



# TMRS Quarterly Summary

Period Ended: September 30, 2018

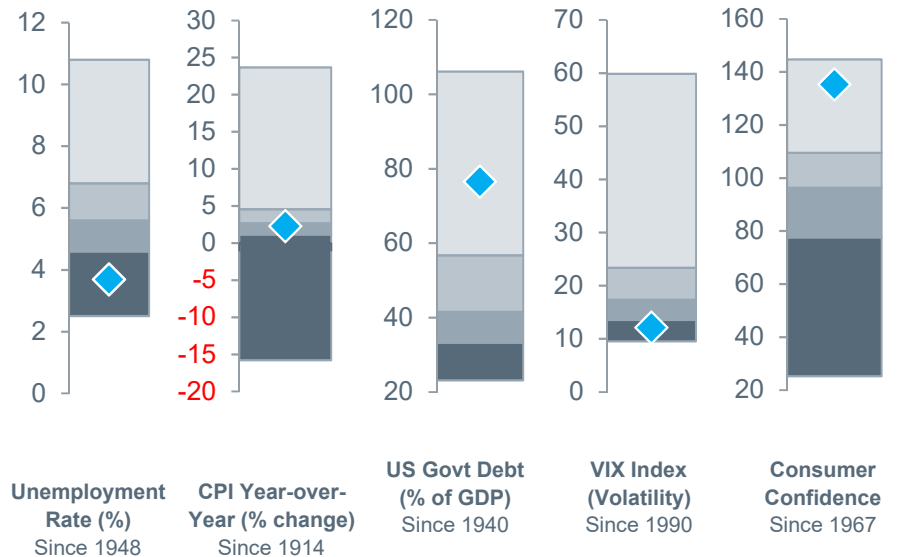


Third Quarter Economic Environment

Key Economic Indicators

Continued US economic growth and monetary policy divergence from global trade partners drove domestic equity and interest rate markets higher during the third quarter of 2018, while international growth broadly continued to slow. Geopolitical risks, particularly those driven by newly imposed trade tariffs, were cited as dampening near-term expectations for economic growth outside the US. The FOMC continued to raise policy rates, increasing the target range for the federal funds rate to 2.0% - 2.25% at the September meeting. The committee again cited both realized and expected labor market inflation conditions as major drivers behind their decision. The committee forecasted stable but slightly lower growth than previously anticipated, with annual GDP growth in 2018 expected to be 2.0% followed by a decrease in 2019 to 1.8%. US economic fundamentals broadly continued to strengthen over the third quarter. Hiring activity in August was revised higher, and hiring remained strong in September, resulting in a decline of the unemployment rate to 3.7%; the lowest level since 1969. In addition to strong employment, hourly earnings increased 2.8% year-over-year.

