

Pennsylvania Municipal Retirement System

Quarterly Performance Report
as of March 31, 2021



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I. Marquette Update



Marquette Update

2Q 2021

400+
clients¹

\$282B
assets under advisement

99%
client retention rate

CELEBRATING **35** YEARS

115
employees

23
full-time partners

5
offices in Chicago, Baltimore,
Milwaukee, Philadelphia,
and St. Louis

Independent Investment Consulting Since 1986

As Marquette heads toward our fourth decade in business, our vision remains the same – to provide independent and meaningful investment advice and be a trusted partner to our clients through effective investment programs. Thank you for your continued confidence in Marquette. We are grateful to have your trust and will continue to work with your interests at the forefront of all that we do.

Firm and client statistics as of December 31, 2020. Client retention rate calculated 2011–2020.

UPCOMING SPEAKING ENGAGEMENTS

- ▶ Ben Mohr moderating “Creating a Modern Fixed Income Portfolio for the Future” Redefining Fixed Income webinars hosted by Institutional Investor 4/21 & 6/24
- ▶ Ben Mohr speaking on Catastrophe Bonds panel at The 2021 Pension Bridge Annual 5/5
- ▶ Mike Piotrowski speaking on “What Do We Do Now? Post-Consolidation Responsibilities of Pension Fund Trustees” panel at 2021 IPPFA Illinois Pension Conference 5/7
- ▶ Nat Kellogg speaking on “Alternative Investments – Private Debt and Private Equity Strategies” panel, David Hernandez speaking on “The Masqueraders of Growth in Equities” panel at Midwest Institutional Forum 5/18
- ▶ Jessica Noviskis speaking on alternatives panel at AIMSE annual conference 5/18
- ▶ Nat Kellogg speaking on eVestment’s Quarterly Institutional Trends Webcast 5/20



RECENT HIRES

Nick Spanola
Performance Analyst

Morgan Chase
Client Analyst



RECENT PROMOTIONS

Nick Johnsen, CFA
Senior Client Analyst, OCIO Services

Nick Cristiano
Assoc. Client Analyst, OCIO Services



Q1 Market Insights Video: April 22nd

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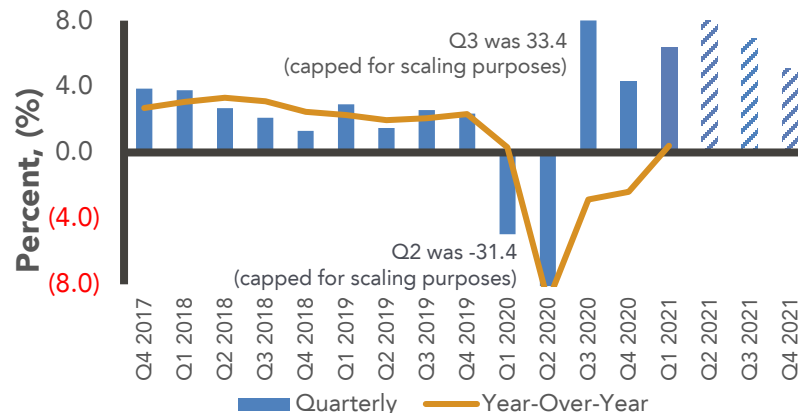
II. Market Environment



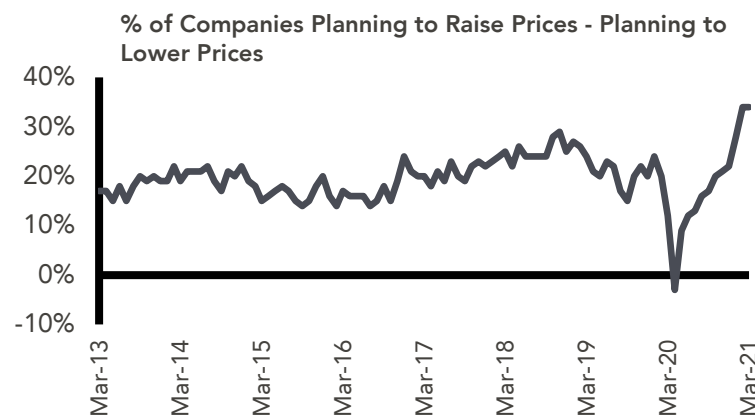
U.S. Economy

- Economic activity accelerated in Q1, with real GDP increasing by a strong annual rate of 6.4% amid continued strength in consumer spending and policy support. Economic strength is expected to continue throughout 2021. If current projections prove accurate, 2021 will be the strongest calendar year for economic growth since 1984.
- Amid the economic rebound and historic policy support, inflation concerns have begun to percolate. Most notably, rising commodity prices and a tight global supply chain have driven rising input costs for both manufacturing and services firms. In turn, companies planning to raise selling prices outnumber those that plan to lower them by the highest amount in at least a decade.

U.S. Real GDP Growth



Inflationary Pressures

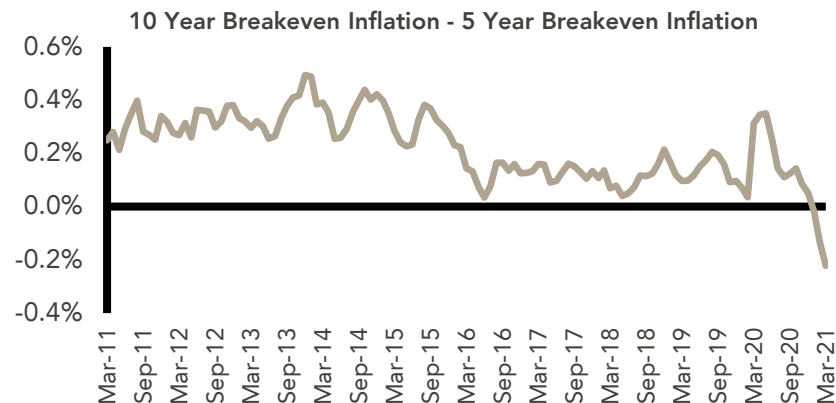


Sources: Refinitiv and The Wall Street Journal. In the "Real GDP Growth" chart, striped bars reflect analyst estimates.

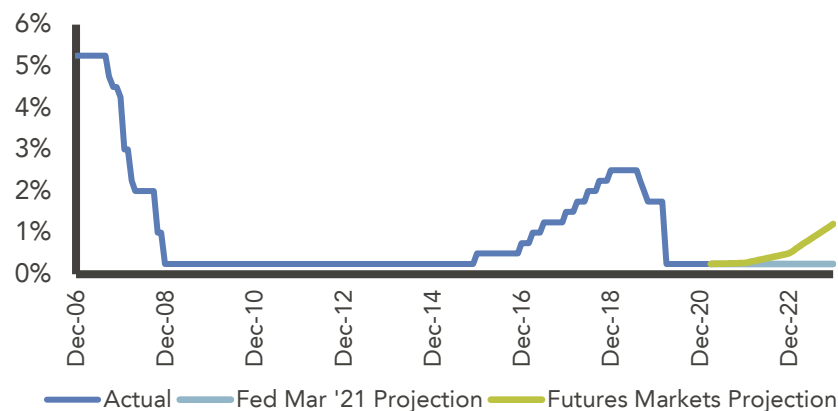
U.S. Economy

- Rising inflation expectations are apparent in the TIPS markets, where 10-year breakeven inflation (i.e., the difference between the yield on the 10-year Treasury note less the yield on the 10-year TIPS note) ended the quarter at the highest level since 2013.
- Interestingly, the 5-year breakeven inflation is higher than 10-year breakeven inflation, a phenomenon that has not occurred often. More specifically, the TIPS market is implying that inflation over the next 5 years will be higher than inflation in the latter half of the next decade.
- That outcome is surely what the Federal Reserve is aiming for, with a pickup in short-term inflation ultimately proving transitory in the intermediate term. This outcome may allow them to leave short-term rates near zero through 2023, as their most recent projections showed.

Inflation Expectations



Short-Term Interest Rates

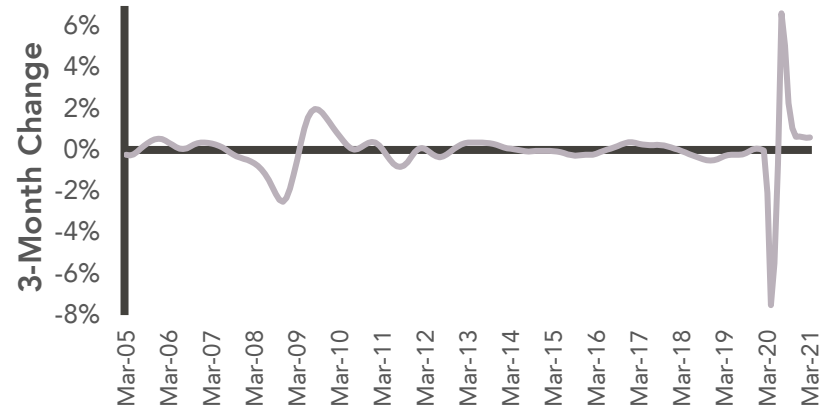


Sources: Federal Reserve Bank of St. Louis and Refinitiv.

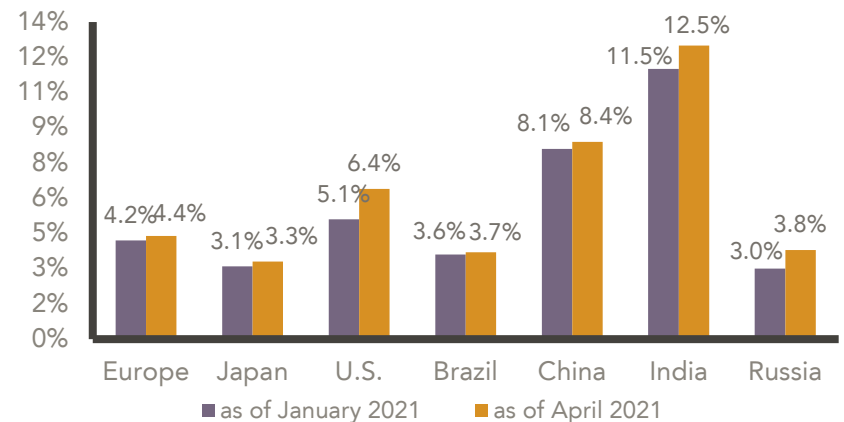
Global Economy

- Global growth has continued to improve. The OECD Composite Leading Indicators has steadied at a solid level, while the global economy is set for 6% growth in 2021, according to the IMF, which was an upgrade from the institution's January projections.
- Economic recoveries, however, are beginning to diverge across countries and regions, depending on the success of vaccine rollout and policy support.
- While all major countries and regions saw their economic growth estimates upgraded, many were marginal, particularly those experiencing another wave of COVID-19 outbreaks (e.g., Europe and Brazil).

OECD Composite Leading Indicators



IMF 2021 Economic Growth Estimates

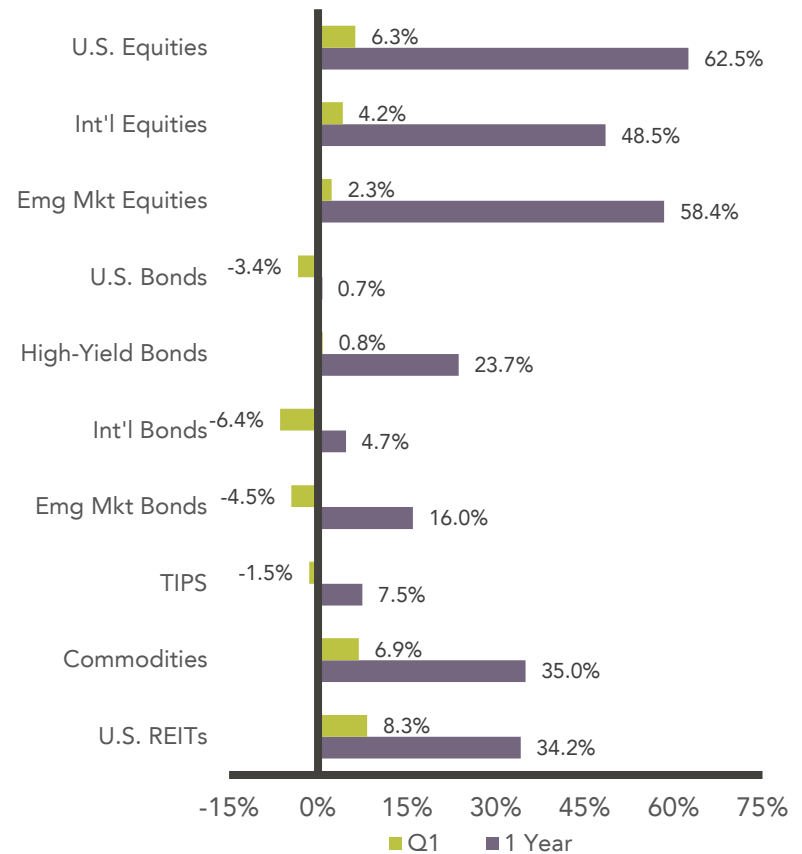


Sources: Organization for Economic Co-operation and Development and the International Monetary Fund.

Global Asset Class Performance

- Global equities** rallied in Q1, continuing their historic run after bottoming in late March of 2020. U.S equities (+6.3%) topped their international developed (+4.2%) and emerging market equity (+2.3%) counterparts. U.S. dollar strength also aided U.S. equity outperformance during the quarter, lessening international developed and emerging market equity returns by four and two percentage points, respectively.
- Fixed income** markets were mostly negative in Q1 amid a sharp rise in Treasury yields. Longer-dated securities were the worst performers as the 10-year note and 30-year bond yields rose, 81 and 76 basis points, respectively. Sub-investment grade debt, however, posted positive returns amid strong market sentiment. High yield (+0.8%) and bank loan (+2.0%) spreads continued to decline amid the economic rebound and market support from the Federal Reserve.
- Inflation-sensitive assets** also posted solid results for the quarter. While TIPS (-1.5%) were in the red, the asset class comfortably outperformed their nominal government bond counterparts amid rising inflation expectations. REITs (+8.3%) topped the broad equity markets, halting a string of underperformance, while commodities (+6.9%) rose strongly given increased demand and global supply chain issues.

Asset Class Returns: Select Asset Class Performance

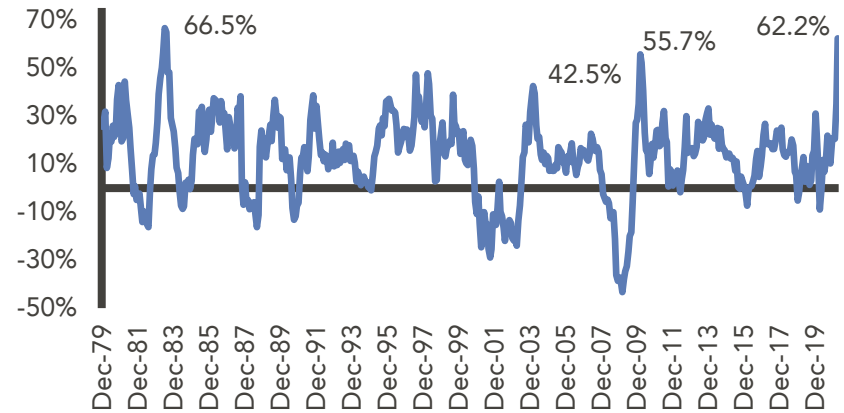


Sources: Markov Processes International

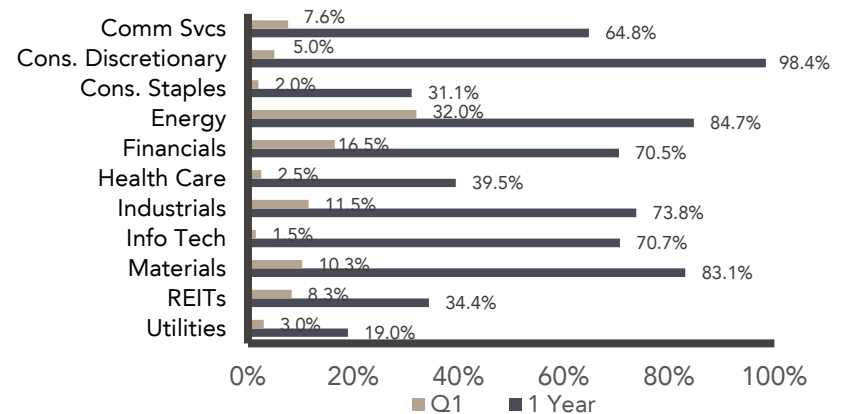
U.S. Equity Markets

- U.S equity markets continued their strength in Q1. Over the past year, domestic equities have returned more than 62%—their best rolling 1-year return since the early 1980s—ending the quarter at all-time highs.
- All sectors finished the quarter in the black, with more cyclical areas generally outperforming their more defensive counterparts. Energy (+32.0%) and financials (+16.5%) led the way again, repeating their strong showing seen in Q4 2020, while consumer staples (+2.0%) and information technology (+1.5%) lagged.

