven Infl. - 1 Yr (%)	-2.84 ▼	1.18	0.85	0.85	N/A
Breakeven Infl. - 10 Yr (%)	1.71 ▼	2.14	1.98	1.58	N/A
CPI YoY (Headline) (%)	1.9 ▼	2.3	2.1	0.7	2.2
Unemployment Rate (%)	3.9 ▲	3.7	4.1	5.0	5.9
Real GDP YoY (%)	N/A	3.0	2.5	2.0	2.2
PMI - Manufacturing	54.3 ▼	59.5	59.4	48.4	52.8
USD Total Wtd Idx	91.79 ▲	90.11	87.47	94.25	86.26
WTI Crude Oil per Barrel (\$)	45.4 ▼	73.3	60.4	37.0	60.1
Gold Spot per Oz (\$)	1,282 ▲	1,193	1,303	1,061	879

Treasury Yield Curve (%)



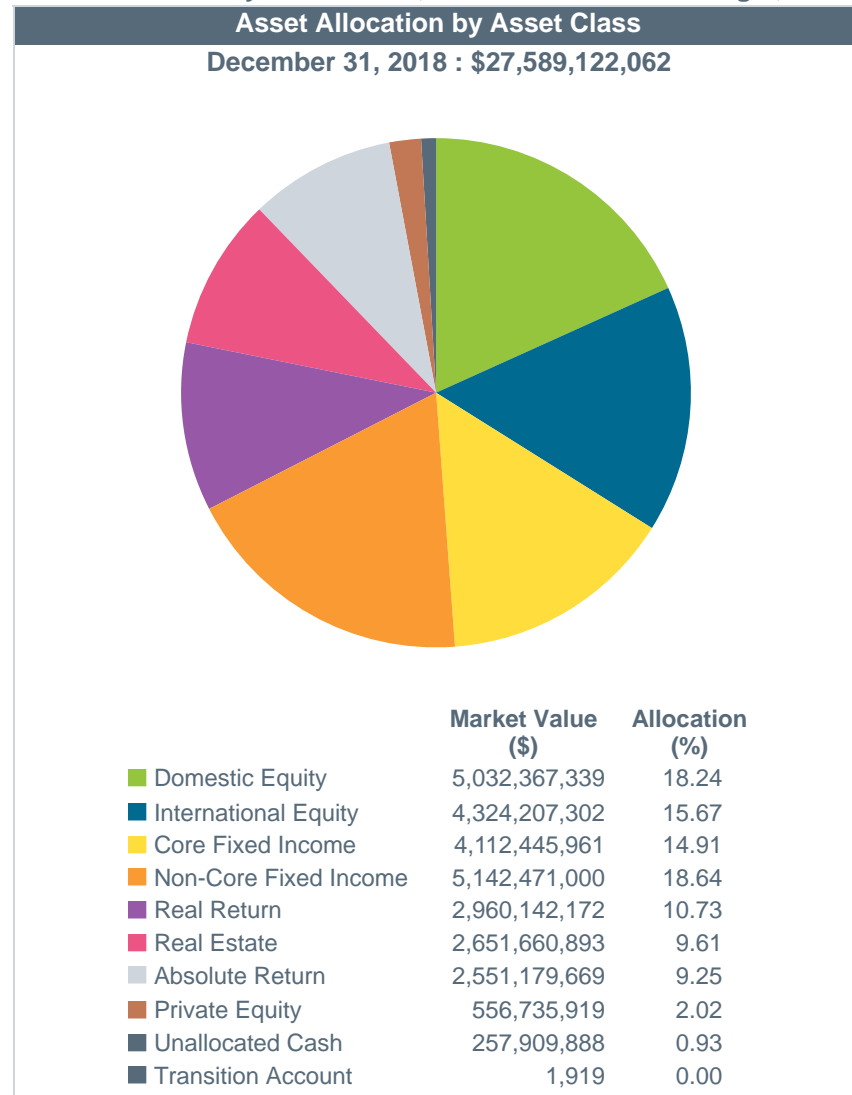
Market Performance (%)