Key Economic Indicators



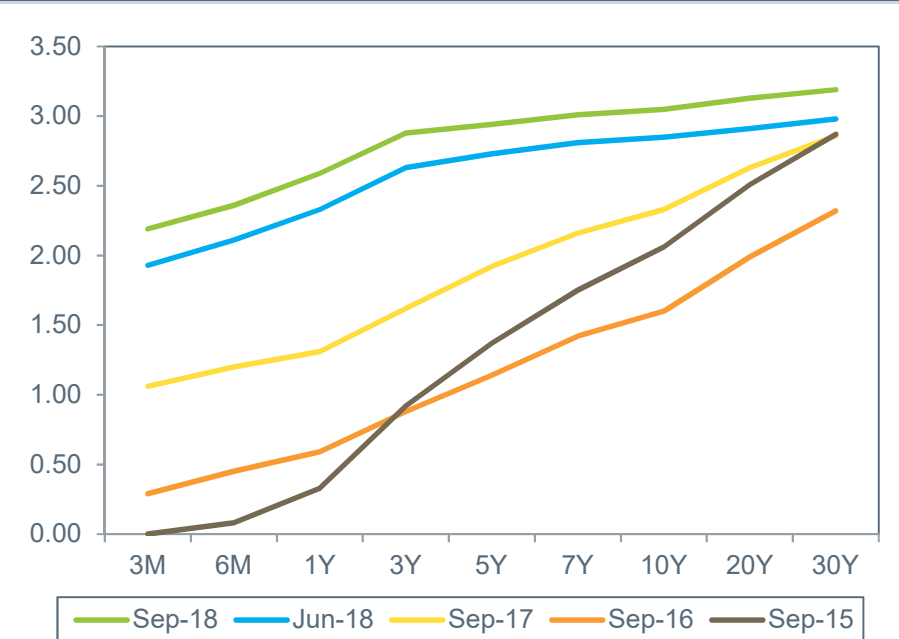
Economic Indicators

	Sep-18	Jun-18	Sep-17	Sep-15	20 Yr
Federal Funds Rate (%)	2.18 ▲	1.91	1.06	0.07	1.97
Breakeven Infl. - 1 Yr (%)	1.18 ▼	1.42	1.24	-1.75	N/A
Breakeven Infl. - 10 Yr (%)	2.14 ▲	2.13	1.85	1.43	N/A
CPI YoY (Headline) (%)	2.3 ▼	2.9	2.2	0.0	2.2
Unemployment Rate (%)	3.7 ▼	4.0	4.2	5.0	5.9
Real GDP YoY (%)	3.0 ▲	2.9	2.3	2.4	2.3
PMI - Manufacturing	59.8 ▼	60.2	60.2	50.1	52.7
USD Total Wtd Idx	90.11 ▲	89.97	88.10	92.10	86.31
WTI Crude Oil per Barrel (\$)	73.3 ▼	74.2	51.7	45.1	59.5
Gold Spot per Oz (\$)	1,193 ▼	1,253	1,280	1,115	868

Market Performance (%)

	QTD	CYTD	1 Yr	5 Yr	10 Yr
S&P 500 (Cap Wtd)	7.71	10.56	17.91	13.95	11.97
Russell 2000	3.58	11.51	15.24	11.07	11.11
MSCI EAFE (Net)	1.35	-1.43	2.74	4.42	5.38
MSCI EAFE SC (Net)	-0.88	-2.19	3.73	7.96	9.68
MSCI Emg Mkts (Net)	-1.09	-7.68	-0.81	3.61	5.40
Bloomberg US Agg Bond	0.02	-1.60	-1.22	2.16	3.77
ICE BofAML 3 Mo US T-Bill	0.49	1.30	1.59	0.52	0.34
NCREIF ODCE (Gross)	2.09	6.48	8.68	10.72	5.58
FTSE NAREIT Eq REIT (TR)	0.79	1.81	3.35	9.16	7.44
HFRI FOF Comp	0.21	0.94	3.02	3.17	2.55
Bloomberg Cmdbt (TR)	-2.02	-2.03	2.59	-7.18	-6.24