1-Year Rolling Return of the Wilshire 5000 Index



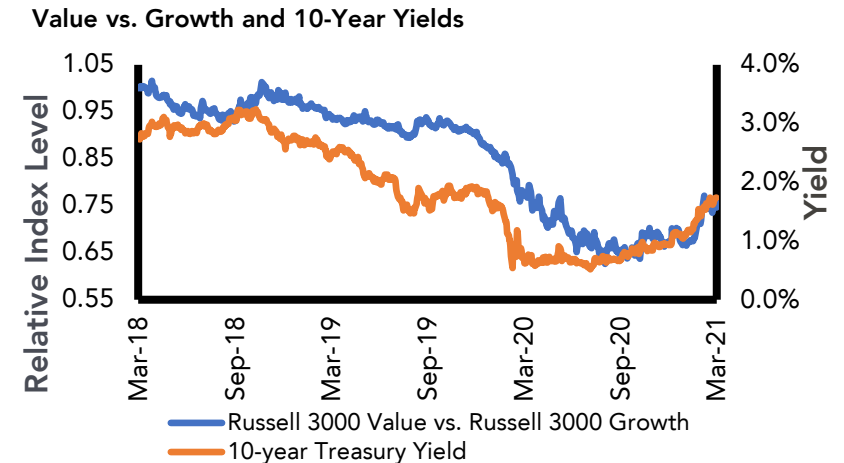
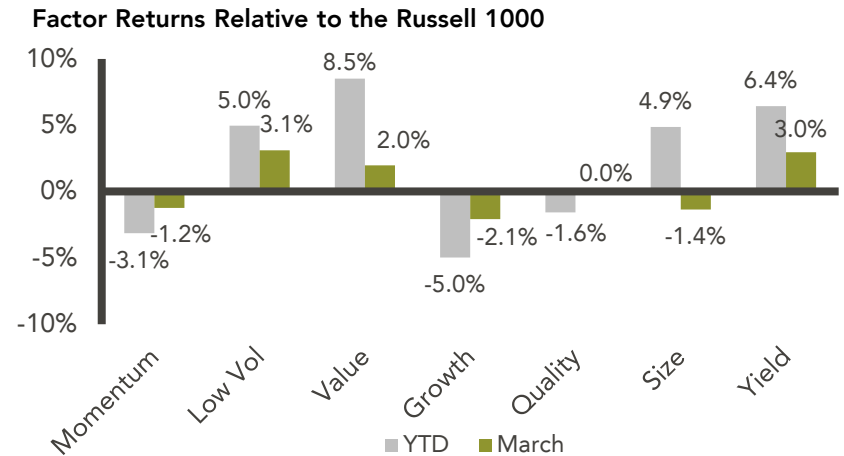
Sector Returns



Sources: eVestment and Refinitiv

U.S. Equity Markets

- From a factor perspective, value (+8.5%) led the way, followed by strong relative returns for yield (+6.4%), low volatility (+5.0%) and size (4.9%). Given that, small-cap value was the best-performing segment of the U.S. equity market in Q1, returning 21.2%.
- The rise in interest rates almost certainly played a role in relative equity performance. Prior to Q1, declining rates were seen as a boon for longer-duration areas of the market, most notably information technology and, therefore, growth stocks.
- Value stocks have now outperformed their growth stock counterparts for two quarters in a row, coinciding with the bottoming in rates witnessed at the end of Q3 2020

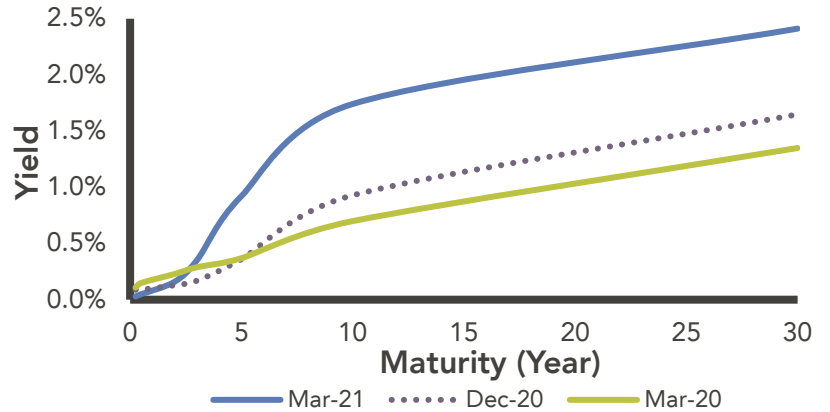


Sources: Bloomberg and Refinitiv.

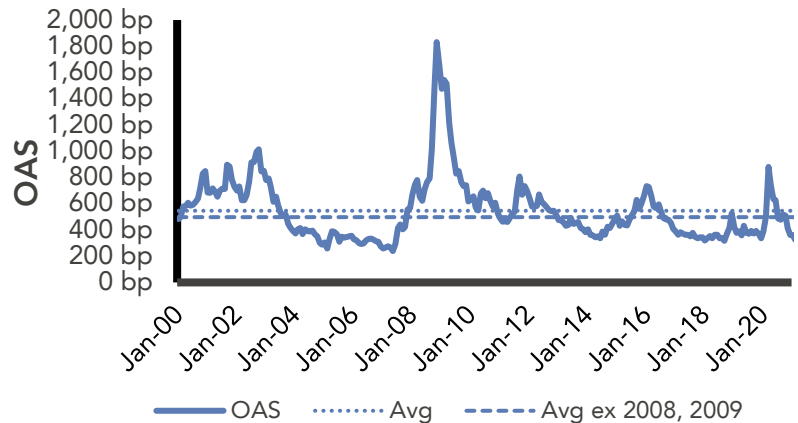
U.S. Fixed Income

- Interest rates rose sharply for intermediate- and long-term Treasuries in Q1, continuing the increase that began in Q4 of last year.
- Treasury returns were deep in the red for the quarter, with the return of core bonds (-3.4%) slightly better due to narrowing spreads for investment-grade credit.
- Sectors with more credit risk saw continued outperformance in Q1. High yield (+0.8%) and bank loans (+2.0%) posted positive returns as spreads continued to decline amid the economic rebound and market support from the Federal Reserve. High yield spreads, for example, ended the quarter at just 310 basis points—well below the long-term average of about 545 basis points.

Yield Curve



High Yield Spread



Sources: Bloomberg Barclays and Refinitiv.

Global Index Returns

U.S. EQUITY	QTR	YTD	1 Year	3 Year	5 Year	10 Year
S&P 500 Index	6.2	6.2	56.4	16.8	16.3	13.9
Russell 3000 Index	6.3	6.3	62.5	17.1	16.6	13.8
Russell 3000 Growth Index	1.2	1.2	64.3	22.4	20.9	16.4
Russell 3000 Value Index	11.9	11.9	58.4	11.0	11.9	10.9
Russell TOP 200 Index	5.1	5.1	56.3	18.3	17.4	14.6
Russell TOP 200 Growth Index	1.3	1.3	61.4	23.7	21.8	17.6
Russell TOP 200 Value Index	10.3	10.3	47.9	11.0	11.8	11.0
Russell 1000 Index	5.9	5.9	60.6	17.3	16.7	14.0
Russell 1000 Growth Index	0.9	0.9	62.7	22.8	21.0	16.6
Russell 1000 Value Index	11.3	11.3	56.1	11.0	11.7	11.0
Russell Mid-Cap Index	8.1	8.1	73.6	14.7	14.7	12.5
Russell Mid-Cap Growth Index	(0.6)	(0.6)	68.6	19.4	18.4	14.1
Russell Mid-Cap Value Index	13.1	13.1	73.8	10.7	11.6	11.1
Russell 2000 Index	12.7	12.7	94.8	14.8	16.4	11.7
Russell 2000 Growth Index	4.9	4.9	90.2	17.2	18.6	13.0
Russell 2000 Value Index	21.2	21.2	97.1	11.6	13.6	10.1

U.S. EQUITY BY SECTOR	QTR	YTD	1 Year	3 Year	5 Year	10 Year
Communication Services	7.6	7.6	64.8	22.2	12.4	11.5
Consumer Discretionary	5.0	5.0	98.4	24.6	20.5	18.3
Consumer Staples	2.0	2.0	31.1	12.3	8.4	11.7
Energy	32.0	32.0	84.7	(6.3)	(1.5)	(2.6)
Financials	16.5	16.5	70.5	9.4	15.3	12.0
Health Care	2.5	2.5	39.5	16.1	14.9	16.1
Industrials	11.5	11.5	73.8	12.7	14.5	12.5
Information Technology	1.5	1.5	70.7	28.4	27.7	20.0
Materials	10.3	10.3	83.1	12.6	14.1	9.3
Real Estate	8.3	8.3	34.4	10.8	7.3	9.2
Utilities	3.0	3.0	19.0	11.4	9.0	11.2

Source: Markov Processes International.

Global Index Returns

INT'L/GLOBAL EQUITY	QTR	YTD	1 Year	3 Year	5 Year	10 Year
MSCI EAFE (Net)	3.5	3.5	44.6	6.0	8.8	5.5
MSCI EAFE Growth (Net)	(0.6)	(0.6)	42.6	9.8	10.8	7.2
MSCI EAFE Value (Net)	7.4	7.4	45.7	1.8	6.6	3.7
MSCI EAFE Small Cap (Net)	4.5	4.5	62.0	6.3	10.5	8.0
MSCI AC World Index (Net)	4.6	4.6	54.6	12.1	13.2	9.1
MSCI AC World Index Growth (Net)	0.3	0.3	59.0	17.5	17.1	11.7
MSCI AC World Index Value (Net)	8.9	8.9	48.8	6.2	9.0	6.4
MSCI Europe ex UK (Net)	3.5	3.5	48.6	7.2	9.5	5.6
MSCI United Kingdom (Net)	6.2	6.2	33.5	0.9	4.3	3.3
MSCI Pacific ex Japan (Net)	4.6	4.6	54.0	7.1	9.6	5.0
MSCI Japan (Net)	1.6	1.6	39.7	6.3	10.5	7.2
MSCI Emerging Markets (Net)	2.3	2.3	58.4	6.5	12.1	3.7

Source: Markov Processes International.

Global Index Returns

FIXED INCOME	QTR	YTD	1 Year	3 Year	5 Year	10 Year
Merrill Lynch 3-month T-Bill	0.0	0.0	0.1	1.5	1.2	0.6
Barclays Intermediate Gov't./Credit	(1.9)	(1.9)	2.0	4.4	2.8	2.9
Barclays Aggregate Bond	(3.4)	(3.4)	0.7	4.7	3.1	3.4
Barclays Short Government	0.0	0.0	0.3	2.2	1.6	1.0
Barclays Intermediate Government	(1.7)	(1.7)	(1.2)	3.8	2.1	2.3
Barclays Long Government	(13.4)	(13.4)	(15.6)	5.8	3.2	6.3
Barclays Investment Grade Corp.	(4.6)	(4.6)	8.7	6.2	4.9	5.0
Barclays High Yield Corp. Bond	0.8	0.8	23.7	6.8	8.1	6.5
JPMorgan Global ex US Bond	(6.4)	(6.4)	4.7	0.8	1.9	1.1
JPMorgan Emerging Market Bond	(4.5)	(4.5)	16.0	4.0	5.1	5.6

INFLATION SENSITIVE	QTR	YTD	1 Year	3 Year	5 Year	10 Year
Consumer Price Index	1.7	1.7	2.6	2.0	2.2	1.7
BC TIPS	(1.5)	(1.5)	7.5	5.7	3.9	3.4
Commodities	6.9	6.9	35.0	(0.2)	2.3	(6.3)
Gold	(9.8)	(9.8)	4.4	7.4	5.5	0.9
REITs	8.3	8.3	34.2	10.8	7.2	9.4
FTSE EPRA/NAREIT Global REITs	7.0	7.0	36.3	5.1	3.0	5.9
NCREIF ODCE*	1.9	1.9	1.5	4.0	5.3	8.7
NCREIF Farmland**	1.6	1.6	3.1	4.9	5.6	10.4
NCREIF Timberland**	0.6	0.6	0.8	1.8	2.3	4.5

*Data are preliminary.

**Data are as of December 31, 2020.

Source: Markov Processes International.

III. Portfolio Review



Observations

- Market Value as of March 31, 2021 was \$3,306,073,118
- Q1 '21 Return: Total Fund 4.7% (net) vs. Policy Index 4.0%; investment gain of \$150 million; ranking in 7th percentile of peers.
- Contributors Q1 '21 Performance:
 - Deep value positions in U.S. Equities
 - Overweight to U.S. Small Cap Equities
 - Very strong relative equity portfolio performance (7.4%) compared to broad market returns of MSCI ACWI IMI (5.1%)
 - Timber
- Detractors Q1 '21 Performance:
 - U.S. Small Cap Growth
 - Fixed Income
- 1 Year Return: Total Fund 41.8% (net) vs. Policy Index 37.4%; investment gain of \$974 million; ranking in 10th percentile of peers.
- 5 Year Return: Total Fund 12.2% (net) vs. Policy Index 10.6%; investment gain of \$1.4 billion; ranking in 4th percentile of peers.
- Estimated Annual Plan Investment Management Expenses: 0.40%

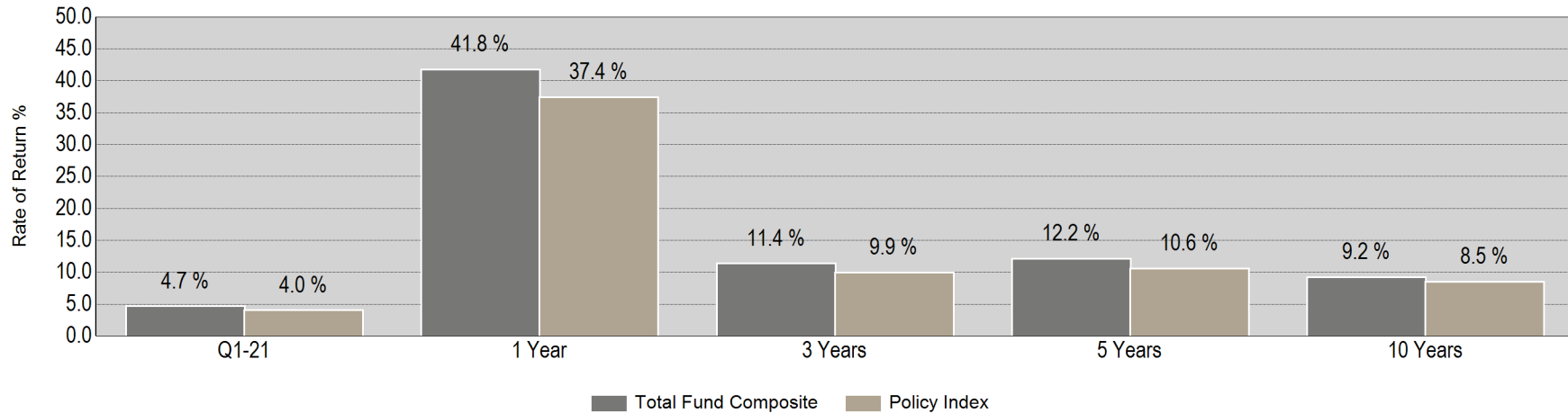
Looking Ahead

- Asset Allocation Study Review
- Equity Portfolio Structure
- Fixed Income Portfolio Structure
- Upcoming Investment Manager Searches

Summary of Cash Flows

	First Quarter	One Year	Three Years	Five Years	Ten Years
Beginning Market Value	\$3,175,810,996	\$2,358,476,552	\$2,510,385,776	\$2,010,700,314	\$1,598,692,217
Net Cash Flow	-\$19,537,964	-\$26,069,862	-\$90,566,775	-\$130,833,780	-\$232,561,383
Net Investment Change	\$149,800,086	\$973,666,428	\$886,254,117	\$1,426,206,584	\$1,939,942,284
Ending Market Value	\$3,306,073,118	\$3,306,073,118	\$3,306,073,118	\$3,306,073,118	\$3,306,073,118

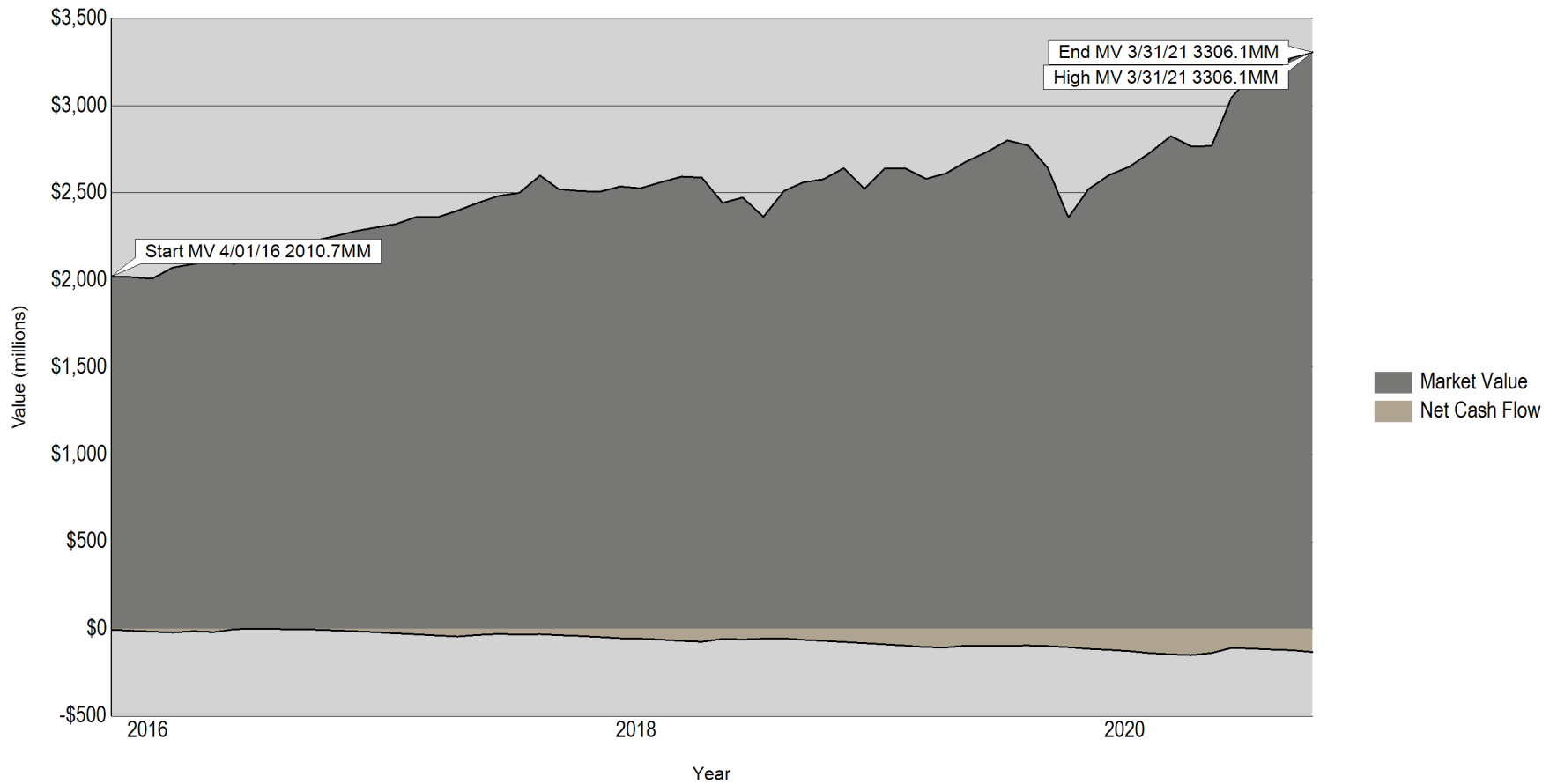
Return Summary (Net)



Asset Allocation vs. Target

	Current	Policy
U.S. Equity	42.1%	40.0%
Non-U.S. Equity	14.7%	15.0%
Emerging Markets	9.5%	10.0%
Real Assets	15.3%	20.0%
U.S. Fixed Income	17.4%	15.0%
Cash Equivalent	1.0%	0.0%
Total	100.0%	100.0%