	QTD	CYTD	1 Yr	5 Yr	10 Yr
S&P 500 (Cap Wtd)	-13.52	-4.38	-4.38	8.49	13.12
Russell 2000	-20.20	-11.01	-11.01	4.41	11.97
MSCI EAFE (Net)	-12.54	-13.79	-13.79	0.53	6.32
MSCI EAFE SC (Net)	-16.05	-17.89	-17.89	3.06	10.51
MSCI Emg Mkts (Net)	-7.47	-14.58	-14.58	1.65	8.02
Bloomberg US Agg Bond	1.64	0.01	0.01	2.52	3.48
ICE BofAML 3 Mo US T-Bill	0.56	1.87	1.87	0.63	0.37
NCREIF ODCE (Gross)	1.76	8.35	8.35	10.41	7.00
FTSE NAREIT Eq REIT (TR)	-6.73	-4.62	-4.62	7.90	12.12
HFRI FOF Comp	-4.85	-3.92	-3.92	1.42	3.13
Bloomberg Cmdb (TR)	-9.41	-11.25	-11.25	-8.80	-3.78

Treasury data courtesy of the US Department of the Treasury. Economic data courtesy of Bloomberg Professional Service. Breakeven Inflation does not have 20 years of history; therefore, its 20-year average is shown as N/A.

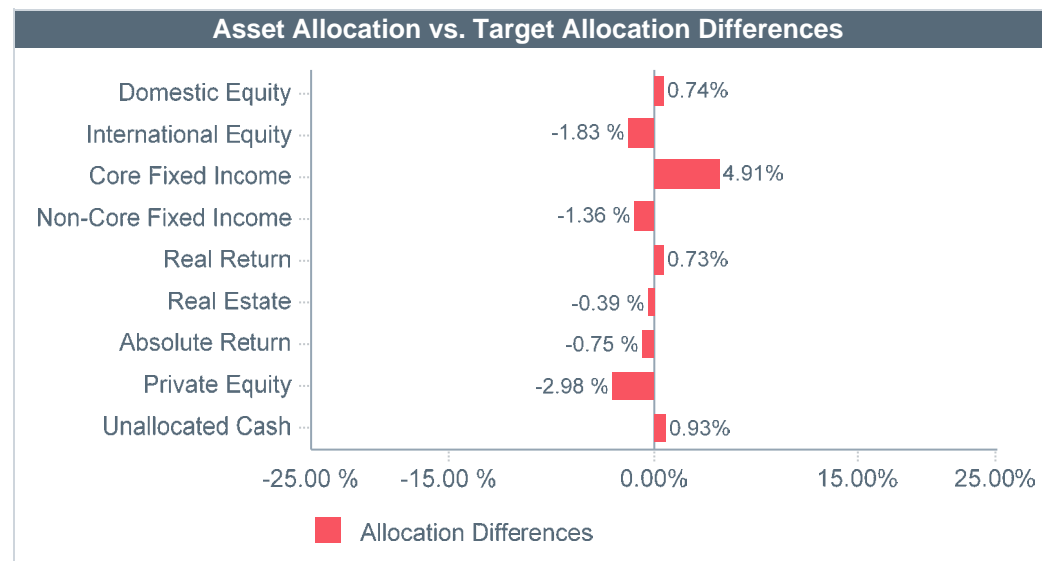


Asset Allocation by Asset Class, Asset Allocation vs. Target, and Schedule of Investable Assets



Asset Allocation vs. Target Allocation

	Market Value (\$)	Allocation (%)	Target (%)	Minimum (%)	Maximum (%)
Total Fund	27,589,122,062	100.00	100.00	-	-
Domestic Equity	5,032,367,339	18.24	17.50	12.50	22.50
International Equity	4,324,207,302	15.67	17.50	12.50	22.50
Core Fixed Income	4,112,445,961	14.91	10.00	5.00	15.00
Non-Core Fixed Income	5,142,471,000	18.64	20.00	15.00	25.00
Real Return	2,960,142,172	10.73	10.00	5.00	15.00
Real Estate	2,651,660,893	9.61	10.00	5.00	15.00
Absolute Return	2,551,179,669	9.25	10.00	5.00	15.00
Private Equity	556,735,919	2.02	5.00	0.00	10.00
Unallocated Cash	257,909,888	0.93	0.00	0.00	10.00