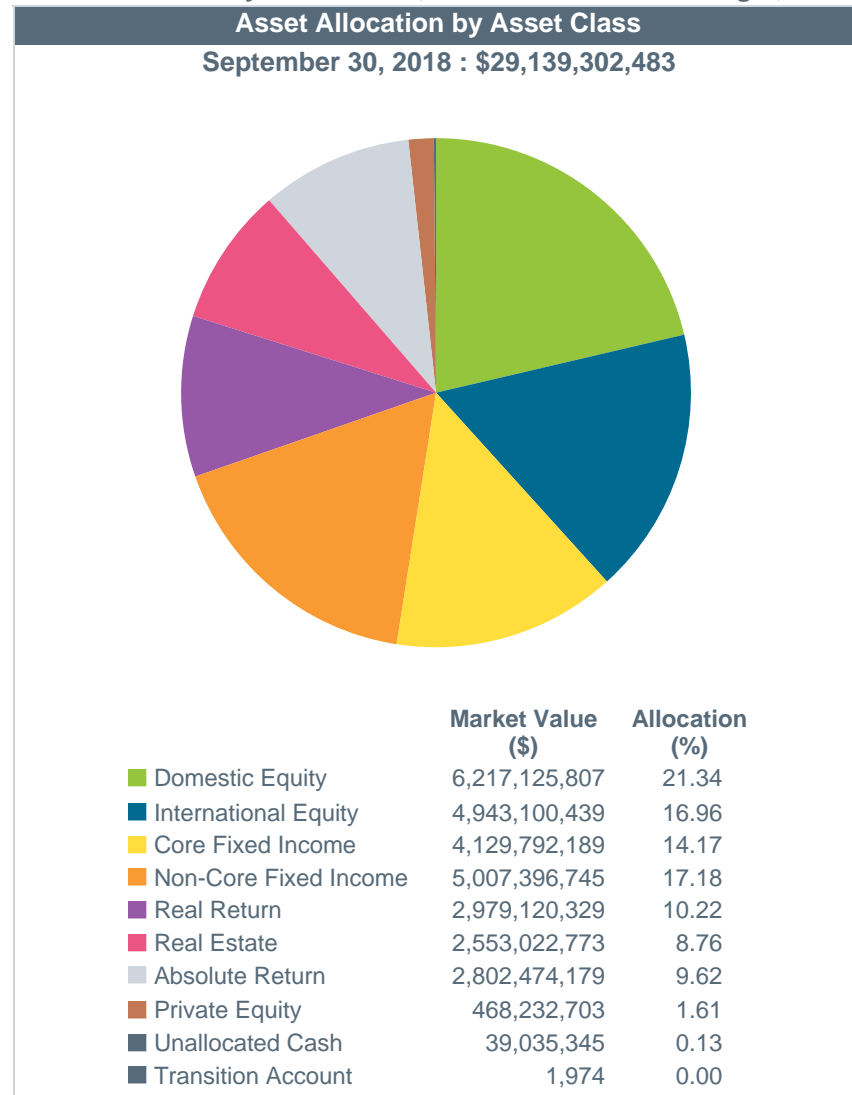
Treasury Yield Curve (%)



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.

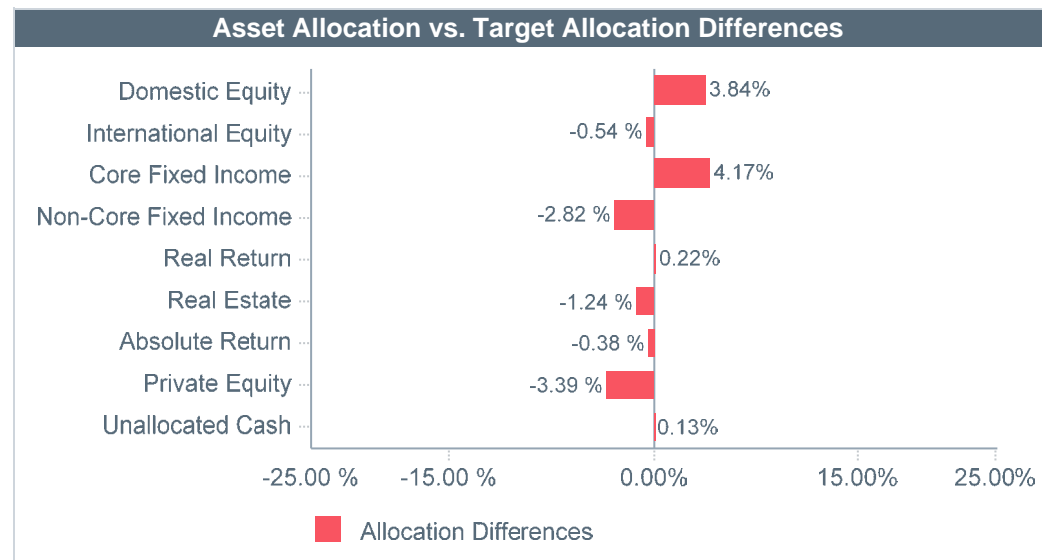


Asset Allocation by Asset Class, Asset Allocation vs. Target, and Schedule of Investable Assets