Market Value History



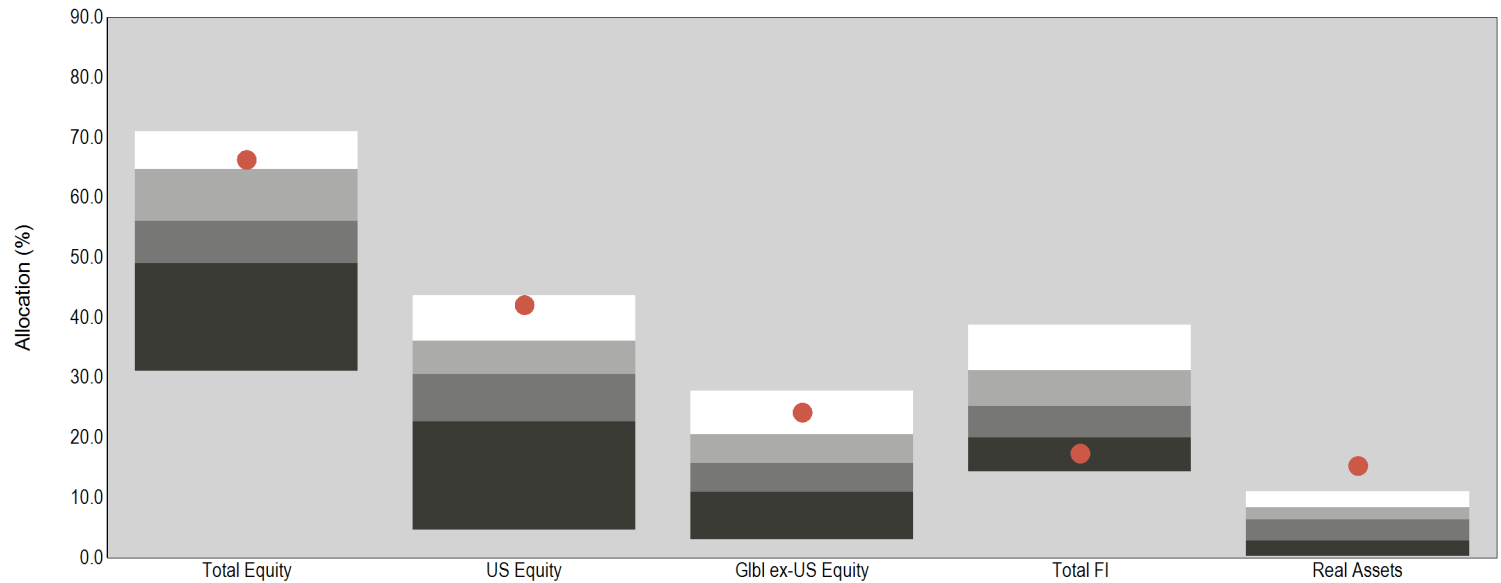
Pennsylvania Municipal Retirement System

Asset Allocation Summary

As of March 31, 2021

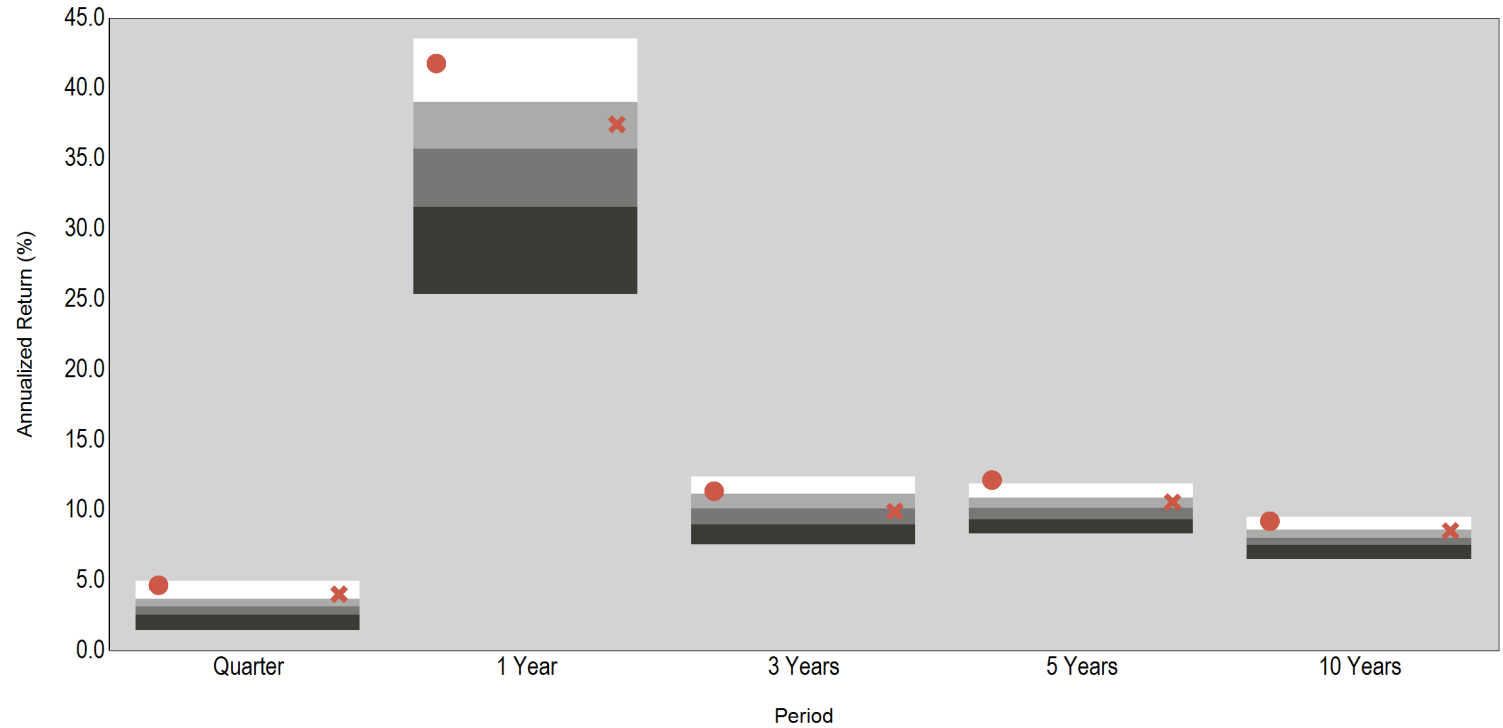
	Market Value	% of Portfolio	Policy %	Policy Difference
Total Fund Composite	3,306,073,118	100.0	100.0	0
Total Equity Composite	2,191,649,781	66.3	65.0	42,702,254
U.S. Equity Composite	1,391,807,874	42.1	40.0	69,378,627
Large Cap U.S. Equity Composite	865,430,106	26.2	25.0	38,911,827
Eagle Asset Mgmt	208,276,222	6.3		
LSV Large Cap Value	206,459,272	6.2		
SSGA S&P 500	106,967,487	3.2		
Polen Focus Growth	273,474,088	8.3		
William & Blair Large Cap Growth	70,253,037	2.1		
Small Cap U.S. Equity Composite	526,377,768	15.9	15.0	30,466,801
LSV Small Cap Value	95,565,493	2.9		
Smith, Graham & Co Small Cap Value	109,568,316	3.3		
SSGA Russell 2000	113,902,756	3.4		
Copeland Small Cap Dividend Growth	58,420,228	1.8		
AMI Small Cap Growth	50,086,085	1.5		
Emerald Small Cap Growth	98,834,891	3.0		
Non-U.S. Equity Composite	799,841,907	24.2	25.0	-26,676,373
Developed Non-U.S. Equity Composite	485,092,238	14.7	15.0	-10,818,729
SSGA MSCI World ex US	159,709,059	4.8		
Hardman Johnston Int'l Equity	166,563,260	5.0		
HGK Int'l Equity	158,481,955	4.8		
Emerging Markets Composite	314,749,668	9.5	10.0	-15,857,643
SSGA MSCI Emerging Markets Index	314,749,668	9.5		
Real Assets Composite	505,665,146	15.3	20.0	-155,549,478
Forest Investment Associates	136,055,751	4.1		
PRISA LP	53,473,289	1.6		
PRISA II	107,072,280	3.2		
PennMuni-Nuveen U.S. Real Estate Fund	207,002,876	6.3		
N. Front Street (Nuveen)	2,060,949	0.1		
Total Fixed Income Composite	574,113,582	17.4	15.0	78,202,615
SSGA US Aggregate Bond Index	574,113,582	17.4		
Cash Composite	34,644,609	1.0	--	34,644,609
Cash Management	7,065,471	0.2		
Pool 999	27,579,138	0.8		

Total Plan Allocation vs. InvMetrics Public DB Net
As of March 31, 2021



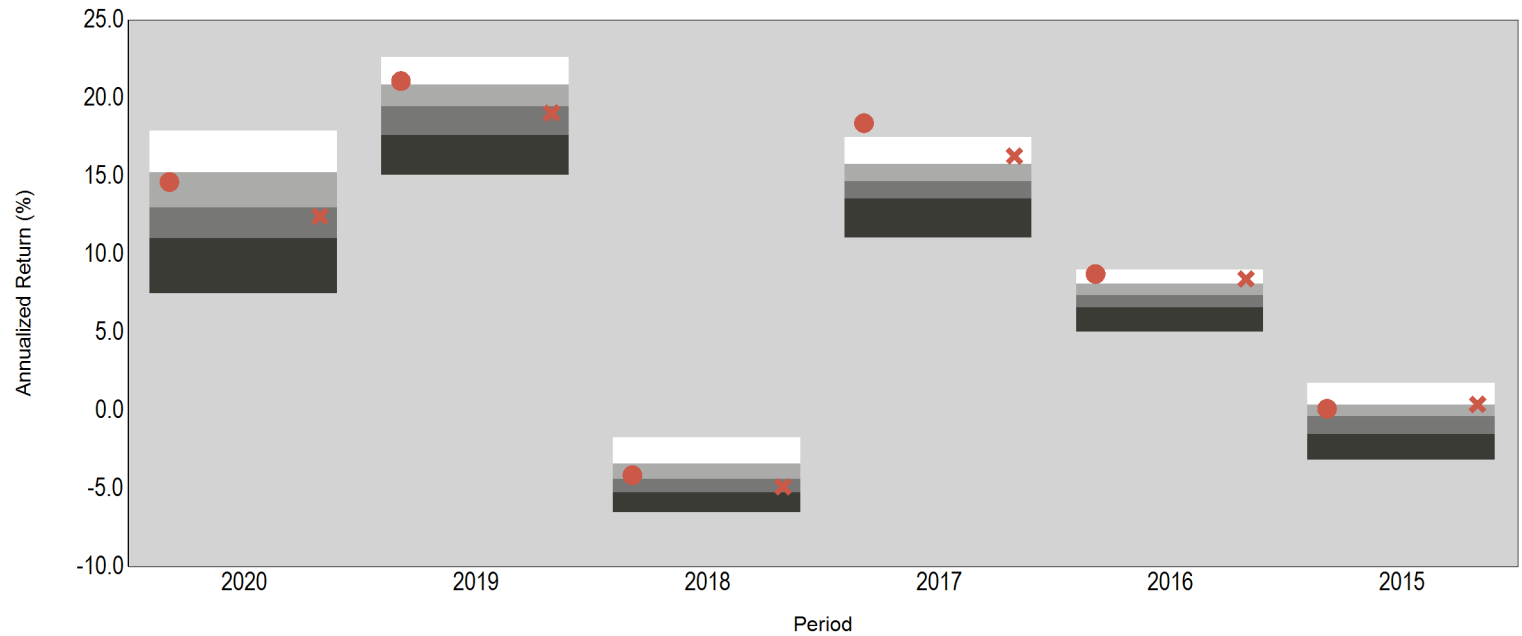
	Allocation (Rank)									
5th Percentile	71.0		43.7		27.8		38.8		11.1	
25th Percentile	64.8		36.1		20.6		31.3		8.4	
Median	56.1		30.6		15.8		25.2		6.4	
75th Percentile	49.1		22.6		10.9		20.0		2.9	
95th Percentile	31.1		4.7		3.1		14.4		0.3	
# of Portfolios	179		110		142		179		50	
● Total Fund Composite	66.3	(19)	42.1	(12)	24.2	(10)	17.4	(86)	15.3	(1)

InvMetrics Public DB Net Return Comparison



	Quarter		1 Year		3 Years		5 Years		10 Years	
5th Percentile	5.0		43.5		12.4		11.9		9.5	
25th Percentile	3.7		39.0		11.2		10.9		8.6	
Median	3.1		35.7		10.1		10.2		8.0	
75th Percentile	2.5		31.6		9.0		9.3		7.5	
95th Percentile	1.5		25.4		7.6		8.3		6.5	
# of Portfolios	427		425		406		388		320	
● Total Fund Composite	4.7	(7)	41.8	(10)	11.4	(22)	12.2	(4)	9.2	(9)
▲ Policy Index	4.0	(16)	37.4	(37)	9.9	(54)	10.6	(36)	8.5	(30)

InvMetrics Public DB Net Return Comparison



Return (Rank)

5th Percentile	17.9	22.6	-1.7	17.5	9.0	1.7
25th Percentile	15.3	20.8	-3.4	15.8	8.1	0.4
Median	13.0	19.5	-4.4	14.7	7.4	-0.4
75th Percentile	11.0	17.6	-5.2	13.6	6.6	-1.5
95th Percentile	7.5	15.1	-6.5	11.1	5.0	-3.2
# of Portfolios	596	550	496	269	269	262
● Total Fund Composite	14.6 (33)	21.1 (23)	-4.1 (44)	18.4 (3)	8.7 (10)	0.1 (31)
▲ Policy Index	12.4 (57)	19.0 (57)	-4.9 (66)	16.3 (18)	8.4 (19)	0.4 (24)

RISK RETURN STATISTICS
April 01, 2016 Through March 31, 2021

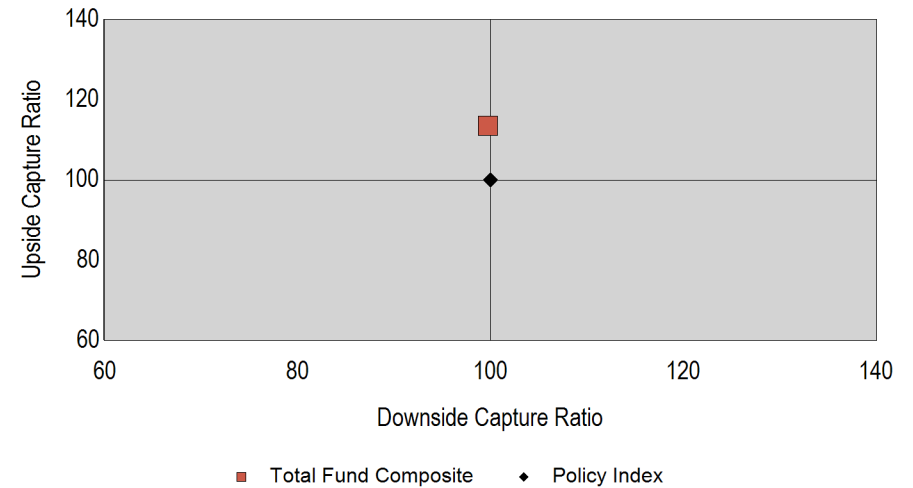
	Total Fund Composite	Policy Index
RETURN SUMMARY STATISTICS		
Number of Periods	20	20
Maximum Return	13.50	12.26
Minimum Return	-15.37	-14.88
Annualized Return	12.16	10.59
Total Return	77.46	65.42
Annualized Excess Return Over Risk Free	11.03	9.47
Annualized Excess Return	1.57	0.00

	Total Fund Composite	Policy Index
RISK SUMMARY STATISTICS		
Beta	1.07	1.00
Upside Deviation	7.67	6.97
Downside Deviation	15.25	14.65

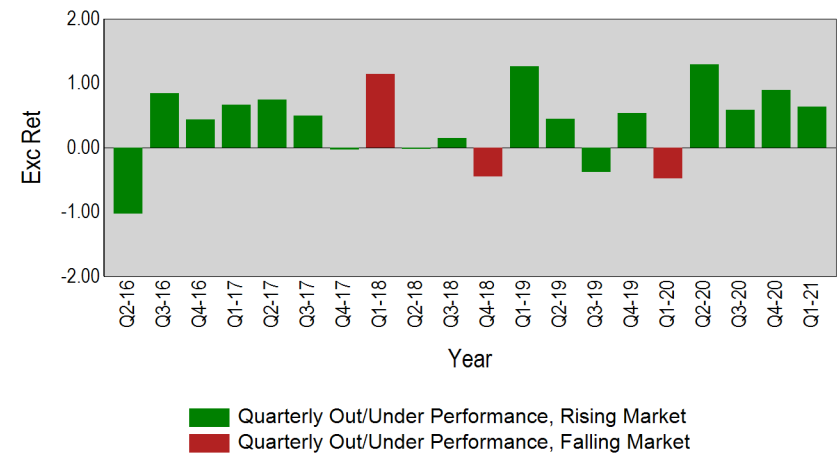
	Total Fund Composite	Policy Index
RISK/RETURN SUMMARY STATISTICS		
Annualized Standard Deviation	13.05	12.20
Alpha	0.20	0.00
Sharpe Ratio	0.85	0.78
Excess Return Over Market / Risk	0.12	0.00
Tracking Error	1.25	0.00
Information Ratio	1.25	--

	Total Fund Composite	Policy Index
CORRELATION STATISTICS		
R-Squared	0.99	1.00
Correlation	1.00	1.00

Upside Capture Ratio vs. Downside Capture Ratio
5 Years Ending March 31, 2021



Quarterly Excess Performance
Total Fund Composite vs. Policy Index



Pennsylvania Municipal Retirement System

Total Equity Composite

As of March 31, 2021

Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	4,926	2,965
Weighted Avg. Market Cap. (\$B)	205.4	298.1
Median Market Cap. (\$B)	5.0	12.9
Price To Earnings	24.8	26.1
Price To Book	3.6	3.6
Price To Sales	1.9	2.2
Return on Equity (%)	10.6	15.3
Yield (%)	1.2	1.8