Schedule of Investable Assets

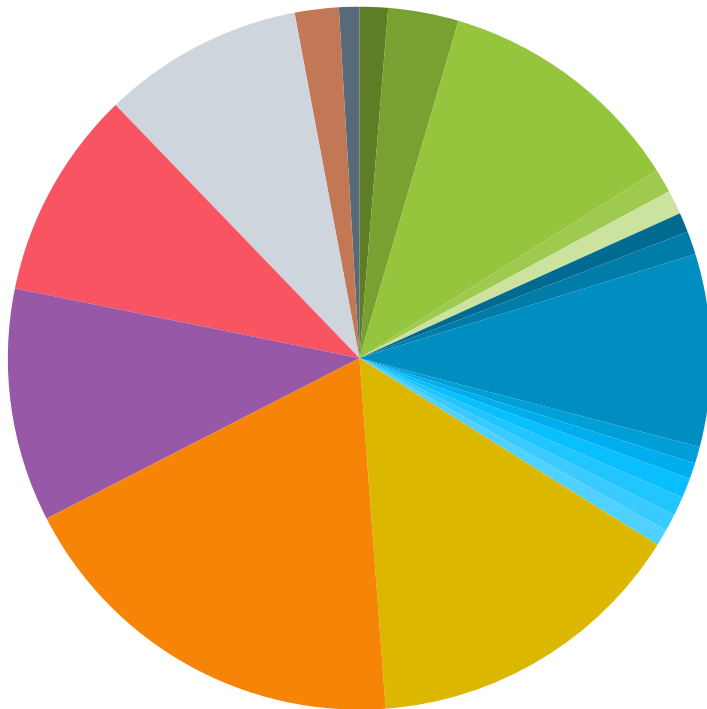
Periods Ending	Beginning Market Value (\$)	Net Cash Flow (\$)	Gain/Loss (\$)	Ending Market Value (\$)	% Return	Unit Value
CYTD	28,433,178,555	-149,031,425	-695,025,068	27,589,122,062	-2.11	97.89

Performance shown is gross of fees and provided by State Street. Allocations shown may not sum up to 100% exactly due to rounding. Gain/Loss figure includes both realized and unrealized gains and losses. Domestic Equity includes Citi Global Markets, Inc.

Texas Municipal Retirement System
 Asset Allocation By Manager - Equity Managers

As of December 31, 2018

December 31, 2018 : \$27,589,122,062



	Market Value (\$)	Allocation (%)
State Street Russell Fndmtl US Index NL (CF)	358,645,227	1.30
UBS US Equity Min Volatility Index (CF)	894,501,109	3.24
NT Collective Russell 3000 Index NL (CF)	3,167,936,735	11.48
Champlain Mid-Cap Core (SA)	303,774,385	1.10
Wellington US Small Cap Opp (SA)	307,407,464	1.11
State Street Russell RAFI Gbl Ex US Index NL (CF)	248,836,020	0.90
UBS World Ex US Min Volatility NL (CF)	296,198,202	1.07
NT Daily Collective ACW Ex US IMI Non-Lending (CF)	2,441,621,707	8.85
Wellington International Horizons (SA)	213,088,674	0.77
Lazard International Equity Plus (SA)	204,061,921	0.74
Wasatch International Small Cap Growth (SA)	251,764,948	0.91
Wellington International Small Cap Opp (SA)	240,030,556	0.87
Acadian Emerging Markets (SA)	219,182,875	0.79
William Blair Emerging Markets (SA)	209,422,399	0.76
Core Fixed Income	4,112,445,961	14.91
Non-Core Fixed Income	5,142,471,000	18.64
Real Return	2,960,142,172	10.73
Real Estate	2,651,660,893	9.61
Absolute Return	2,551,179,669	9.25
Private Equity	556,735,919	2.02
State Street Government STIF 6 (CF) - Cash	257,909,888	0.93
Citigroup Global Markets, Inc.	813,806	0.00
Transition Account	1,919	0.00