**Asset Allocation vs. Target Allocation**

	Market Value (\$)	Allocation (%)	Target (%)	Minimum (%)	Maximum (%)
Total Fund	29,139,302,483	100.00	100.00	-	-
Domestic Equity	6,217,125,807	21.34	17.50	12.50	22.50
International Equity	4,943,100,439	16.96	17.50	12.50	22.50
Core Fixed Income	4,129,792,189	14.17	10.00	5.00	15.00
Non-Core Fixed Income	5,007,396,745	17.18	20.00	15.00	25.00
Real Return	2,979,120,329	10.22	10.00	5.00	15.00
Real Estate	2,553,022,773	8.76	10.00	5.00	15.00
Absolute Return	2,802,474,179	9.62	10.00	5.00	15.00
Private Equity	468,232,703	1.61	5.00	0.00	10.00
Unallocated Cash	39,035,345	0.13	0.00	0.00	10.00



**Schedule of Investable Assets**

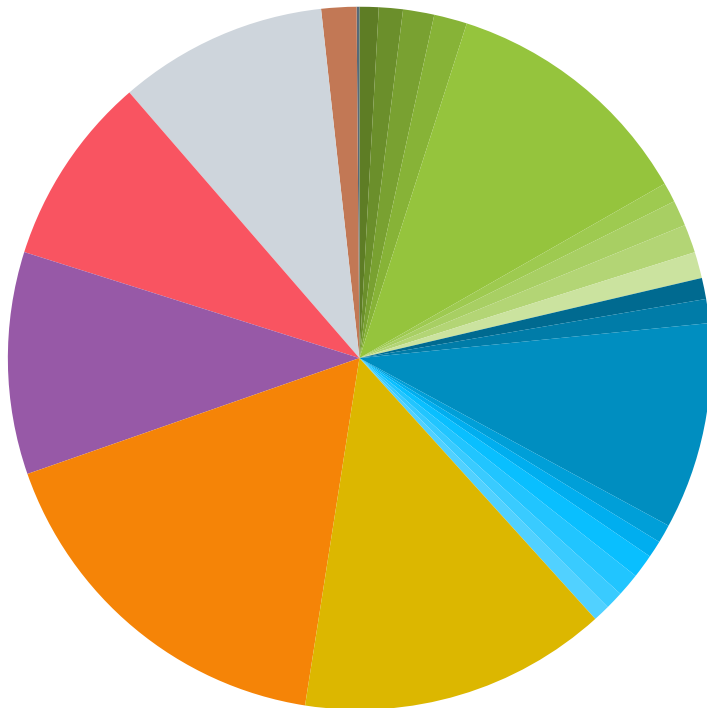
Periods Ending	Beginning Market Value (\$)	Net Cash Flow (\$)	Gain/Loss (\$)	Ending Market Value (\$)	% Return	Unit Value
CYTD	28,433,178,555	-108,174,015	814,297,943	29,139,302,483	3.08	103.08