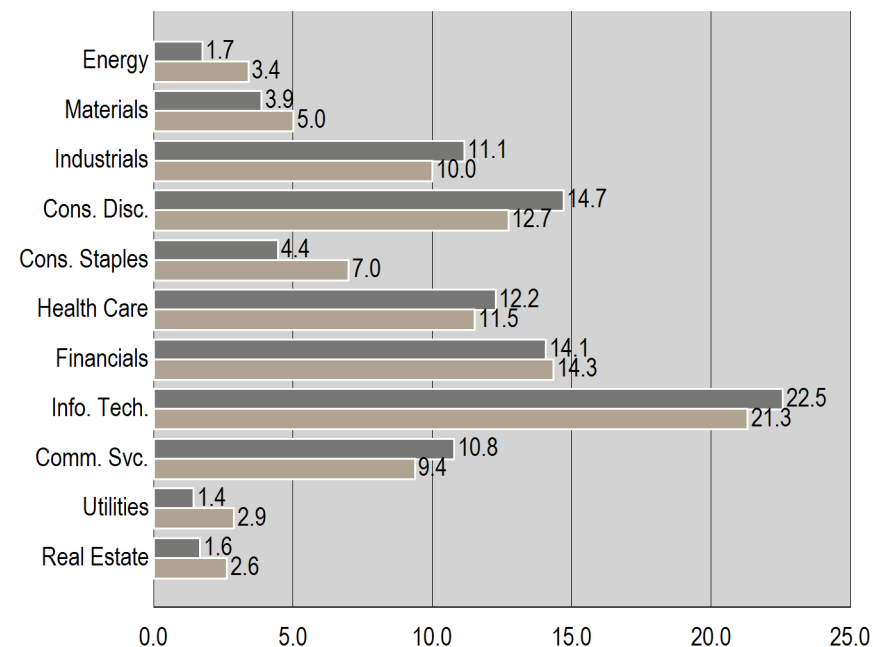
Top Holdings

MICROSOFT CORP	2.3%
FACEBOOK INC	1.8%
ALPHABET INC	1.7%
AMAZON.COM INC	1.5%
TENCENT HOLDINGS LTD	1.3%
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	1.1%
ADOBE INC	1.0%
UNITEDHEALTH GROUP INC	0.9%
ALIBABA GROUP HOLDING LTD	0.9%
ABBOTT LABORATORIES	0.8%
Total	13.4%

Market Capitalization

	Small Cap	Mid Cap	Large Cap	Unclassified
Total Equity Composite	25.2%	16.2%	55.8%	2.8%
MSCI ACWI	4.0%	16.2%	79.8%	0.0%
<i>Weight Over/Under</i>	<i>21.2%</i>	<i>0.0%</i>	<i>-24.0%</i>	<i>2.8%</i>

Sector Allocation (%) vs MSCI ACWI



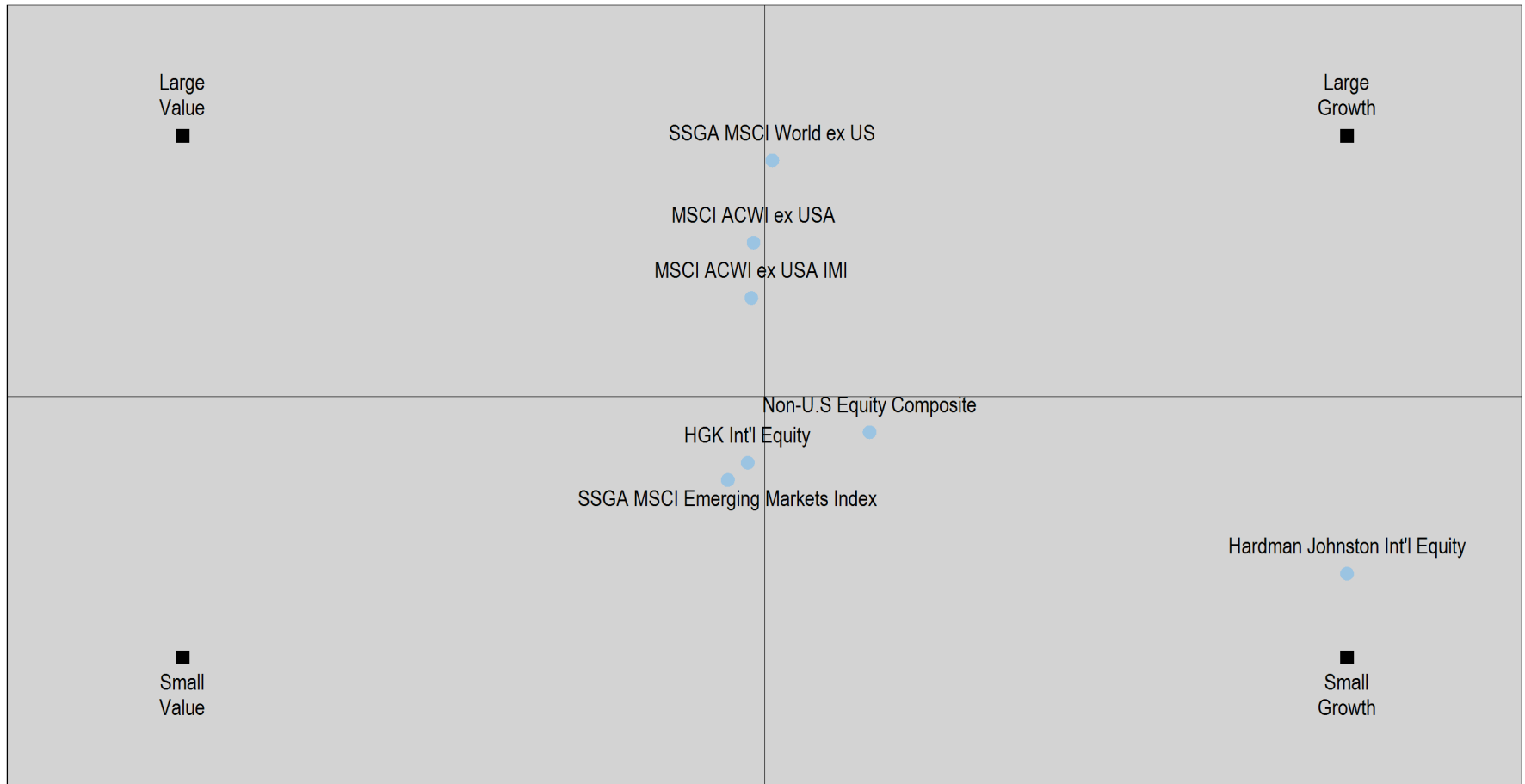
Region Allocation Summary

Region	% of Total	% of Bench	% Diff
North America ex U.S.	1.0%	2.8%	-1.9%
United States	61.3%	57.8%	3.5%
Europe Ex U.K.	9.5%	12.8%	-3.3%
United Kingdom	3.2%	3.8%	-0.5%
Pacific Basin Ex Japan	3.2%	3.1%	0.1%
Japan	3.6%	6.5%	-2.9%
Emerging Markets	17.6%	12.9%	4.7%
Other	0.5%	0.2%	0.3%
Total	100.0%	100.0%	0.0%

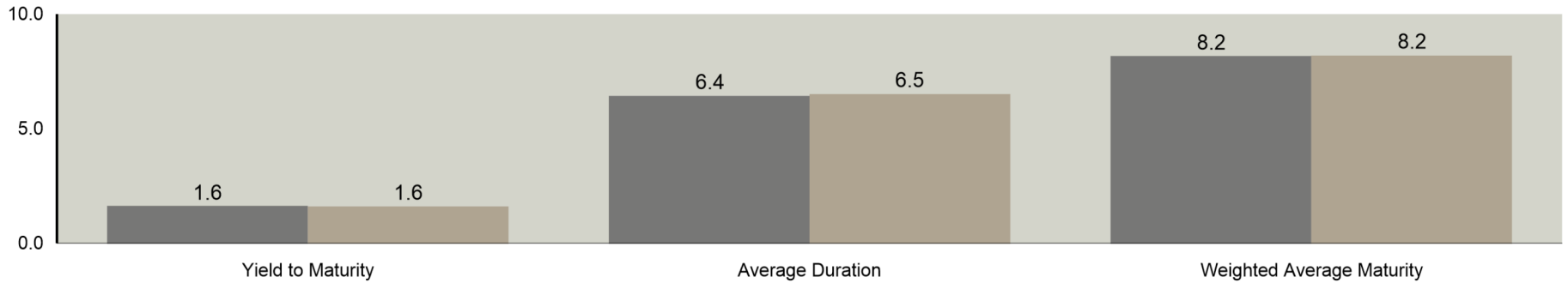
Style Map
3 Years Ending March 31, 2021



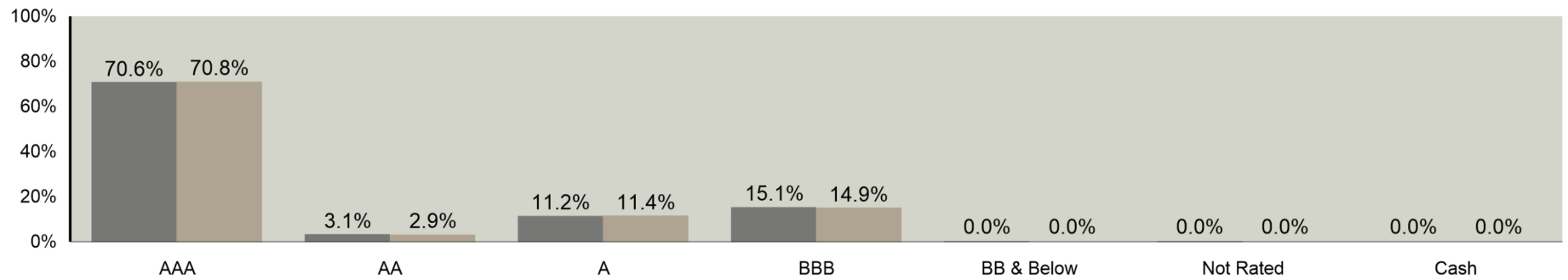
Style Map
3 Years Ending March 31, 2021



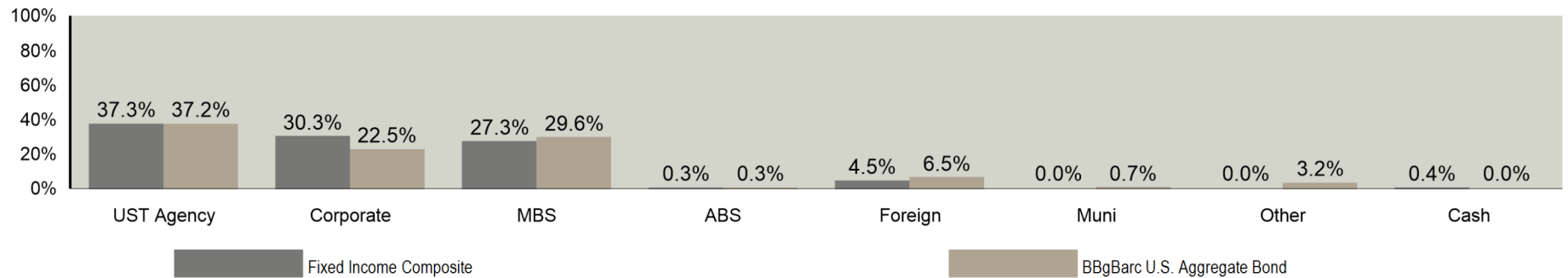
Summary Characteristics



Credibility Quality Allocation



US Sector Allocation



Pennsylvania Municipal Retirement System

Performance Summary (Net)

As of March 31, 2021

	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	Inception	Inception Date
Total Fund Composite	4.7	41.8	11.4	12.2	9.2	9.1	Jan-86
<i>Policy Index</i>	4.0	37.4	9.9	10.6	8.5	9.4	Jan-86
<i>InvMetrics Public DB Net Rank</i>	7	10	22	4	9	13	Jan-86
Total Equity Composite	7.4	--	--	--	--	28.1	Oct-20
<i>MSCI ACWI IMI Net USD</i>	5.1	--	--	--	--	21.6	Oct-20
U.S. Equity Composite	10.8	76.4	18.1	17.8	13.3	9.9	Jan-06
<i>Russell 3000</i>	6.3	62.5	17.1	16.6	13.8	10.3	Jan-06
<i>InvMetrics Public DB US Eq Net Rank</i>	4	5	3	3	39	44	Jan-06
Large Cap U.S. Equity Composite	7.9	63.7	19.2	18.3	14.9	11.4	Jan-86
<i>S&P 500</i>	6.2	56.4	16.8	16.3	13.9	11.2	Jan-86
<i>Eagle Asset Mgmt</i>	11.1	67.4	17.1	17.8	--	19.2	Feb-16
<i>Russell 1000 Value</i>	11.3	56.1	11.0	11.7	--	12.8	Feb-16
<i>eV US Large Cap Value Equity Net Rank</i>	55	22	5	2	--	2	Feb-16
<i>LSV Large Cap Value</i>	16.1	70.1	9.6	12.0	11.4	8.9	Apr-04
<i>Russell 1000 Value</i>	11.3	56.1	11.0	11.7	11.0	8.3	Apr-04
<i>S&P 500</i>	6.2	56.4	16.8	16.3	13.9	9.9	Apr-04
<i>eV US Large Cap Value Equity Net Rank</i>	10	19	69	53	40	40	Apr-04
<i>SSGA S&P 500</i>	6.2	56.2	16.7	16.2	13.8	9.0	Feb-97
<i>S&P 500</i>	6.2	56.4	16.8	16.3	13.9	9.0	Feb-97
<i>eV US Large Cap Core Equity Net Rank</i>	56	42	22	18	15	68	Feb-97
<i>Polen Focus Growth</i>	1.7	57.1	25.8	21.5	17.8	18.4	Oct-10
<i>Russell 1000 Growth</i>	0.9	62.7	22.8	21.0	16.6	17.7	Oct-10
<i>eV US Large Cap Growth Equity Net Rank</i>	53	63	8	28	6	7	Oct-10
<i>William & Blair Large Cap Growth</i>	2.2	--	--	--	--	31.4	Jun-20
<i>Russell 1000 Growth</i>	0.9	--	--	--	--	32.8	Jun-20
<i>eV US Large Cap Growth Equity Net Rank</i>	44	--	--	--	--	46	Jun-20

Pennsylvania Municipal Retirement System

Performance Summary (Net)

As of March 31, 2021

	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	Inception	Inception Date
Small Cap U.S. Equity Composite	15.3	98.6	14.7	16.4	11.5	11.2	Jan-93
<i>Russell 2000</i>	12.7	94.8	14.8	16.4	11.7	10.0	Jan-93
LSV Small Cap Value	23.3	106.3	9.0	--	--	8.3	Dec-16
<i>Russell 2000 Value</i>	21.2	97.1	11.6	--	--	10.1	Dec-16
<i>Russell 2000</i>	12.7	94.8	14.8	--	--	14.2	Dec-16
<i>eV US Small Cap Value Equity Net Rank</i>	20	27	69	--	--	70	Dec-16
Smith, Graham & Co Small Cap Value	21.3	119.9	14.5	--	--	11.9	Dec-16
<i>Russell 2000 Value</i>	21.2	97.1	11.6	--	--	10.1	Dec-16
<i>eV US Small Cap Value Equity Net Rank</i>	31	10	17	--	--	24	Dec-16
SSGA Russell 2000	12.7	94.8	14.7	16.4	11.7	9.2	Mar-97
<i>Russell 2000</i>	12.7	94.8	14.8	16.4	11.7	9.3	Mar-97
<i>eV US Small Cap Core Equity Net Rank</i>	55	33	38	33	48	99	Mar-97
Copeland Small Cap Dividend Growth	14.4	66.5	15.1	--	--	13.8	Sep-17
<i>Russell 2000</i>	12.7	94.8	14.8	--	--	13.6	Sep-17
<i>eV US Small Cap Core Equity Net Rank</i>	40	88	33	--	--	38	Sep-17
AMI Small Cap Growth	3.1	76.7	8.2	--	--	10.5	Sep-17
<i>Russell 2000 Growth</i>	4.9	90.2	17.2	--	--	18.1	Sep-17
<i>eV US Small Cap Growth Equity Net Rank</i>	64	90	99	--	--	98	Sep-17
Emerald Small Cap Growth	2.2	87.8	18.9	19.9	14.8	11.9	Oct-98
<i>Russell 2000 Growth</i>	4.9	90.2	17.2	18.6	13.0	9.3	Oct-98
<i>eV US Small Cap Growth Equity Net Rank</i>	75	63	67	65	45	51	Oct-98
Non-U.S. Equity Composite	2.2	56.9	8.0	12.4	--	9.3	May-12
<i>MSCI ACWI ex USA</i>	3.5	49.4	6.5	9.8	--	8.1	May-12
<i>InvMetrics Public DB ex-US Eq Net Rank</i>	82	32	18	5	--	24	May-12
Developed Non-U.S. Equity Composite	1.8	56.3	9.6	12.6	7.5	8.2	Jan-93
<i>MSCI EAFE</i>	3.5	44.6	6.0	8.8	5.5	6.3	Jan-93
SSGA MSCI World ex US	4.1	46.3	6.7	9.3	--	7.0	Apr-12
<i>MSCI World ex USA</i>	4.0	45.9	6.3	8.9	--	6.6	Apr-12
<i>eV ACWI ex-US Core Equity Net Rank</i>	46	89	56	71	--	64	Apr-12
Hardman Johnston Int'l Equity	-3.7	66.6	14.2	17.0	--	11.4	Apr-12
<i>MSCI EAFE</i>	3.5	44.6	6.0	8.8	--	6.9	Apr-12
<i>eV EAFE All Cap Equity Net Rank</i>	98	8	1	1	--	1	Apr-12
HGK Int'l Equity	4.8	54.5	7.9	11.5	--	10.2	Feb-12
<i>MSCI EAFE</i>	3.5	44.6	6.0	8.8	--	7.3	Feb-12
<i>eV EAFE All Cap Equity Net Rank</i>	41	24	32	19	--	19	Feb-12

Pennsylvania Municipal Retirement System

Performance Summary (Net)

As of March 31, 2021

	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	Inception	Inception Date
Emerging Markets Composite							
SSGA MSCI Emerging Markets Index	2.3	58.9	6.2	12.0	3.5	9.3	Nov-08
MSCI Emerging Markets	2.3	58.4	6.5	12.1	3.7	9.5	Nov-08
eV Emg Mkts Equity Net Rank	63	71	55	56	71	71	Nov-08
Real Assets Composite							
<i>NFI</i>	1.9	2.1	3.9	5.0	7.1	7.5	Apr-93
Forest Investment Associates	1.9	1.5	4.0	5.3	8.7	--	Apr-93
NCREIF Timberland Property Index	5.2	3.9	0.9	2.5	4.2	3.8	Mar-99
PRISA LP	0.0	0.7	1.5	2.4	4.5	5.8	Mar-99
<i>NFI</i>	1.9	2.0	4.7	5.7	9.1	6.2	Jan-86
PRISA II	1.9	1.5	4.0	5.3	8.7	--	Jan-86
<i>NFI</i>	1.8	0.6	4.4	6.0	10.2	3.6	Jul-07
PennMuni-Nuveen U.S. Real Estate Fund	1.9	1.5	4.0	5.3	8.7	4.4	Jul-07
<i>NFI</i>	0.0	2.4	6.3	7.2	8.8	6.0	Dec-08
N. Front Street (Nuveen)	1.9	1.5	4.0	5.3	8.7	5.4	Dec-08
Consumer Price Index	0.0	-9.2	-4.0	--	--	-6.4	Sep-16
	1.7	2.6	2.0	--	--	2.1	Sep-16
Total Fixed Income Composite							
SSGA US Aggregate Bond Index	-3.4	0.8	4.7	3.1	3.4	5.1	Apr-97
BBgBarc US Aggregate TR	-3.4	0.7	4.7	3.1	3.4	5.1	Apr-97
eV US Core Fixed Inc Net Rank	63	90	78	77	75	67	Apr-97
Cash Composite							
Cash Management							
Pool 999							

IV. Investment Managers



Manager Summary: Concentrated portfolio (25-35 names) focused on finding undervalued companies that have high growth potential yet low risk of significant downside loss. 8 member team performs bottom-up fundamental analysis, all generalists: 4 member committee that meets weekly to discuss the portfolio. Low portfolio turnover around 20%. Sectors cannot be above 35% of portfolio.