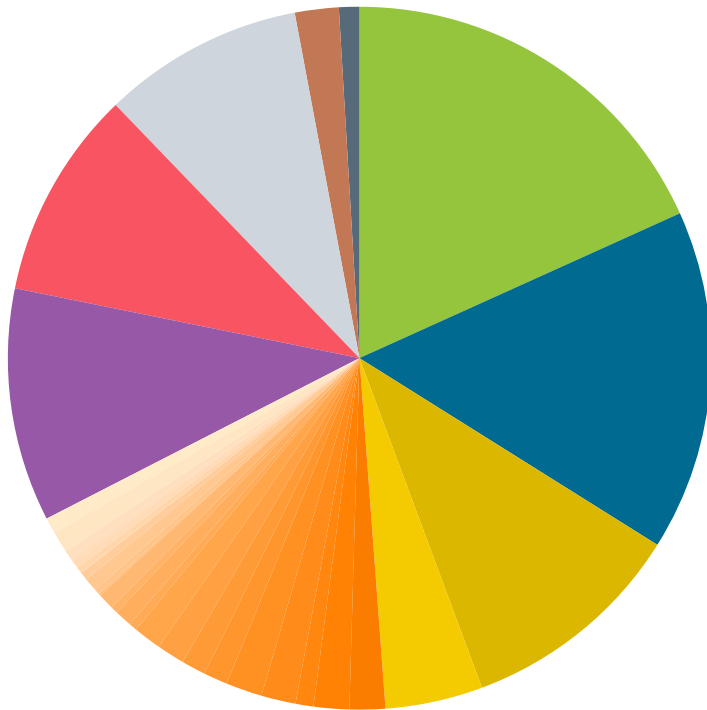
Allocations shown may not sum up to 100% exactly due to rounding. In December 2018, Sasco U.S. Contrarian Value (SA), Epoch U.S. Choice (SA), The Boston Company Mid Cap Opp Value (SA), and The Boston Company Small Cap Opp Value (SA) were terminated. These accounts held negative balances at quarter end and are currently in the process of liquidation. Proceeds were re-invested in UBS US Equity Min Volatility Index (CF) and NT Collective Russell 3000 Index NL (CF).



Texas Municipal Retirement System
 Asset Allocation By Manager - Fixed Income Managers