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 September 30, 2018

September 30, 2018 : \$29,139,302,483



	Market Value (\$)	Allocation (%)
■ Sasco U.S. Contrarian Value (SA)	254,973,888	0.88
■ Epoch U.S. Choice (SA)	321,561,070	1.10
■ State Street Russell Fndmtl US Index NL (CF)	418,699,080	1.44
■ UBS US Equity Min Volatility Index (CF)	442,773,524	1.52
■ NT Collective Russell 3000 Index NL (CF)	3,438,065,151	11.80
■ The Boston Company Mid Cap Opp Value (SA)	264,638,621	0.91
■ Champlain Mid-Cap Core (SA)	343,673,497	1.18
■ Wellington US Small Cap Opp (SA)	380,016,140	1.30
■ The Boston Company Small Cap Opp Value (SA)	352,715,856	1.21
■ State Street Russell RAFI Gbl Ex US Index NL (CF)	282,704,788	0.97
■ UBS World Ex US Min Volatility NL (CF)	320,921,057	1.10
■ NT Daily Collective ACW Ex US IMI Non-Lending (CF)	2,767,718,997	9.50
■ Wellington International Horizons (SA)	247,114,477	0.85
■ Lazard International Equity Plus (SA)	227,581,886	0.78
■ Wasatch International Small Cap Growth (SA)	319,719,579	1.10
■ Wellington International Small Cap Opp (SA)	308,524,395	1.06
■ Acadian Emerging Markets (SA)	243,902,347	0.84
■ William Blair Emerging Markets (SA)	224,912,915	0.77
■ Core Fixed Income	4,129,792,189	14.17
■ Non-Core Fixed Income	5,007,396,745	17.18
■ Real Return	2,979,120,329	10.22
■ Real Estate	2,553,022,773	8.76
■ Absolute Return	2,802,474,179	9.62
■ Private Equity	468,232,703	1.61
■ State Street Government STIF 6 (CF) - Cash	39,035,345	0.13
■ Citigroup Global Markets, Inc.	8,980	0.00
■ Transition Account	1,974	0.00

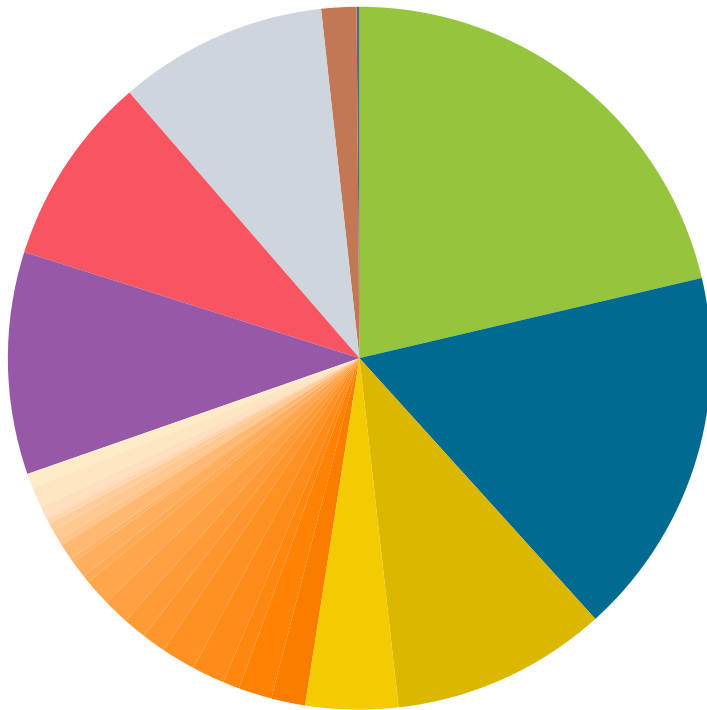
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Texas Municipal Retirement System  
 Asset Allocation By Manager - Fixed Income Managers