Characteristics

	Portfolio	Russell 1000 Value
Number of Holdings	28	849
Weighted Avg. Market Cap. (\$B)	467.4	146.6
Median Market Cap. (\$B)	115.3	13.0
Price To Earnings	24.3	24.1
Price To Book	3.4	2.7
Price To Sales	2.5	2.3
Return on Equity (%)	14.8	10.8
Yield (%)	0.7	2.0

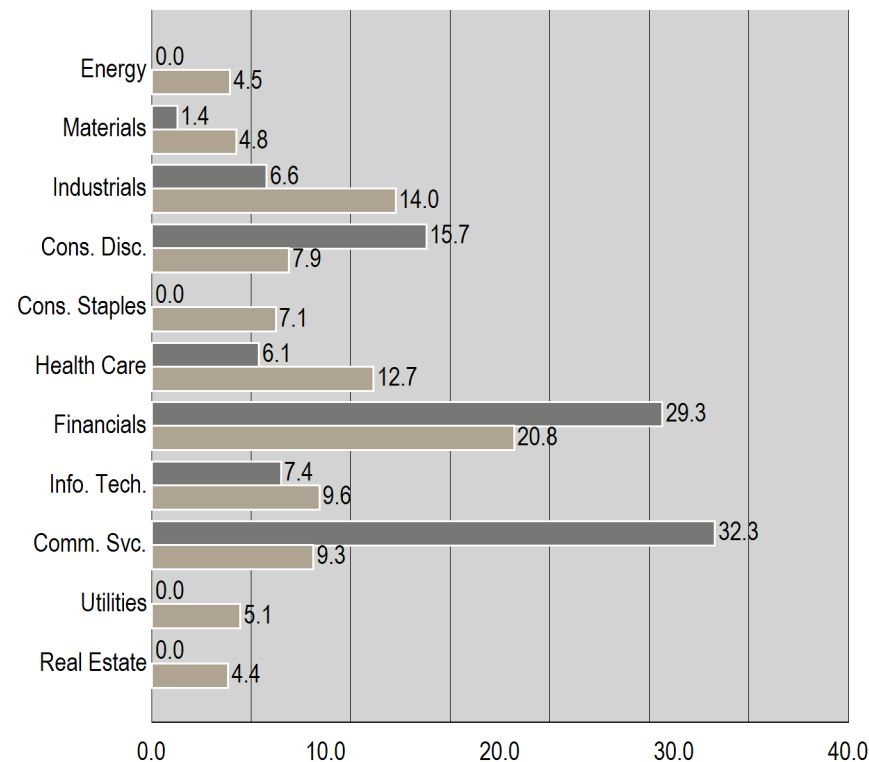
Top Holdings

ALPHABET INC	7.5%
MICROSOFT CORP	7.5%
COMCAST CORP	6.5%
FACEBOOK INC	6.5%
WELLS FARGO & CO	5.3%
GOLDMAN SACHS GROUP INC (THE)	5.2%
MARRIOTT INTERNATIONAL INC	5.2%
AMAZON.COM INC	5.0%
GENERAL ELECTRIC CO	4.9%
AON PLC	4.6%
Total	58.1%

Market Capitalization

	Small Cap	Mid Cap	Large Cap
Eagle Asset Mgmt	0.0%	13.9%	86.1%
Russell 1000 Value	0.9%	32.5%	66.6%
<i>Weight Over/Under</i>	-0.9%	-18.6%	19.5%

Sector Allocation (%) vs Russell 1000 Value



Manager Summary: Quantitative model that selects deep value stocks. Model ranks stocks based on fundamental measures of value and indicators of price recovery. The model contains three basic blocks of variables: 1) Cheapness/Fundamentals (60%), 2) Past Long-Term Performance/Contrarian (15%) and 3) Momentum (25%). The top 15% of stocks are ranked by expected return and then optimized for risk control. The resulting portfolio consists of approximately 100-150 stocks.

Characteristics

	Portfolio	S&P 500
Number of Holdings	151	505
Weighted Avg. Market Cap. (\$B)	64.8	467.6
Median Market Cap. (\$B)	16.3	29.5
Price To Earnings	18.0	30.1
Price To Book	2.7	4.5
Price To Sales	1.2	3.2
Return on Equity (%)	18.3	27.1
Yield (%)	2.2	1.4

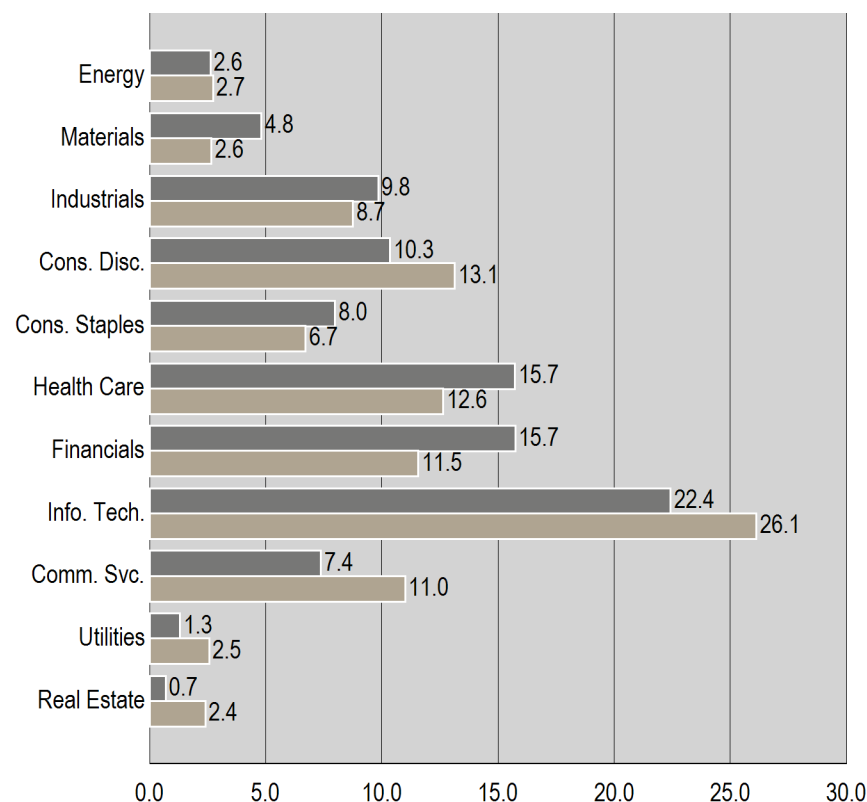
Top Holdings

INTEL CORP	2.2%
CISCO SYSTEMS INC	1.9%
ORACLE CORP	1.9%
VERIZON COMMUNICATIONS INC	1.7%
AT&T INC	1.7%
MERCK & CO INC	1.6%
APPLIED MATERIALS INC.	1.6%
COMCAST CORP	1.5%
PFIZER INC	1.5%
AMGEN INC	1.5%
Total	17.1%

Market Capitalization

	Small Cap	Mid Cap	Large Cap
LSV Large Cap Value	4.8%	52.9%	42.3%
S&P 500	0.0%	16.5%	83.5%
<i>Weight Over/Under</i>	4.8%	36.4%	-41.2%

Sector Allocation (%) vs S&P 500



Manager Summary: Passive strategy that seeks to replicate the return of the Standard & Poor's 500 index. This strategy is a low-cost option to gain diversified exposure to U.S. domiciled companies by owning the 500 largest companies by market capitalization in the U.S.

Characteristics

	Portfolio	S&P 500
Number of Holdings	507	505
Weighted Avg. Market Cap. (\$B)	461.2	467.6
Median Market Cap. (\$B)	29.5	29.5
Price To Earnings	30.0	30.1
Price To Book	4.5	4.5
Price To Sales	3.3	3.2
Return on Equity (%)	27.0	27.1
Yield (%)	1.5	1.4

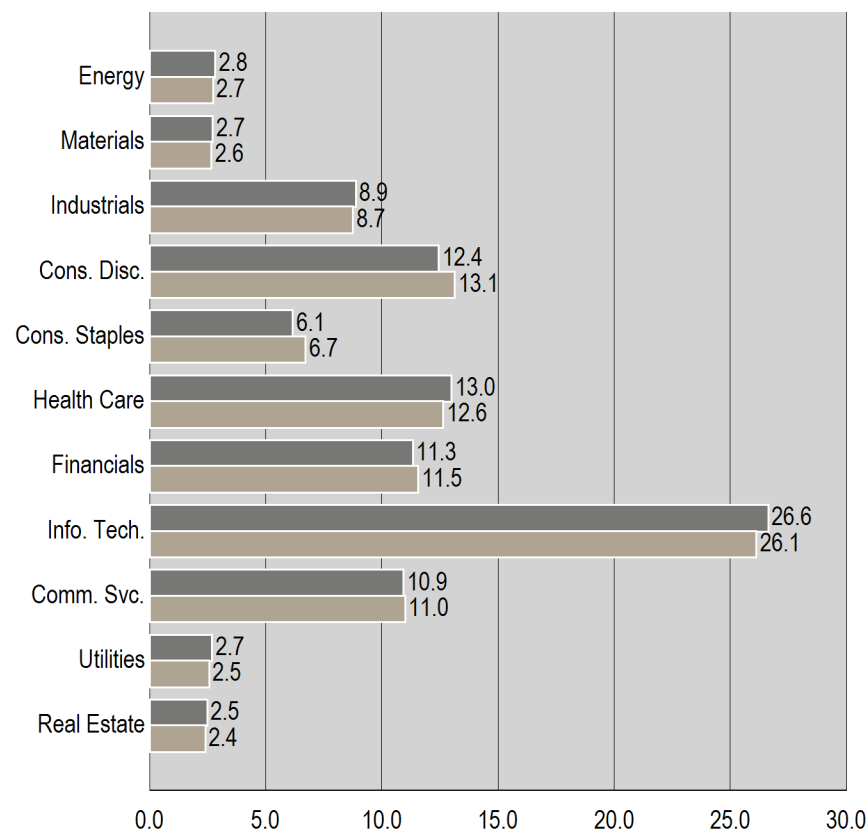
Top Holdings

APPLE INC	5.7%
MICROSOFT CORP	5.3%
AMAZON.COM INC	3.9%
FACEBOOK INC	2.1%
ALPHABET INC	1.8%
ALPHABET INC	1.8%
TESLA INC	1.5%
BERKSHIRE HATHAWAY INC	1.4%
JPMORGAN CHASE & CO	1.4%
JOHNSON & JOHNSON	1.3%
Total	26.3%

Market Capitalization

	Small Cap	Mid Cap	Large Cap
SSGA S&P 500	0.0%	16.6%	83.4%
S&P 500	0.0%	16.5%	83.5%
<i>Weight Over/Under</i>	<i>0.0%</i>	<i>0.1%</i>	<i>-0.1%</i>

Sector Allocation (%) vs S&P 500



Manager Summary: Concentrated U.S. large cap growth portfolio with 20-30 names. Investment process begins with negative screening, only including names with robust financials, strong management and attractive earnings growth potential. Then team of generalists perform bottom-up fundamental analysis reviewing industry dynamics, competitive advantage, free cash flow modeling, meet with mgmt. and perform worst case scenarios. High active share. Position limit: 50% limit on sector exposure. Low portfolio turnover (30%).

Characteristics

	Portfolio	Russell 1000 Growth
Number of Holdings	25	453
Weighted Avg. Market Cap. (\$B)	538.6	689.0
Median Market Cap. (\$B)	203.7	17.3
Price To Earnings	44.8	38.3
Price To Book	10.5	11.5
Price To Sales	8.5	5.5
Return on Equity (%)	31.6	36.9
Yield (%)	0.4	0.8

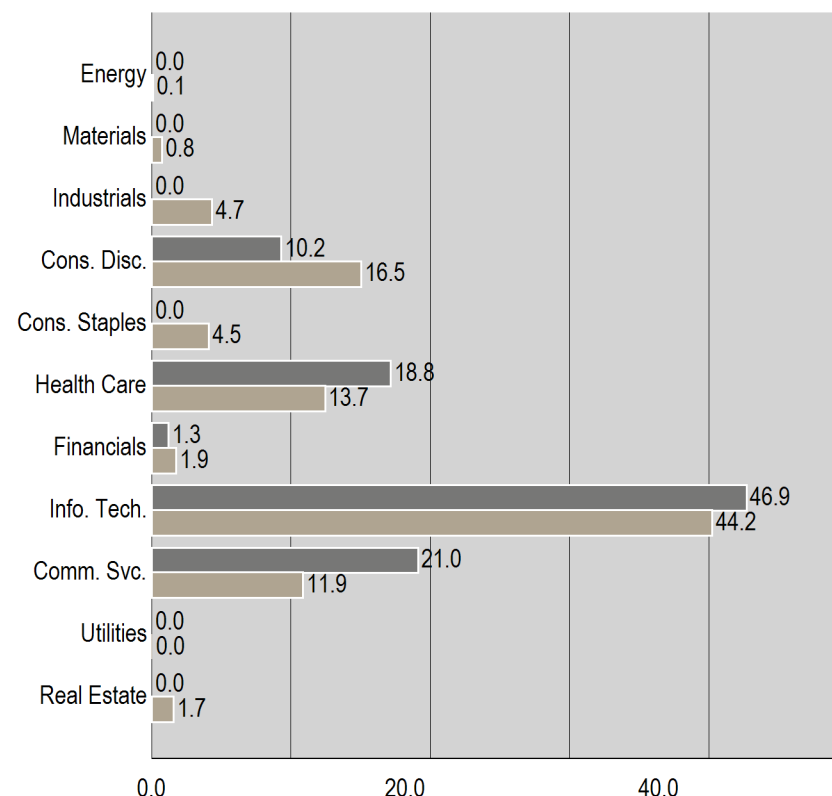
Top Holdings

FACEBOOK INC	8.7%
MICROSOFT CORP	8.3%
ALPHABET INC	7.2%
ADOBE INC	6.6%
ABBOTT LABORATORIES	5.8%
SALESFORCE.COM INC	4.8%
ACCENTURE PLC	4.8%
MASTERCARD INC	4.8%
AMAZON.COM INC	4.8%
VISA INC	4.7%
Total	60.3%

Market Capitalization

	Small Cap	Mid Cap	Large Cap
Polen Focus Growth	0.0%	4.1%	95.9%
Russell 1000 Growth	0.3%	15.0%	84.7%
<i>Weight Over/Under</i>	<i>-0.3%</i>	<i>-10.9%</i>	<i>11.2%</i>

Sector Allocation (%) vs Russell 1000 Growth



Manager Summary: U.S. large cap growth strategy with concentrated portfolio of 30-40 names. Invest in companies with long term earnings growth over a 3-5 year time horizon. Approximately 90% of their portfolio is based on quality growth and 10% fallen quality which may have some short term event which has caused undervaluation. The strategy is market and sector neutral to the Russell 1000 Growth. Names must have a market cap \$5bn<.

Characteristics

	Portfolio	Russell 1000 Growth
Number of Holdings	34	453
Weighted Avg. Market Cap. (\$B)	516.9	689.0
Median Market Cap. (\$B)	104.9	17.3
Price To Earnings	44.2	38.3
Price To Book	9.3	11.5
Price To Sales	5.8	5.5
Return on Equity (%)	27.2	36.9
Yield (%)	0.7	0.8

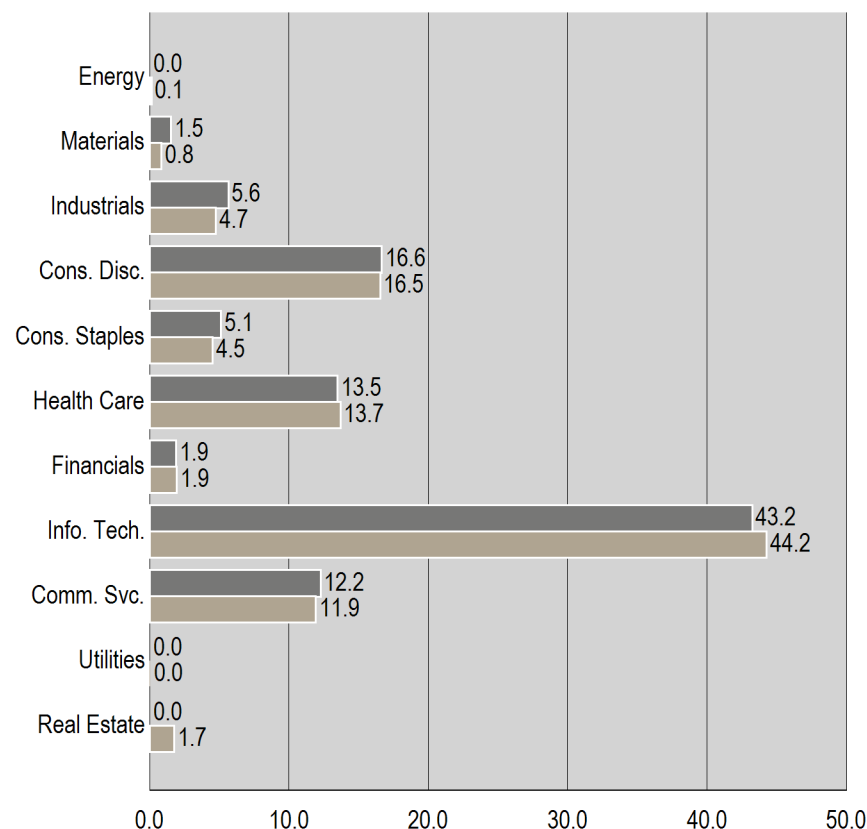
Top Holdings

MICROSOFT CORP	10.5%
AMAZON.COM INC	7.8%
ALPHABET INC	6.2%
MASTERCARD INC	5.0%
PAYPAL HOLDINGS INC	4.5%
UNITEDHEALTH GROUP INC	4.0%
NIKE INC	3.7%
ACCENTURE PLC	3.4%
TEXAS INSTRUMENTS INC	3.4%
LAM RESEARCH CORP	3.3%
Total	51.8%

Market Capitalization

	Small Cap	Mid Cap	Large Cap
William & Blair Large Cap Growth	0.0%	12.7%	87.3%
Russell 1000 Growth	0.3%	15.0%	84.7%
<i>Weight Over/Under</i>	<i>-0.3%</i>	<i>-2.3%</i>	<i>2.6%</i>

Sector Allocation (%) vs Russell 1000 Growth



Manager Summary: Quantitative model focuses on maximizing returns for given level of tracking error. The model ranks stocks based on fundamental measures of value and indicators of a recent recovery. Same model approach as LCV. The top 15% of stocks are ranked by expected return and then optimized for risk control. The resulting portfolio consists of approximately 175-225 stocks.