As of December 31, 2018

December 31, 2018 : \$27,589,122,062



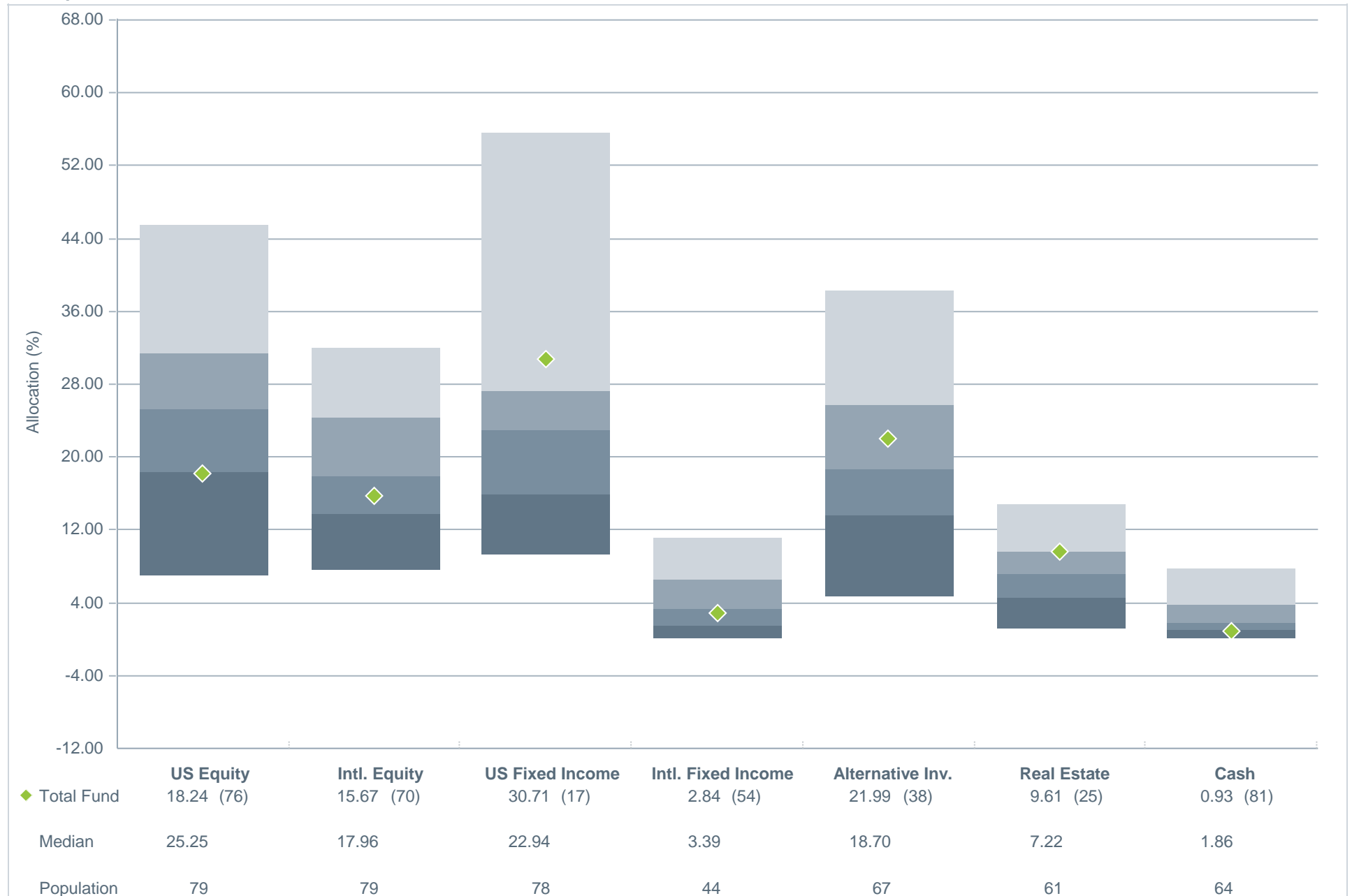
	Market Value (\$)	Allocation (%)
Domestic Equity	5,032,367,339	18.24
International Equity	4,324,207,302	15.67
BlackRock, Inc. Core (SA)	2,876,397,488	10.43
PIMCO Core Plus Fixed Income (SA)	1,236,048,473	4.48
Ellington RMBS/CMBS (SA)	453,265,137	1.64
Voya RMBS/CMBS (SA)	450,919,444	1.63
Waterfall Eden Fund, LP	225,971,800	0.82
Octagon Credit Advisors	436,690,909	1.58
GSO Capital Advisors	459,669,317	1.67
Columbia Management Investment Advisers, LLC	305,815,980	1.11
Neuberger Berman Investment Advisers, LLC (SA)	307,800,000	1.12
Alliance Bernstein Emerging Mkt Debt (SA)	355,563,690	1.29
BlueBay Emerging Mkt Debt (SA)	355,669,716	1.29
Bain Capital Credit, LP	101,410,800	0.37
Beach Point Total Ret Fd II, LP	220,375,800	0.80
BlackRock Global Credit Opportunities, LP	89,585,359	0.32
GoldenTree Asset Management, LP	207,479,200	0.75
Marathon CLO Equity Fund, LP	22,985,746	0.08
Marathon ECO Fund III, LP	72,232,857	0.26
Marathon SPS Fund, LP	169,575,863	0.61
PIMCO Corp Op Fd II Onshore, LP	101,307,616	0.37
Varde Private Debt Opportunities Fund, LP	9,814,830	0.04
Adams Street Private Credit Fund-A, LP	73,426,723	0.27
AG Direct Lending Fund III (Unlevered), LP	101,210,108	0.37
Golub Capital Pearls DLP, LP	37,708,259	0.14
H.I.G. Whitehorse Capital, LLC	113,482,437	0.41
TCW Brazos Fund, LLC	269,974,911	0.98
White Oak Summit Fund, LP	200,534,500	0.73
Real Return	2,960,142,172	10.73
Real Estate	2,651,660,893	9.61
Absolute Return	2,551,179,669	9.25
Private Equity	556,735,919	2.02
State Street Government STIF 6 (CF) - Cash	257,909,888	0.93
Transition Account	1,919	0.00

Allocations shown may not sum up to 100% exactly due to rounding.



Texas Municipal Retirement System
All Public Plans > \$1B-Total Fund
Plan Sponsor TF Asset Allocation

As of December 31, 2018



Parentheses contain percentile ranks. Allocations shown may not sum up to 100% exactly due to rounding. Intl Fixed Income consists of Alliance Bernstein Emerging Mkt Debt (SA), BlueBay Emerging Mkt Debt (SA), and Marathon ECO Fund III, LP.