As of September 30, 2018

September 30, 2018 : \$29,139,302,483



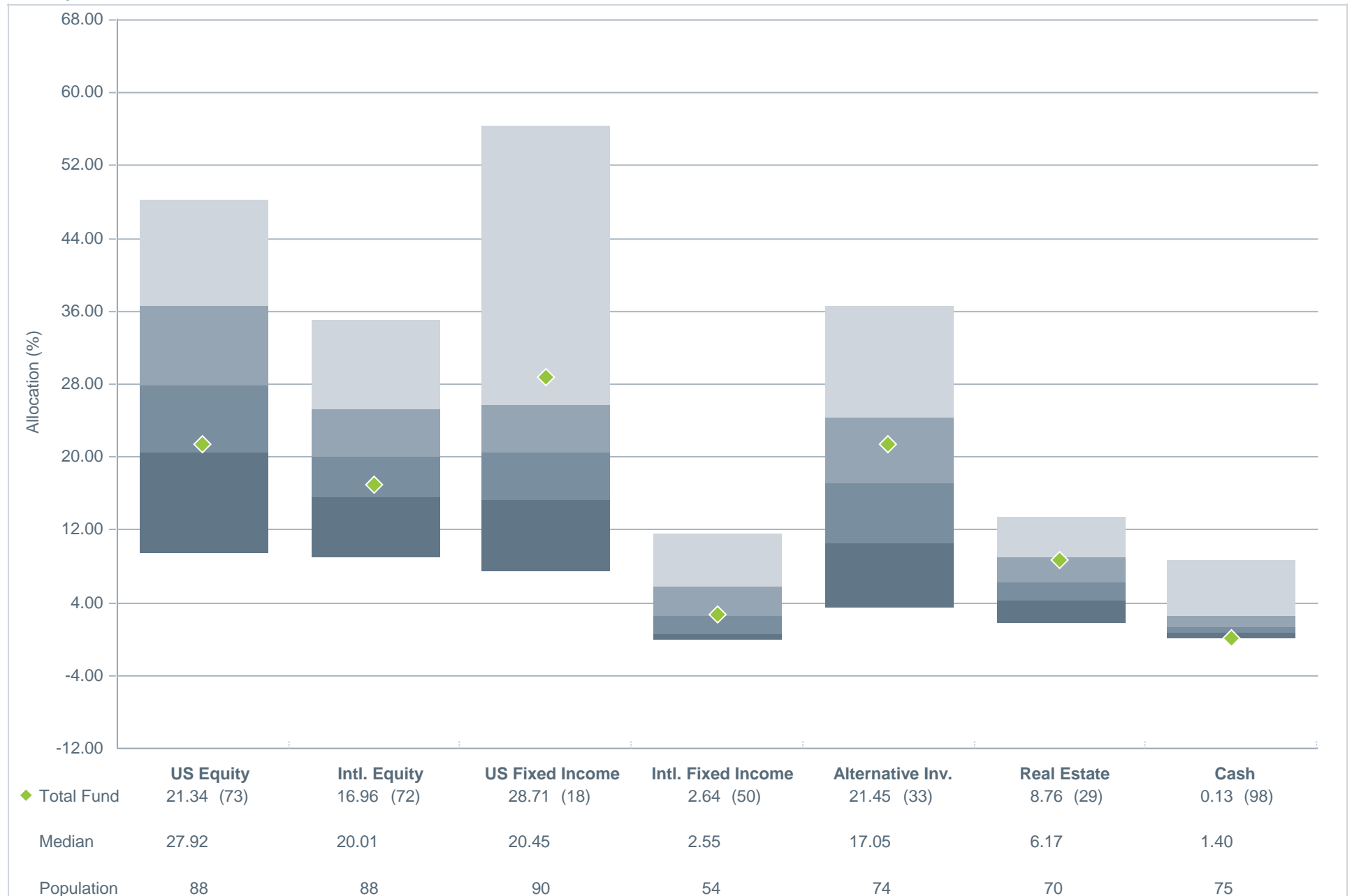
	Market Value (\$)	Allocation (%)
Domestic Equity	6,217,125,807	21.34
International Equity	4,943,100,439	16.96
BlackRock, Inc. Core (SA)	2,891,178,838	9.92
PIMCO Core Plus Fixed Income (SA)	1,238,613,351	4.25
Ellington RMBS/CMBS (SA)	454,803,038	1.56
Voya RMBS/CMBS (SA)	447,964,381	1.54
Waterfall Eden Fund, LP	222,366,000	0.76
Octagon Credit Advisors	436,831,529	1.50
GSO Capital Advisors	460,198,312	1.58
Columbia Management Investment Advisers, LLC	320,422,462	1.10
Neuberger Berman Investment Advisers, LLC	312,300,000	1.07
Alliance Bernstein Emerging Mkt Debt (SA)	352,584,932	1.21
BlueBay Emerging Mkt Debt (SA)	354,563,600	1.22
Bain Capital Credit, LP	102,445,600	0.35
Beach Point Total Ret Fd II, LP	224,778,200	0.77
BlackRock Global Credit Opportunities, LP	58,958,010	0.20
GoldenTree Asset Management, LP	210,350,000	0.72
Marathon CLO Equity Fund, LP	24,900,572	0.09
Marathon ECO Fund III, LP	63,019,200	0.22
Marathon SPS Fund, LP	142,536,909	0.49
PIMCO Corp Op Fd II Onshore, LP	100,434,361	0.34
Varde Private Debt Opportunities Fund, LP	10,000,000	0.03
Adams Street Private Credit Fund-A, LP	54,945,227	0.19
AG Direct Lending Fund III (Unlevered), LP	38,750,000	0.13
Golub Capital Pearls DLP, LP	36,865,619	0.13
H.I.G. Whitehorse Capital, LLC	105,896,341	0.36
TCW Brazos Fund, LLC	279,931,837	0.96
White Oak Summit Fund, LP	191,550,615	0.66
Real Return	2,979,120,329	10.22
Real Estate	2,553,022,773	8.76
Absolute Return	2,802,474,179	9.62
Private Equity	468,232,703	1.61
State Street Government STIF 6 (CF) - Cash	39,035,345	0.13
Transition Account	1,974	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 September 30, 2018