Characteristics

	Portfolio	Russell 2000
Number of Holdings	221	2,023
Weighted Avg. Market Cap. (\$B)	3.2	3.7
Median Market Cap. (\$B)	1.9	1.1
Price To Earnings	15.9	23.9
Price To Book	2.0	2.9
Price To Sales	0.9	1.8
Return on Equity (%)	6.6	-7.2
Yield (%)	1.6	0.9

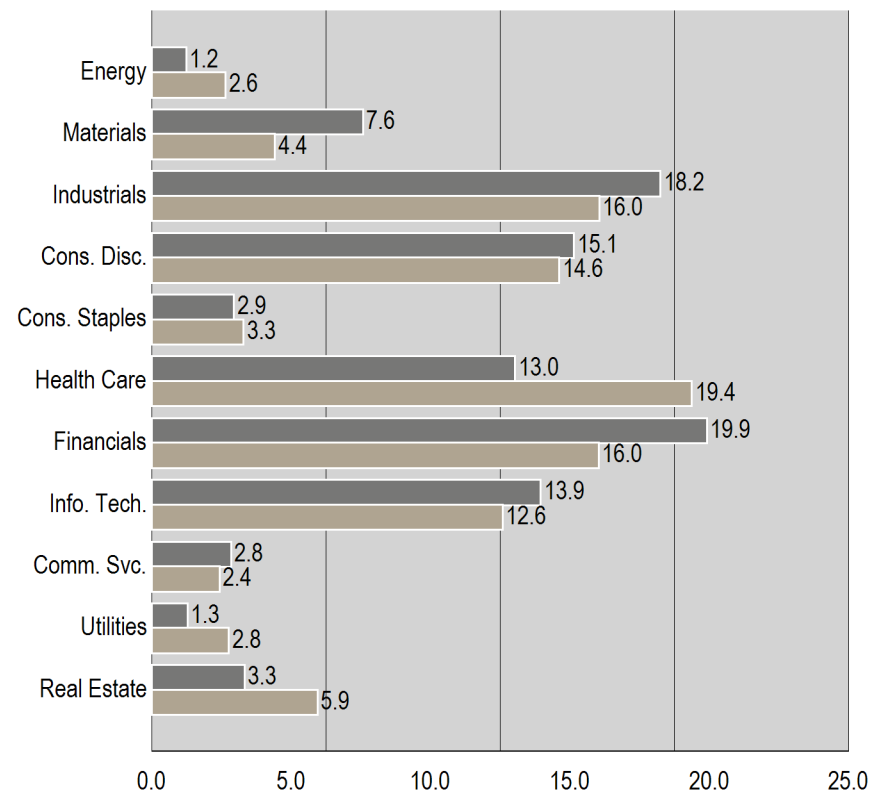
Top Holdings

SELECT MEDICAL HOLDINGS CORP	1.8%
ATKORE INC	1.6%
TENET HEALTHCARE CORP	1.5%
KB HOME	1.3%
CNO FINANCIAL GROUP INC	1.2%
J2 GLOBAL INC	1.2%
AMKOR TECHNOLOGY INC	1.2%
RELIANCE STEEL & ALUMINUM CO	1.2%
UNITED THERAPEUTICS CORP	1.1%
AGCO CORP	1.1%
Total	13.2%

Market Capitalization

	Small Cap	Mid Cap	Large Cap
LSV Small Cap Value	71.2%	28.8%	0.0%
Russell 2000	67.5%	32.5%	0.0%
<i>Weight Over/Under</i>	<i>3.7%</i>	<i>-3.7%</i>	<i>0.0%</i>

Sector Allocation (%) vs Russell 2000



Manager Summary: Minority-owned investment management firm with fundamental bottom-up process. Stocks are first screened based on earnings, book value, and cash flow criteria with fundamental analysis performed on the top 20% within each respective sector. Sell candidates are companies that have dropped to the bottom 40% of their screen. The strategy holds 50-75 positions and is typically within plus/minus 5% of index sector weightings.

Characteristics

	Portfolio	Russell 2000 Value
Number of Holdings	68	1,474
Weighted Avg. Market Cap. (\$B)	3.1	3.2
Median Market Cap. (\$B)	2.3	0.9
Price To Earnings	18.8	19.3
Price To Book	2.3	2.0
Price To Sales	0.9	1.3
Return on Equity (%)	-4.1	-6.0
Yield (%)	1.1	1.5

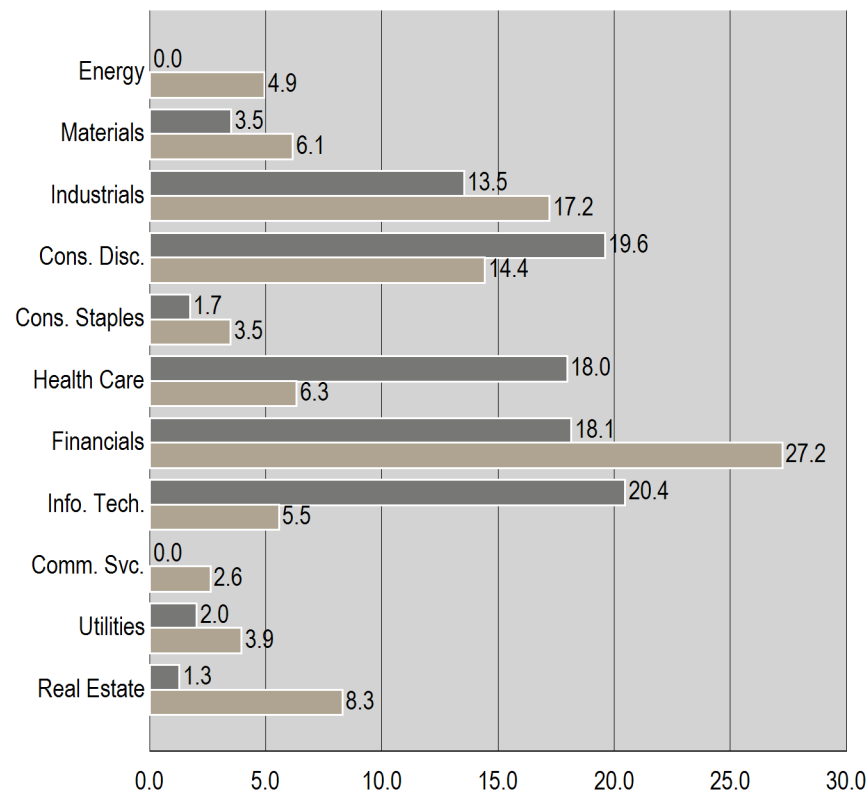
Top Holdings

ULTRA CLEAN HOLDINGS INC	2.9%
HIBBETT SPORTS INC	2.9%
LITHIA MOTORS INC.	2.8%
DYCOM INDUSTRIES INC.	2.7%
OWENS & MINOR INC.	2.7%
SELECT MEDICAL HOLDINGS CORP	2.7%
SYNAPTICS INC	2.4%
M.D.C. HOLDINGS INC.	2.3%
DECKERS OUTDOOR CORP	2.3%
DIEBOLD NIXDORF INC	2.3%
Total	26.1%

Market Capitalization

	Small Cap	Mid Cap	Large Cap
Smith, Graham & Co Small Cap Value	75.5%	24.5%	0.0%
Russell 2000 Value	76.4%	23.6%	0.0%
<i>Weight Over/Under</i>	<i>-0.9%</i>	<i>0.9%</i>	<i>0.0%</i>

Sector Allocation (%) vs Russell 2000 Value



Manager Summary: Passive strategy that seeks to replicate the return of the Russell 2000 index. This strategy is a low-cost option to gain diversified exposure to U.S. domiciled companies through owning the 2,000 smallest American companies by market capitalization in the Russell 3000 index.

Characteristics

	Portfolio	Russell 2000
Number of Holdings	2,079	2,023
Weighted Avg. Market Cap. (\$B)	3.7	3.7
Median Market Cap. (\$B)	1.1	1.1
Price To Earnings	24.0	23.9
Price To Book	2.9	2.9
Price To Sales	1.8	1.8
Return on Equity (%)	-7.2	-7.2
Yield (%)	0.9	0.9

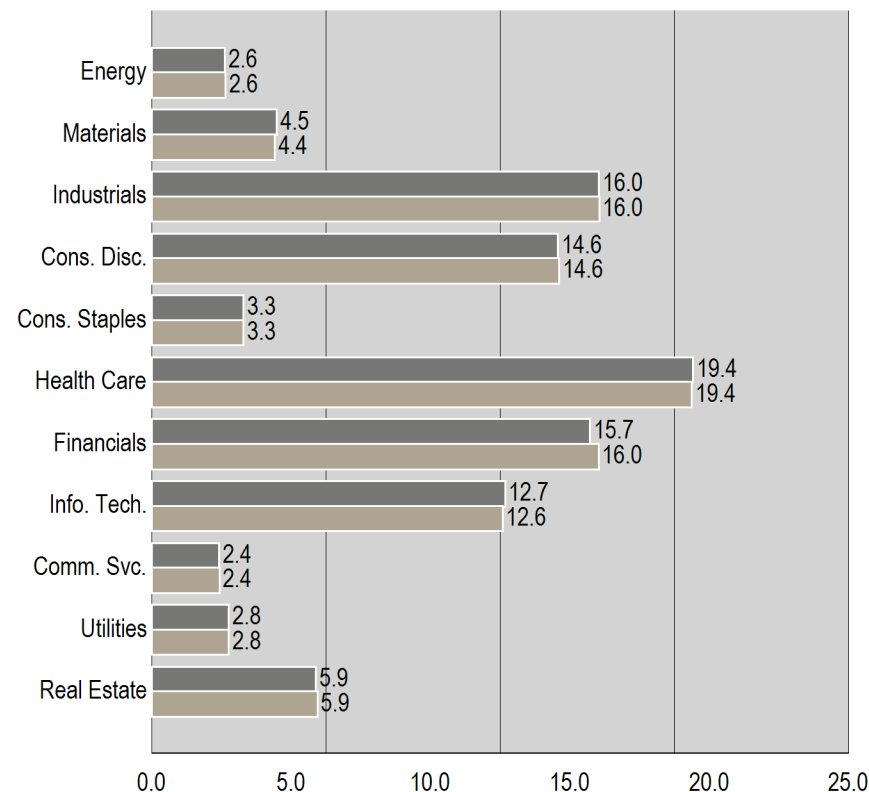
Top Holdings

PENN NATIONAL GAMING INC	0.6%
CAESARS ENTERTAINMENT INC	0.6%
PLUG POWER INC	0.5%
DARLING INGREDIENTS INC	0.4%
NOVAVAX INC	0.4%
GAMESTOP CORP.	0.4%
LITHIA MOTORS INC.	0.4%
SUNRUN INC	0.3%
BUILDERS FIRSTSOURCE INC	0.3%
RH	0.3%
Total	4.2%

Market Capitalization

	Small Cap	Mid Cap	Large Cap
SSGA Russell 2000	67.2%	32.8%	0.0%
Russell 2000	67.5%	32.5%	0.0%
<i>Weight Over/Under</i>	<i>-0.2%</i>	<i>0.2%</i>	<i>0.0%</i>

Sector Allocation (%) vs Russell 2000



Manager Summary: A bottom-up fundamental manager who views dividend growth as a litmus test for earnings quality and focuses on attributes such as dividend coverage, cash flow strength, earnings growth, and return on capital. Fundamental research is focused on identifying companies with strong competitive positions that support steadily rising dividends. Strategy invests in larger, more established small cap firms while tending to underweight the lower market cap ranges. The strategy seeks sector diversification with 45-50 holdings.

Characteristics

	Portfolio	Russell 2000
Number of Holdings	60	2,023
Weighted Avg. Market Cap. (\$B)	4.3	3.7
Median Market Cap. (\$B)	3.6	1.1
Price To Earnings	27.5	23.9
Price To Book	3.2	2.9
Price To Sales	2.1	1.8
Return on Equity (%)	13.4	-7.2
Yield (%)	1.7	0.9

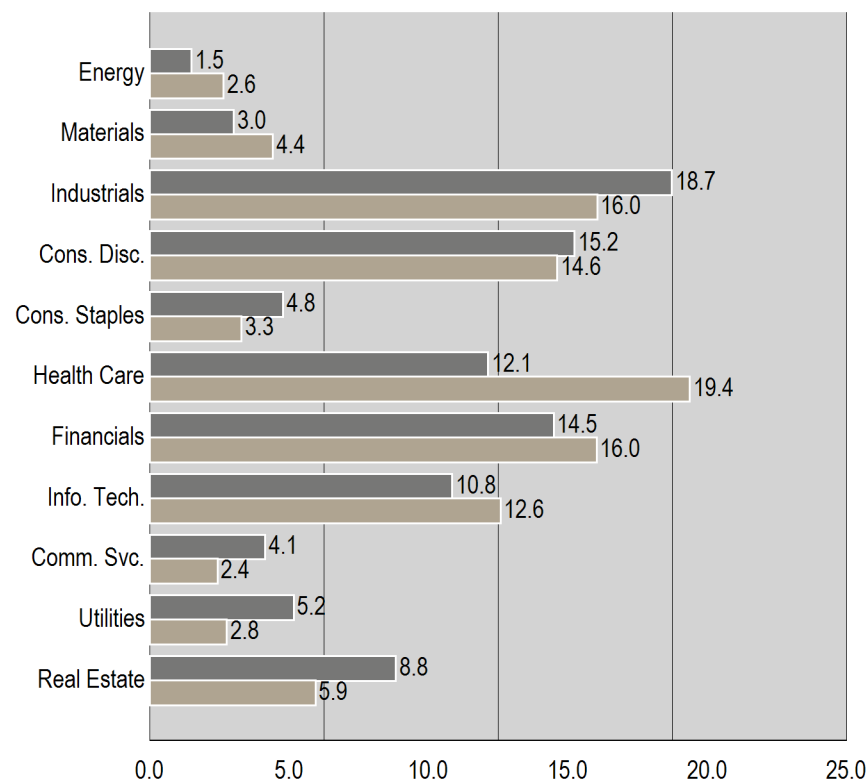
Top Holdings

ENSIGN GROUP INC (THE)	3.1%
EVERCORE INC	2.7%
SHOE CARNIVAL INC	2.6%
NEXSTAR MEDIA GROUP INC.	2.4%
BRUNSWICK CORP	2.4%
HOME BANCSHARES INC	2.3%
ENCOMPASS HEALTH CORP	2.3%
BANK OZK	2.3%
ALGONQUIN POWER & UTILITIES CORP	2.2%
STANDEX INTERNATIONAL CORP	2.2%
Total	24.6%

Market Capitalization

	Small Cap	Mid Cap	Large Cap
Copeland Small Cap Dividend Growth	48.0%	52.0%	0.0%
Russell 2000	67.5%	32.5%	0.0%
Weight Over/Under	-19.5%	19.5%	0.0%

Sector Allocation (%) vs Russell 2000



Manager Summary: Strategy invests in companies with recurring revenues. Considered a Growth at a Reasonable Price "GARP" strategy, owning companies at attractive valuations and temporary mispricing. Portfolio will traditionally hold 30-35 names in the portfolio. Turnover of the portfolio is 40-50%.