Texas Municipal Retirement System
Comparative Performance

As of December 31, 2018

	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	2017	Since Incep.	Inception Date
Total Fund	-5.12	-2.11	-2.11	6.31	5.03	6.39	6.63	14.27	8.32	01/01/1989
Actual Allocation Benchmark	-5.16	-2.48	-2.48	5.72	4.48	5.91	5.67	13.30	7.71	
Difference	0.04	0.37	0.37	0.59	0.55	0.48	0.96	0.97	0.61	
Global Equity	-13.75	-10.10	-10.10	6.96	4.93	9.22	9.81	24.22	4.70	02/01/2008
Global Equity Benchmark	-13.20	-9.69	-9.69	7.00	4.85	9.15	9.73	23.84	4.61	
Difference	-0.55	-0.41	-0.41	-0.04	0.08	0.07	0.08	0.38	0.09	
Domestic Equity	-14.82	-6.22	-6.22	8.61	7.54	12.13	12.95	20.55	7.74	02/01/2008
Russell 3000 Index	-14.30	-5.24	-5.24	8.97	7.91	12.46	13.18	21.13	7.94	
Difference	-0.52	-0.98	-0.98	-0.36	-0.37	-0.33	-0.23	-0.58	-0.20	
International Equity	-12.47	-14.54	-14.54	4.68	1.45	5.61	6.16	29.41	1.19	02/01/2008
International Equity Benchmark	-11.88	-14.76	-14.76	4.39	0.85	5.07	5.71	27.81	0.76	
Difference	-0.59	0.22	0.22	0.29	0.60	0.54	0.45	1.60	0.43	
Core Fixed Income	1.43	0.11	0.11	2.33	2.70	2.34	3.73	3.93	7.44	01/01/1989
Fixed Income Benchmark	1.64	0.01	0.01	2.06	2.52	2.10	2.91	3.54	6.89	
Difference	-0.21	0.10	0.10	0.27	0.18	0.24	0.82	0.39	0.55	
Non-Core Fixed Income	0.16	2.55	2.55	6.16	N/A	N/A	N/A	8.06	4.78	10/01/2014
Non-Core Fixed Income Benchmark	0.24	2.65	2.65	5.08	N/A	N/A	N/A	5.50	3.53	
Difference	-0.08	-0.10	-0.10	1.08	N/A	N/A	N/A	2.56	1.25	

Performance shown is gross of fees and provided by State Street. Performance is annualized for periods greater than one year. Real Estate and Private Equity fund returns are calculated by Private Edge. Private Real Estate fund returns are lagged 1 quarter. Inception dates shown for the Private Real Estate and Private Equity funds and composites represent the first full quarter following initial funding. All other inception dates represent the first full month following initial funding.



Texas Municipal Retirement System
Comparative Performance

As of December 31, 2018

	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	2017	Since Incep.	Inception Date
Real Return	-3.81	-4.04	-4.04	3.61	1.87	2.22	N/A	8.32	2.85	02/01/2011
Real Return Benchmark	-3.45	-3.81	-3.81	4.36	2.43	1.98	4.10	9.91	2.98	
Difference	-0.36	-0.23	-0.23	-0.75	-0.56	0.24	N/A	-1.59	-0.13	
Real Estate	2.69	10.59	10.59	12.41	14.53	12.98	N/A	11.93	12.98	01/01/2012
Real Estate Benchmark	2.08	8.67	8.67	8.76	10.71	11.17	5.57	7.65	11.17	
Difference	0.61	1.92	1.92	3.65	3.82	1.81	N/A	4.28	1.81	
Absolute Return	-1.04	1.51	1.51	5.01	N/A	N/A	N/A	13.01	4.43	08/01/2014
Absolute Return Benchmark	-3.15	-0.96	-0.96	1.53	2.01	3.09	3.16	7.11	1.47	
Difference	2.11	2.47	2.47	3.48	N/A	N/A	N/A	5.90	2.96	
Absolute Return Direct Composite	-1.21	1.07	1.07	5.50	N/A	N/A	N/A	14.20	5.50	01/01/2016
Absolute Return Benchmark	-3.15	-0.96	-0.96	1.53	2.01	3.09	3.16	7.11	1.53	
Difference	1.94	2.03	2.03	3.97	N/A	N/A	N/A	7.09	3.97	
Private Equity	3.38	39.18	39.18	19.20	N/A	N/A	N/A	19.69	19.20	01/01/2016
Private Equity Benchmark	3.38	39.18	39.18	19.20	N/A	N/A	N/A	19.69	19.20	
Difference	0.00	0.00	0.00	0.00	N/A	N/A	N/A	0.00	0.00	
Russell 3000+3% Index (1 Qtr Lag)	7.92	21.11	21.11	20.59	16.86	20.37	15.37	22.27	20.59	
Difference	-4.54	18.07	18.07	-1.39	N/A	N/A	N/A	-2.58	-1.39	
TMRS Unallocated Cash (SA)	0.50	1.65	1.65	0.98	0.79	0.59	0.45	0.72	0.51	06/01/2008
FTSE 30 Day T-Bill Index	0.56	1.82	1.82	0.94	0.57	0.42	0.31	0.80	0.35	
Difference	-0.06	-0.17	-0.17	0.04	0.22	0.17	0.14	-0.08	0.16	