Parenteses 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 September 30, 2018

	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	2017	Since Incep.	Inception Date
<b>Total Fund</b>	<b>1.97</b>	<b>3.08</b>	<b>6.52</b>	<b>8.91</b>	<b>6.83</b>	<b>7.71</b>	<b>7.50</b>	<b>14.27</b>	<b>8.58</b>	<b>01/01/1989</b>
Actual Allocation Benchmark	2.03	2.82	5.97	8.30	6.33	7.23	7.27	13.30	7.96	
Difference	-0.06	0.26	0.55	0.61	0.50	0.48	0.23	0.97	0.62	
<b>Global Equity Composite</b>	<b>3.72</b>	<b>4.23</b>	<b>10.34</b>	<b>14.24</b>	<b>9.66</b>	<b>12.75</b>	<b>8.80</b>	<b>24.22</b>	<b>6.27</b>	<b>02/01/2008</b>
Global Equity Benchmark	4.05	4.04	10.08	14.09	9.44	12.57	8.65	23.84	6.12	
Difference	-0.33	0.19	0.26	0.15	0.22	0.18	0.15	0.38	0.15	
<b>Domestic Equity</b>	<b>6.59</b>	<b>10.10</b>	<b>17.17</b>	<b>16.81</b>	<b>13.18</b>	<b>16.62</b>	<b>11.86</b>	<b>20.55</b>	<b>9.56</b>	<b>02/01/2008</b>
Russell 3000 Index	7.12	10.57	17.58	17.07	13.46	16.86	12.01	21.13	9.71	
Difference	-0.53	-0.47	-0.41	-0.26	-0.28	-0.24	-0.15	-0.58	-0.15	
<b>International Equity</b>	<b>0.29</b>	<b>-2.36</b>	<b>2.70</b>	<b>10.70</b>	<b>5.15</b>	<b>8.13</b>	<b>5.22</b>	<b>29.41</b>	<b>2.49</b>	<b>02/01/2008</b>
International Equity Benchmark	0.39	-3.27	1.79	10.14	4.39	7.47	4.70	27.81	1.98	
Difference	-0.10	0.91	0.91	0.56	0.76	0.66	0.52	1.60	0.51	
<b>Core Fixed Income</b>	<b>0.11</b>	<b>-1.30</b>	<b>-0.84</b>	<b>1.70</b>	<b>2.34</b>	<b>2.30</b>	<b>4.09</b>	<b>3.93</b>	<b>7.45</b>	<b>01/01/1989</b>
Fixed Income Benchmark	0.02	-1.60	-1.22	1.31	2.16	2.02	4.01	3.54	6.89	
Difference	0.09	0.30	0.38	0.39	0.18	0.28	0.08	0.39	0.56	
<b>Non-Core Fixed Income</b>	<b>0.91</b>	<b>2.40</b>	<b>3.56</b>	<b>5.66</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>8.06</b>	<b>5.04</b>	<b>10/01/2014</b>
Non-Core Fixed Income Benchmark	0.99	2.42	3.43	4.42	N/A	N/A	N/A	5.50	3.69	
Difference	-0.08	-0.02	0.13	1.24	N/A	N/A	N/A	2.56	1.35	