Characteristics

	Portfolio	Russell 2000 Growth
Number of Holdings	34	1,114
Weighted Avg. Market Cap. (\$B)	4.3	4.2
Median Market Cap. (\$B)	3.8	1.2
Price To Earnings	38.8	33.5
Price To Book	4.1	5.3
Price To Sales	2.7	3.1
Return on Equity (%)	13.2	-8.2
Yield (%)	0.2	0.4

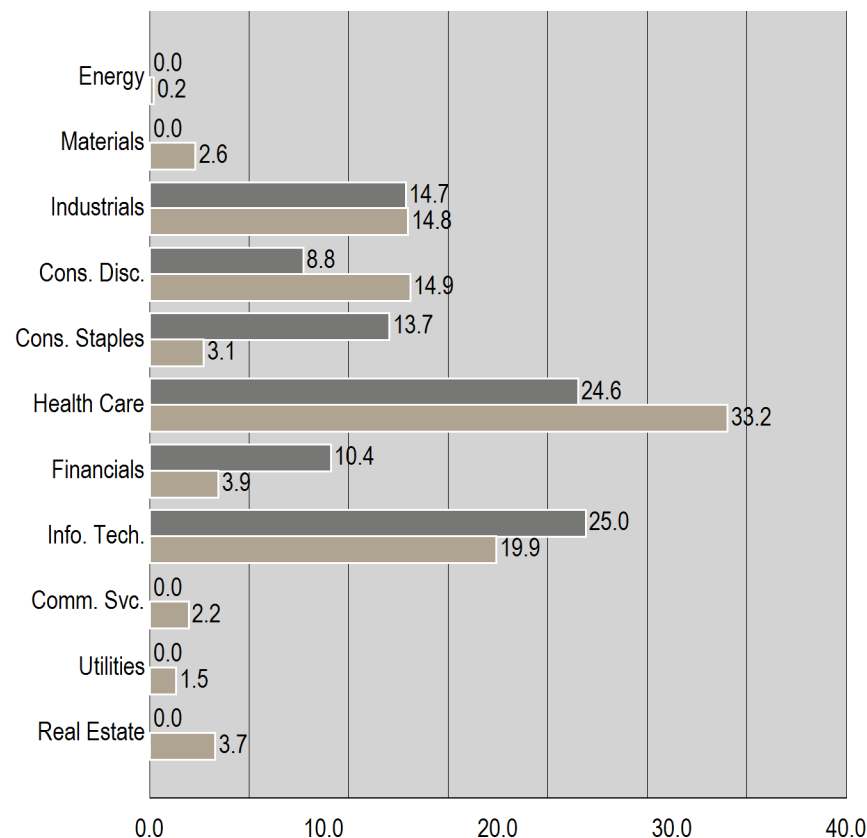
Top Holdings

HALOZYME THERAPEUTICS INC	4.6%
MERIT MEDICAL SYSTEMS INC	4.2%
WILLSCOT MOBILE MINI HOLDINGS CORP	4.2%
SIMPLY GOOD FOODS CO (THE)	4.1%
SYNEOS HEALTH INC	4.1%
WESTERN ALLIANCE BANCORPORATION	4.0%
PERFICIENT INC	3.5%
PRIMERICA INC	3.4%
ASGN INC	3.3%
GREEN DOT CORP	3.3%
Total	38.7%

Market Capitalization

	Small Cap	Mid Cap	Large Cap
AMI Small Cap Growth	58.7%	41.3%	0.0%
Russell 2000 Growth	58.3%	41.7%	0.0%
<i>Weight Over/Under</i>	<i>0.4%</i>	<i>-0.4%</i>	<i>0.0%</i>

Sector Allocation (%) vs Russell 2000 Growth



Manager Summary: Core growth strategy, fundamental, bottom-up process seeking companies with a competitive advantage, market leadership, growth rates exceeding peers, differentiated growth drivers, and low research coverage. Analysts work across the market cap spectrum supporting small, mid, and all-cap strategies with coverage of dynamic sectors. The strategy holds 110-125 companies and portfolio construction limits of no more than 15% in any one industry group.

Characteristics

	Portfolio	Russell 2000 Growth
Number of Holdings	118	1,114
Weighted Avg. Market Cap. (\$B)	4.0	4.2
Median Market Cap. (\$B)	3.3	1.2
Price To Earnings	39.0	33.5
Price To Book	4.7	5.3
Price To Sales	3.5	3.1
Return on Equity (%)	-13.2	-8.2
Yield (%)	0.4	0.4

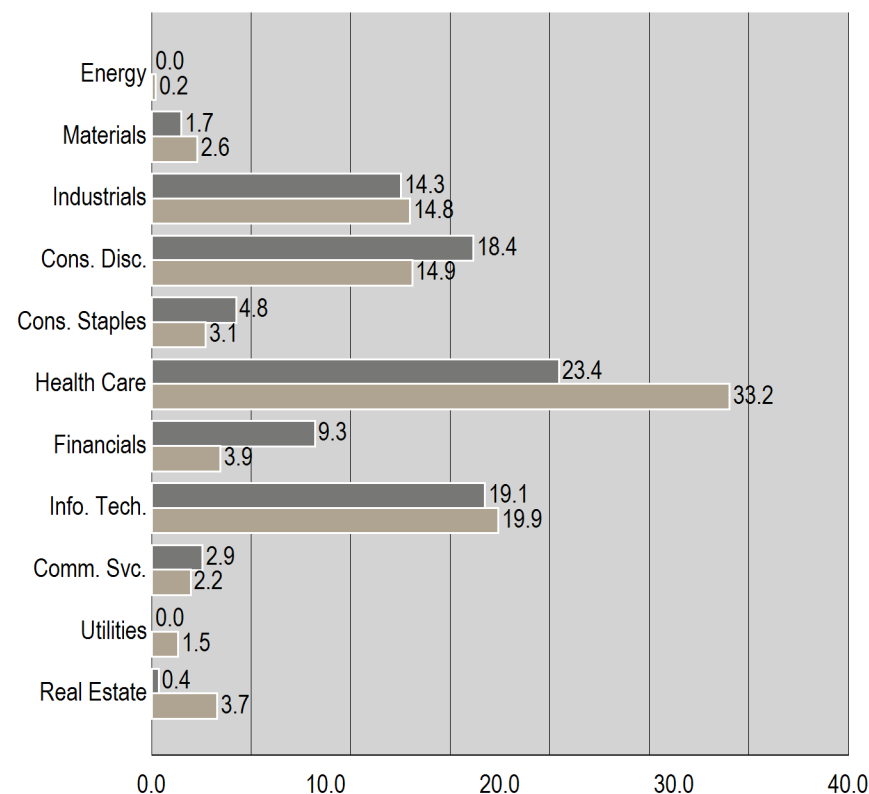
Top Holdings

FRESHPET INC	2.5%
NEOGENOMICS INC	2.2%
CHURCHILL DOWNS INC	2.0%
CHART INDUSTRIES INC	2.0%
CHEGG INC	1.9%
VARONIS SYSTEMS INC	1.9%
MACOM TECHNOLOGY SOLUTIONS HOLDINGS INC	1.8%
TETRA TECH INC	1.7%
MOELIS & CO	1.7%
RAPID7 INC	1.7%
Total	19.4%

Market Capitalization

	Small Cap	Mid Cap	Large Cap
Emerald Small Cap Growth	60.2%	39.8%	0.0%
Russell 2000 Growth	58.3%	41.7%	0.0%
<i>Weight Over/Under</i>	<i>1.9%</i>	<i>-1.9%</i>	<i>0.0%</i>

Sector Allocation (%) vs Russell 2000 Growth



Pennsylvania Municipal Retirement System

SSGA MSCI World ex US

As of March 31, 2021

Manager Summary: Passive strategy that seeks to replicate the returns of the MSCI ACWI ex US index. This strategy is a low-cost option to gain diversified exposure to internationally based companies.

Characteristics

	Portfolio	MSCI ACWI ex USA
Number of Holdings	1,837	2,345
Weighted Avg. Market Cap. (\$B)	102.2	102.8
Median Market Cap. (\$B)	10.0	9.7
Price To Earnings	21.5	21.6
Price To Book	2.7	2.7
Price To Sales	1.5	1.5
Return on Equity (%)	10.5	10.4
Yield (%)	2.2	2.3

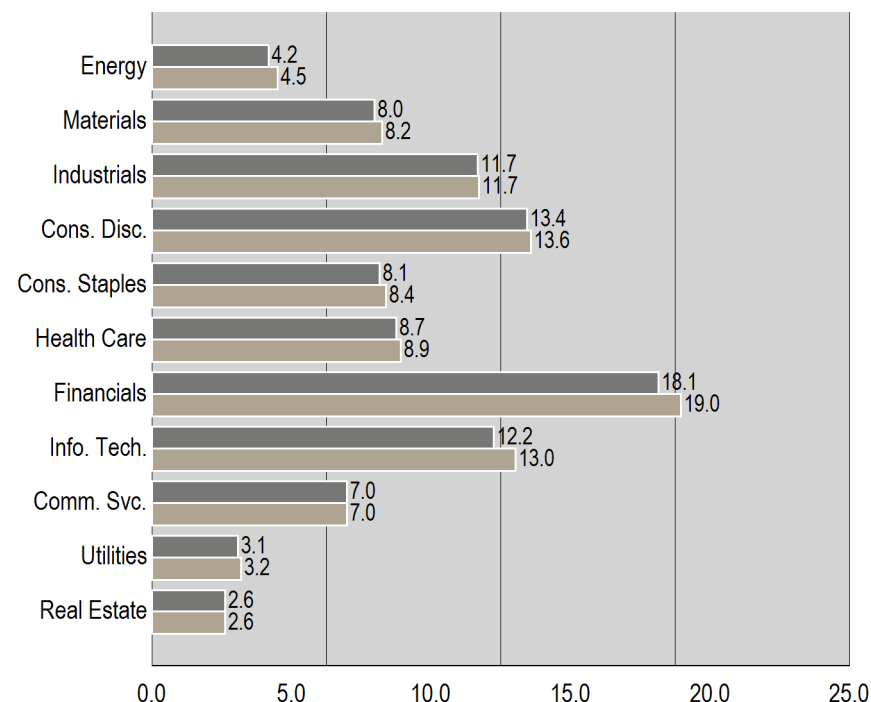
Top Holdings

ISHARES TRUST - ISHARES MSCI INDIA ETF	2.7%
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	1.9%
TENCENT HOLDINGS LTD	1.7%
ALIBABA GROUP HOLDING LTD	1.7%
SAMSUNG ELECTRONICS CO LTD	1.3%
NESTLE SA, CHAM UND VEVEY	1.2%
ASML HOLDING NV	1.0%
ROCHE HOLDING AG	0.9%
NOVARTIS AG	0.7%
LVMH MOET HENNESSY LOUIS VUITTON SE	0.7%
Total	13.8%

Market Capitalization

	Small Cap	Mid Cap	Large Cap	Unclassified
SSGA MSCI World ex US	9.8%	22.7%	62.9%	4.6%
MSCI ACWI ex USA	9.6%	23.8%	66.7%	0.0%
<i>Weight Over/Under</i>	0.3%	-1.1%	-3.7%	4.6%

Sector Allocation (%) vs MSCI ACWI ex USA



Region Allocation Summary

Region	% of Total	% of Bench	% Diff
North America ex U.S.	6.7%	6.7%	0.0%
United States	0.3%	0.0%	0.3%
Europe Ex U.K.	31.5%	30.3%	1.2%
United Kingdom	7.6%	8.9%	-1.3%
Pacific Basin Ex Japan	8.1%	7.4%	0.8%
Japan	15.5%	15.5%	0.0%
Emerging Markets	29.2%	30.6%	-1.4%
Other	1.1%	0.6%	0.5%
Total	100.0%	100.0%	0.0%

Manager Summary: Concentrated portfolio (20-30 names). Utilizes fundamental research invests in quality companies with 10% EPS growth and market leaders, invest at attractive valuation. Turnover is between 20-30%. Maximum position is 5%. Given the concentrated nature of the portfolio, high idiosyncratic risk in the portfolio and sizable tracking error. High active share (around 90-95%). No currency hedge.

Characteristics

	Portfolio	MSCI EAFE
Number of Holdings	25	875
Weighted Avg. Market Cap. (\$B)	116.9	73.0
Median Market Cap. (\$B)	55.2	12.9
Price To Earnings	43.9	23.3
Price To Book	5.8	2.6
Price To Sales	4.5	1.4
Return on Equity (%)	-2.8	9.8
Yield (%)	0.4	2.3

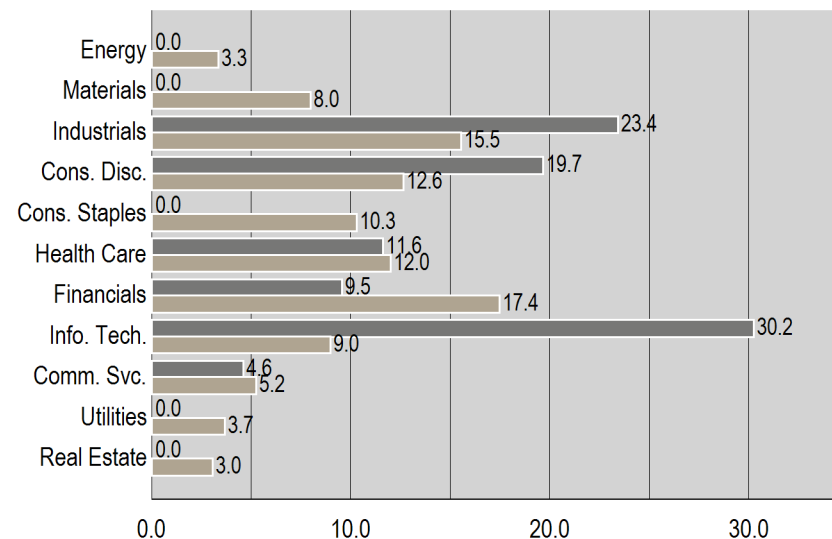
Top Holdings

ASML HOLDING NV	6.0%
MELCO RESORTS & ENTERTAINMENT LTD	5.3%
SAFRAN SA	5.3%
AIRBUS SE	5.2%
APTIV PLC	5.1%
ICICI BANK LTD	4.9%
ATLISSIAN CORP PLC	4.8%
NIDEC CORP	4.8%
KEYENCE CORP	4.8%
AIA GROUP LTD	4.7%
Total	51.1%

Market Capitalization

	Small Cap	Mid Cap	Large Cap	Unclassified
Hardman Johnston Int'l Equity	0.0%	24.2%	74.7%	1.0%
MSCI EAFE	5.2%	24.2%	70.5%	0.0%
<i>Weight Over/Under</i>	-5.2%	0.0%	4.2%	1.0%

Sector Allocation (%) vs MSCI EAFE



Region Allocation Summary

Region	% of Total	% of Bench	% Diff
North America ex U.S.	0.0%	0.0%	0.0%
United States	0.0%	0.0%	0.0%
Europe Ex U.K.	35.5%	48.5%	-13.1%
United Kingdom	7.8%	14.2%	-6.4%
Pacific Basin Ex Japan	20.8%	11.8%	9.0%
Japan	18.5%	24.8%	-6.4%
Emerging Markets	17.5%	0.0%	17.5%
Other	0.0%	0.6%	-0.6%
Total	100.0%	100.0%	0.0%

Manager Summary: Bottom-up fundamental manager looking for businesses that are undergoing structural change. Analysts are generalists who are unconstrained in their candidates. Looking for upside over a time horizon of 2-3 years through assessing and predicting earnings estimates. Concentrated portfolio: 30-35 names equally weighted with a max of 5% allocation. Sector and countries limits of 30%. Turnover is roughly 30-40%.

Characteristics

	Portfolio	MSCI EAFE
Number of Holdings	36	875
Weighted Avg. Market Cap. (\$B)	52.4	73.0
Median Market Cap. (\$B)	23.7	12.9
Price To Earnings	11.3	23.3
Price To Book	2.6	2.6
Price To Sales	0.9	1.4
Return on Equity (%)	7.4	9.8
Yield (%)	0.8	2.3

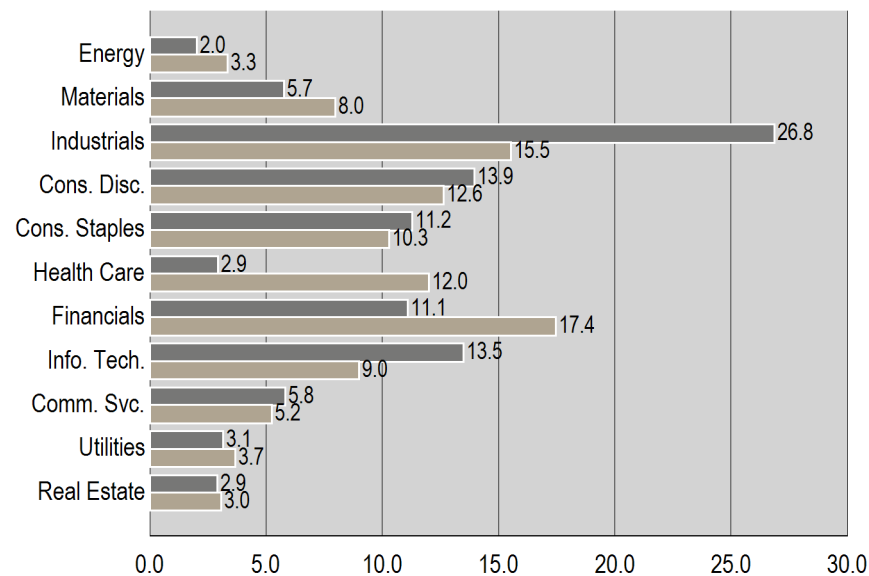
Top Holdings

SHIMANO INC	3.9%
SK HYNIX INC	3.9%
COCA-COLA EUROPEAN PARTNERS PLC	3.4%
ASML HOLDING NV	3.4%
CAPGEMINI SE	3.4%
TECHTRONIC INDUSTRIES CO LTD	3.3%
BAE SYSTEMS PLC	3.3%
TOYOTA MOTOR CORP	3.3%
GETLINK SE	3.3%
FORTUM OYJ	3.2%
Total	34.3%

Market Capitalization

	Small Cap	Mid Cap	Large Cap	Unclassified
HGK Int'l Equity	3.7%	39.3%	50.5%	6.5%
MSCI EAFE	5.2%	24.2%	70.5%	0.0%
<i>Weight Over/Under</i>	<i>-1.5%</i>	<i>15.0%</i>	<i>-20.0%</i>	<i>6.5%</i>

Sector Allocation (%) vs MSCI EAFE



Region Allocation Summary

Region	% of Total	% of Bench	% Diff
North America ex U.S.	5.7%	0.0%	5.7%
United States	0.0%	0.0%	0.0%
Europe Ex U.K.	47.1%	48.5%	-1.5%
United Kingdom	17.8%	14.2%	3.6%
Pacific Basin Ex Japan	8.7%	11.8%	-3.0%
Japan	14.6%	24.8%	-10.3%
Emerging Markets	6.1%	0.0%	6.1%
Other	0.0%	0.6%	-0.6%
Total	100.0%	100.0%	0.0%

Manager Summary: Passive strategy that seeks to replicate the return of the MSCI Emerging Markets index. This strategy is a low-cost option to gain diversified exposure to emerging market based companies.