- RVK notes that for private market investments like Commercial Real Estate and Private Equity, for which there are no market prices, as are available for public securities, and for which an appraised value is calculated only quarterly, daily time weighted return calculations (public market return methodology) are imperfect at best and usually misleading. Real Estate and Private Equity fund returns are calculated by Private Edge.
- Please see Addendum for custom benchmark descriptions.

Performance shown is gross of fees and provided by State Street. Performance is annualized for periods greater than one year. Real Estate and Private Equity fund returns are calculated by Private Edge. Private Real Estate fund returns are lagged 1 quarter. Inception dates shown for the Private Real Estate and Private Equity funds and composites represent the first full quarter following initial funding. All other inception dates represent the first full month following initial funding.

Composite Benchmark Comments

The **Actual Allocation Benchmark** is calculated monthly using beginning of month asset class weights applied to each corresponding benchmark return and currently consists of the following:

- Russell 3000 Index
- International Equity Benchmark
- Fixed Income Benchmark
- Non-Core Fixed Income Benchmark
- Real Return Benchmark
- Real Estate Benchmark
- Absolute Return Benchmark
- Private Equity Benchmark
- FTSE 30 Day T-Bill Index

Asset Class Composite Benchmarks:

The **Global Equity Benchmark** is calculated monthly and consists of 50% Russell 3000 Index and 50% MSCI EAFE Index (USD) (Net) through 07/31/2010; a blend of the Russell 3000 Index, MSCI ACW Ex US IM Index (USD) (Net) and MSCI EAFE Index (USD) (Net) at beginning of month investment weights through 11/30/2012; and a blend of the Russell 3000 Index and MSCI ACW Ex US IM Index (USD) (Net) at beginning of the month weights thereafter.

The **International Equity Benchmark** is calculated monthly and consists of the MSCI EAFE Index (USD) (Net) through 07/31/2010; a blend of the MSCI ACW Ex US IM Index (USD) (Net) and MSCI EAFE Index (USD) (Net) at beginning of month investment weights through 01/31/2012; and the MSCI ACW Ex US IM Index (USD) (Net) thereafter.

The **Fixed Income Benchmark** is calculated monthly and consists of the Bloomberg US Gov't Crdt Lng Trm Bond Index through 06/30/2009; Bloomberg US Agg Bond Index thereafter.

The **Non-Core Fixed Income Benchmark** is calculated monthly using beginning of the month sub-asset class weights within the Non-Core Fixed Income Composite applied to each sub-asset class primary benchmark return.

The **Real Return Benchmark** is calculated monthly using beginning of the month sub-asset class weights within the Real Return Composite applied to each sub-asset class primary benchmark return.

The **Real Estate Benchmark** is calculated monthly and consists of the NCREIF ODCE Index (AWA) (Gross); interim months assume a 0.00% return. The return is composed of lagged and un-lagged returns in the same proportion as the market value of managers whose returns are being reported on a lagged versus non-lagged basis.

The **Absolute Return Benchmark** is calculated monthly and consists of the HFRI FOF: Dvf'd Index (1 Mo Lag).

The **Private Equity Benchmark** is set equal to the Composite return.

Real Estate Performance Comments

"Privately held real estate fund returns are one-quarter lagged and are provided by Private Edge. Quarterly returns are incorporated in the last month of that particular quarter. The returns for the first two months are zero.

Market values are previous quarter-end values as reported, rolled forward with current cash flows. Returns and market values provided by Private Edge are rolled into their respective Real Estate composite and the Total Plan composite.

Publicly traded real estate fund performance is non-lagged, reflecting monthly fluctuations. Detailed information regarding methodology can be found in the internal TMRS Performance Reporting Policy statement" (State Street Performance Team).

H/2 CP, LP is a publicly traded real estate fund, previously classified as non-public. Performance from 10/2015 - 12/2015 is revised to reflect the change in calculation methodology.

PORTLAND

CHICAGO

NEW YORK

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