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 September 30, 2018

	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	2017	Since Incep.	Inception Date
<b>Real Return</b>	<b>-0.07</b>	<b>-0.24</b>	<b>2.51</b>	<b>4.29</b>	<b>2.57</b>	<b>2.97</b>	<b>N/A</b>	<b>8.32</b>	<b>3.47</b>	<b>02/01/2011</b>
Real Return Benchmark	-0.30	-0.36	2.51	4.77	3.01	2.88	3.82	9.91	3.56	
Difference	0.23	0.12	0.00	-0.48	-0.44	0.09	N/A	-1.59	-0.09	
<b>Real Estate</b>	<b>2.59</b>	<b>7.70</b>	<b>10.92</b>	<b>12.69</b>	<b>14.41</b>	<b>N/A</b>	<b>N/A</b>	<b>11.93</b>	<b>13.05</b>	<b>01/01/2012</b>
Real Estate Benchmark	2.05	6.45	8.45	9.32	11.03	11.39	5.29	7.65	11.26	
Difference	0.54	1.25	2.47	3.37	3.38	N/A	N/A	4.28	1.79	
<b>Absolute Return</b>	<b>0.17</b>	<b>2.57</b>	<b>4.65</b>	<b>5.49</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>11.35</b>	<b>5.02</b>	<b>08/01/2014</b>
Absolute Return Benchmark	0.35	2.25	3.96	2.39	3.40	3.21	1.92	7.11	2.34	
Difference	-0.18	0.32	0.69	3.10	N/A	N/A	N/A	4.24	2.68	
<b>Absolute Return Direct Composite</b>	<b>-0.05</b>	<b>2.28</b>	<b>4.25</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>13.21</b>	<b>6.49</b>	<b>01/01/2016</b>
Absolute Return Benchmark	0.35	2.25	3.96	2.39	3.40	3.21	1.92	7.11	2.86	
Difference	-0.40	0.03	0.29	N/A	N/A	N/A	N/A	6.10	3.63	
<b>Private Equity</b>	<b>9.18</b>	<b>34.63</b>	<b>45.04</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>19.69</b>	<b>19.67</b>	<b>01/01/2016</b>
Private Equity Benchmark	9.18	34.63	45.04	N/A	N/A	N/A	N/A	19.69	19.67	
Difference	0.00	0.00	0.00	N/A	N/A	N/A	N/A	0.00	0.00	
Russell 3000+3% Index (1 Qtr Lag)	4.66	12.22	18.22	14.93	16.69	16.40	13.54	22.27	19.30	
Difference	4.52	22.41	26.82	N/A	N/A	N/A	N/A	-2.58	0.37	
<b>TMRS Unallocated Cash (SA)</b>	<b>0.47</b>	<b>1.14</b>	<b>1.41</b>	<b>0.94</b>	<b>0.69</b>	<b>0.52</b>	<b>0.41</b>	<b>0.72</b>	<b>0.48</b>	<b>06/01/2008</b>
FTSE 30 Day T-Bill Index	0.48	1.25	1.51	0.76	0.46	0.33	0.26	0.80	0.31	
Difference	-0.01	-0.11	-0.10	0.18	0.23	0.19	0.15	-0.08	0.17	

- Historical performance shown for the Global Equity, Domestic Equity, International Equity, Total Fixed Income, and Real Return composites is provided by State Street.
- 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 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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