Characteristics

	Portfolio	MSCI Emerging Markets
Number of Holdings	1,217	1,381
Weighted Avg. Market Cap. (\$B)	178.0	176.6
Median Market Cap. (\$B)	7.1	7.1
Price To Earnings	19.3	19.2
Price To Book	3.1	3.0
Price To Sales	1.6	1.6
Return on Equity (%)	12.0	12.0
Yield (%)	2.0	2.0

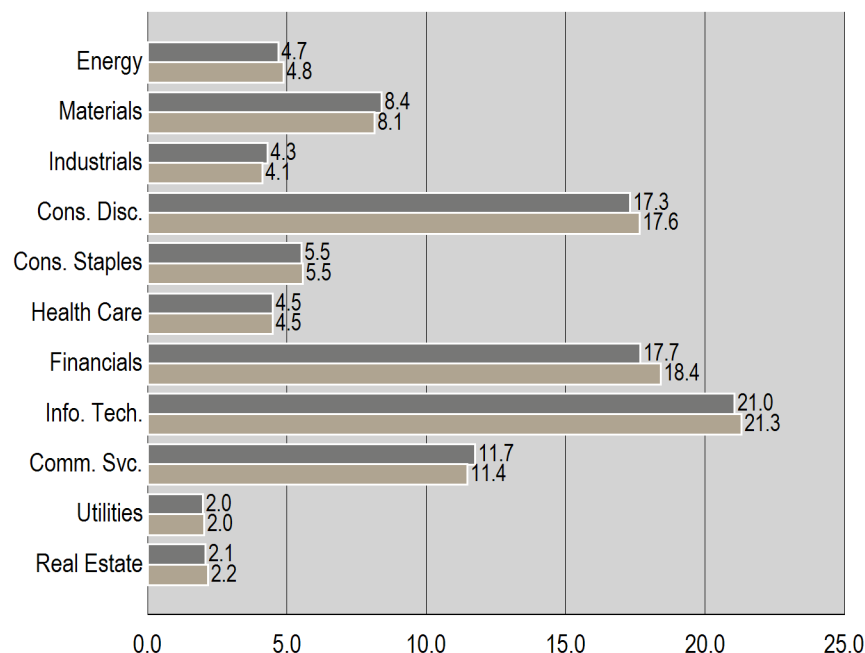
Top Holdings

TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	6.4%
TENCENT HOLDINGS LTD	5.7%
ALIBABA GROUP HOLDING LTD	5.5%
SAMSUNG ELECTRONICS CO LTD	4.3%
MEITUAN DIANPING USD0.00001 A B CLASS ISIN KYG596691041	1.6%
NASPERS LTD	1.3%
CHINA CONSTRUCTION BANK CORP	1.0%
RELIANCE INDUSTRIES LTD	0.9%
VALE SA	0.9%
PING AN INSURANCE GROUP	0.8%
Total	28.5%

Market Capitalization

	Small Cap	Mid Cap	Large Cap	Unclassified
SSGA MSCI Emerging Markets Index	3.6%	19.3%	71.4%	5.7%
MSCI Emerging Markets	8.7%	19.2%	72.0%	0.0%
<i>Weight Over/Under</i>	-5.1%	0.0%	-0.6%	5.7%

Sector Allocation (%) vs MSCI Emerging Markets



Region Allocation Summary

Region	% of Total	% of Bench	% Diff
North America ex U.S.	0.0%	0.0%	0.0%
United States	0.6%	0.0%	0.6%
Europe Ex U.K.	0.2%	0.1%	0.1%
United Kingdom	0.1%	0.0%	0.1%
Pacific Basin Ex Japan	3.0%	0.0%	3.0%
Japan	0.0%	0.0%	0.0%
Emerging Markets	94.5%	99.3%	-4.7%
Other	1.5%	0.6%	0.9%
Total	100.0%	100.0%	0.0%

Characteristics

Fund GAV (\$MM)	\$26,179.1
Fund NAV (\$MM)	\$20,301.7
Cash (% of NAV)	3.2%
# of Investments	266
% in Top 10 by NAV	27.4%
Leverage %	23.0%
Occupancy	89.9%
# of MSAs	42
1-Year Dividend Yield	3.3%
As of Date	31-Dec-20

Strategy Breakdown

	% of Portfolio
Pre-Development	0.5%
Development	5.1%
Initial Leasing	1.8%
Operating	92.4%
Re-Development	
Other	0.2%

Top Five Metro Areas	% of NAV
Los Angeles-Long Beach, CA	16.9%
New York-Newark, NY-NJ-CT-F	15.6%
Washington-Baltimore-Arlington	12.2%
San Jose-San Francisco-Oakland	9.2%
Boston-Worcester-Providence	6.9%

Queue In:

Contribution Queue (\$MM)	\$955.00
Anticipated Drawdown (Months)	

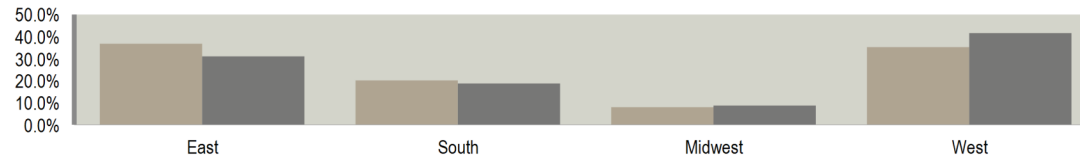
Queue Out:

Redemption Queue (\$MM)	\$442.02
Anticipated Payout (Months)	

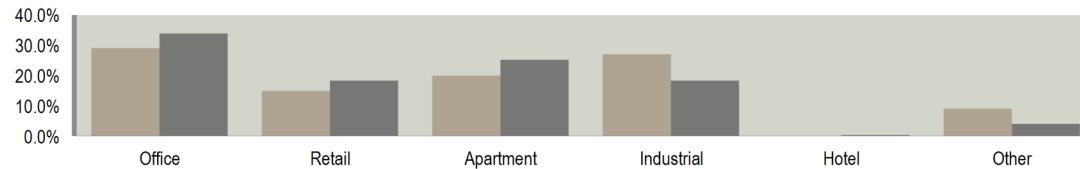
Top Ten Holdings Investment Detail

#	Property	Type	Location	% of Fund NAV
1	ESS Storage Portfolio	Other	Various	6.7%
2	International Place	Office	Boston	5.3%
3	Avalon Portfolio	Other	Alpharetta	2.6%
4	11 Madison	Office	New York	2.5%
5	Eleven Times Square - Office	Office	New York	2.3%
6	Wareham Portfolio	Office	Emeryville	1.8%
7	Post Montgomery Tower	Office	San Francisco	1.8%
8	Mission Towers	Office	Santa Clara	1.7%
9	500 8th Street	Office	Washington	1.6%
10	Central Place	Office	Arlington	1.1%
Total				27.4%

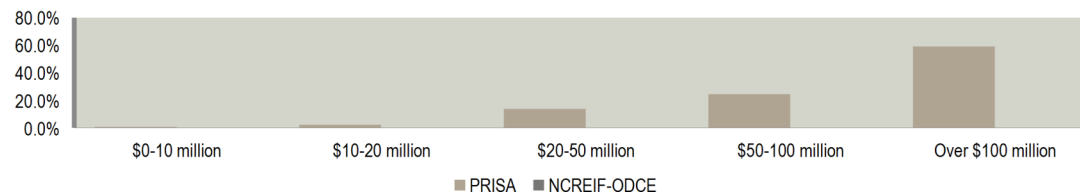
Regional Breakdown by NAV (Excluding Cash & Debt)



Property Type Breakdown by NAV (Excluding Cash & Debt)



Property Size Breakdown by NAV (Excluding Cash & Debt)



■ PRISA ■ NCREIF-ODCE

Characteristics

Fund GAV (\$MM)	\$13,454.0
Fund NAV (\$MM)	\$8,238.0
Cash (% of NAV)	2.3%
# of Investments	154
% in Top 10 by NAV	25.4%
Leverage %	37.0%
Occupancy	85.6%
# of MSAs	70
1-Year Dividend Yield	3.1%
As of Date	31-Dec-20

Strategy Breakdown

	% of Portfolio
Pre-Development	7.7%
Development	5.0%
Initial Leasing	14.9%
Operating	70.8%
Re-Development	
Other	1.6%

Top Five Metro Areas	% of NAV
Washington DC	8.1%
San Francisco, CA	7.6%
Northern NJ	7.2%
Boston, MA	6.6%
San Jose, CA	6.4%

Queue In:

Contribution Queue (\$MM)	\$0.00
Anticipated Drawdown (Months)	0

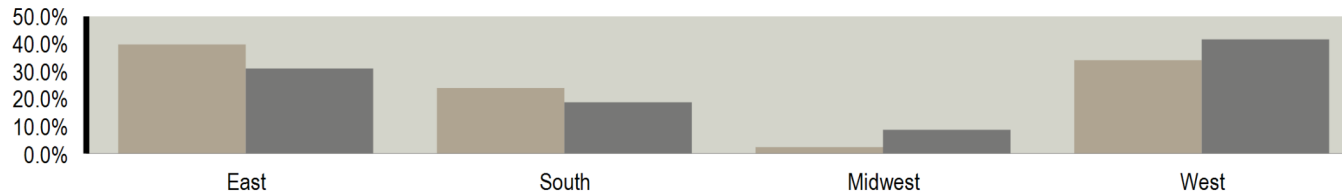
Queue Out:

Redemption Queue (\$MM)	\$322.30
Anticipated Payout (Months)	0

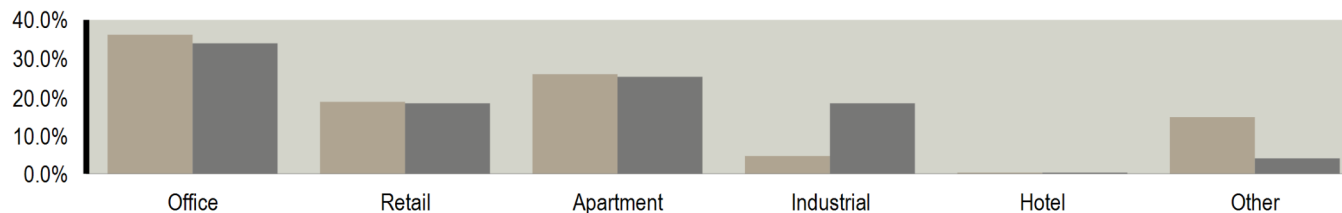
Top Ten Holdings Investment Detail

#	Property	Type	Location	% of Fund NAV
1	Great America Commons	Office	Santa Clara, CA	4.0%
2	Citigroup Center	Office	San Francisco, CA	3.8%
3	Twenty 20	Apartment	Cambridge, MA	2.5%
4	Redwood LIFE	Office	Redwood Shores, CA	2.5%
5	1015 Half Street	Office	Washington, DC	2.3%
6	Tremley Point Logistics Center	Other	Linden, NJ	2.2%
7	The MET (MetroCenter at South Coast)	Office	Costa Mesa, CA	2.2%
8	Regions Plaza	Office	Atlanta, GA	2.1%
9	Franklin Square North	Office	Washington, DC	2.0%
10	Sayreville Seaport	Other	Sayreville, NJ	2.0%
Total				25.4%

Regional Breakdown by NAV (Excluding Cash & Debt)



Property Type Breakdown by NAV (Excluding Cash & Debt)



Characteristics

Fund GAV (\$MM)	\$277.0
Fund NAV (\$MM)	\$259.8
Cash (% of NAV)	0.0%
# of Investments	8
Occupancy	97.7%
NOI	5.9%
Loan to Value	7.2%
As of Date	12/31/2020

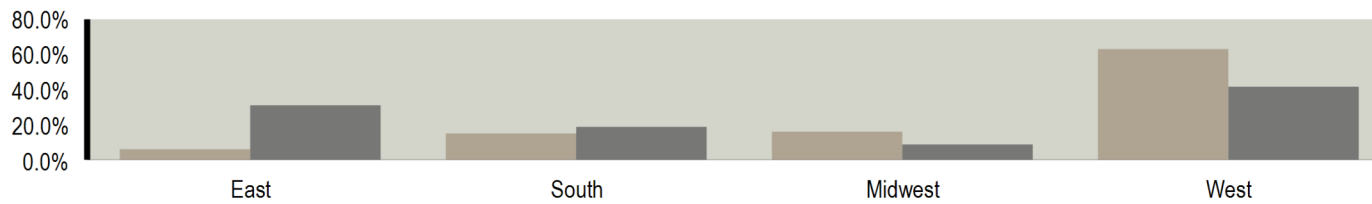
Asset Summary

Property	Acquisition
Copley Corporate Center	2010
SR Ranch	2011
Des Peres Corners	2010
708 Uptown	2014
Fairway Center II	2016
Republic Distribution Center	2013
526 Route 46	2014
Shoppes at Monarch Lakes	2010

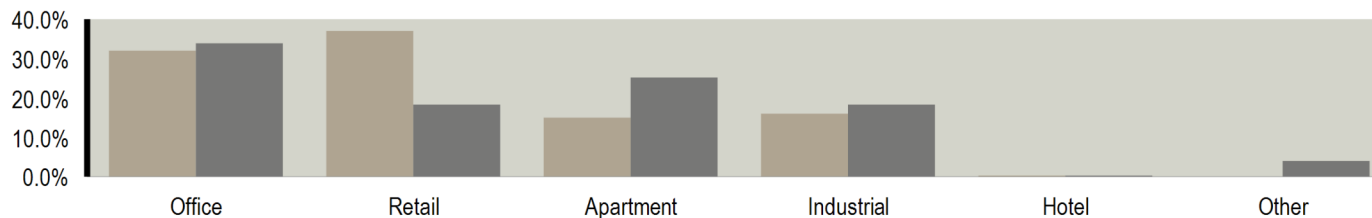
Portfolio Allocation

#	Property	Type	Location	% of Fund NAV
1	Copley Corporate Center	Office	San Diego, CA	18.3%
2	SR Ranch	Retail	San Diego, CA	16.2%
3	Des Peres Corners	Retail	Des Peres, MO	15.9%
4	708 Uptown	Apartment	Seattle, WA	14.6%
5	Fairway Center II	Office	Brea, CA	13.3%
6	Republic Distribution Center	Industrial	Houston, TX	9.9%
7	526 Route 46	Industrial	Teterboro, NJ	6.6%
8	Shoppes at Monarch Lakes	Retail	Miramar, FL	5.1%
Total				100.0%

Regional Breakdown by NAV



Property Type Breakdown by NAV



Net Assets (\$MM) 134.7

Portfolio Allocation

#	Property	Type	Location	% of Fund NAV
1	Coquille	Douglas Fir/Cedar	Oregon	16.4%
2	Dupont	Pine	Georgia	18.1%
3	Black River	Pine	South Carolina	16.3%
4	Bucktails	Maple/Oak/Cherry	Pennsylvania	14.7%
5	North River	Douglas Fir/Hemlock	Washington	12.3%
6	Carter Pasture	Pine	Texas	6.9%
7	Bennetts Creek	Pine	North Carolina	6.4%
8	Bear Island	Pine	Virginia	5.1%
9	Fitz-Weller	Maple/Oak	New York	3.8%
Total				100.0%

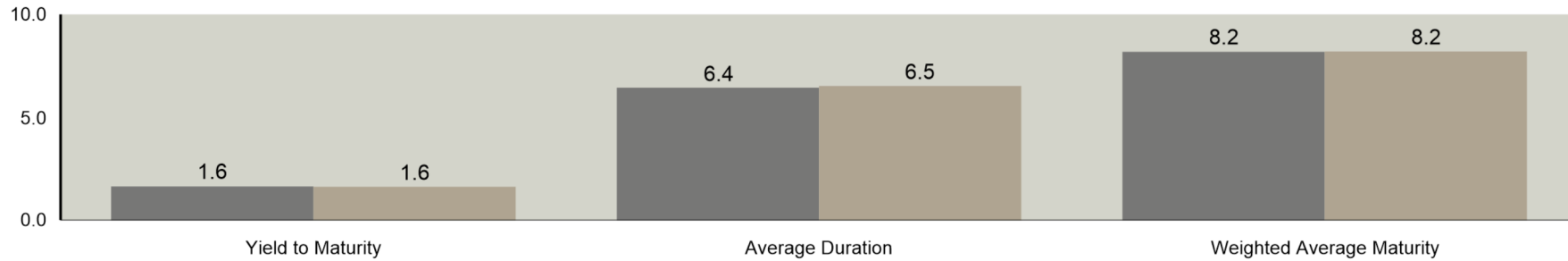
Regional Breakdown by NAV



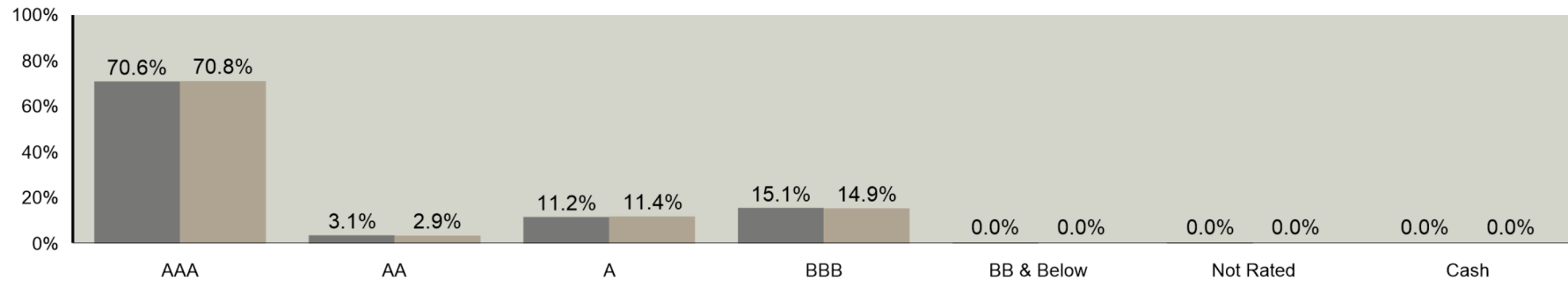
Manager Summary

Passive strategy, tracks the BBgBarc U.S. Aggregate Bond Index. Using statistical sampling techniques based on duration, maturity, interest rate sensitivity, security structure, and credit quality to attempt to replicate the returns of the Index using a smaller number of securities.

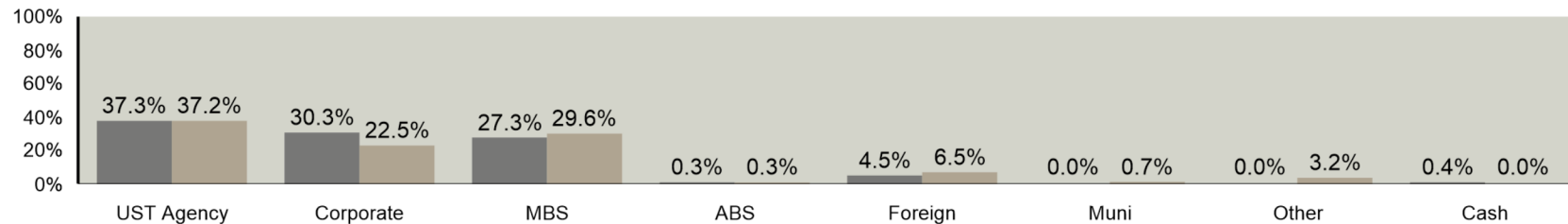
Summary Characteristics



Credity Quality Allocation



US Sector Allocation



SSGA BBG Barclays Aggregate

BBgBarc U.S. Aggregate Bond

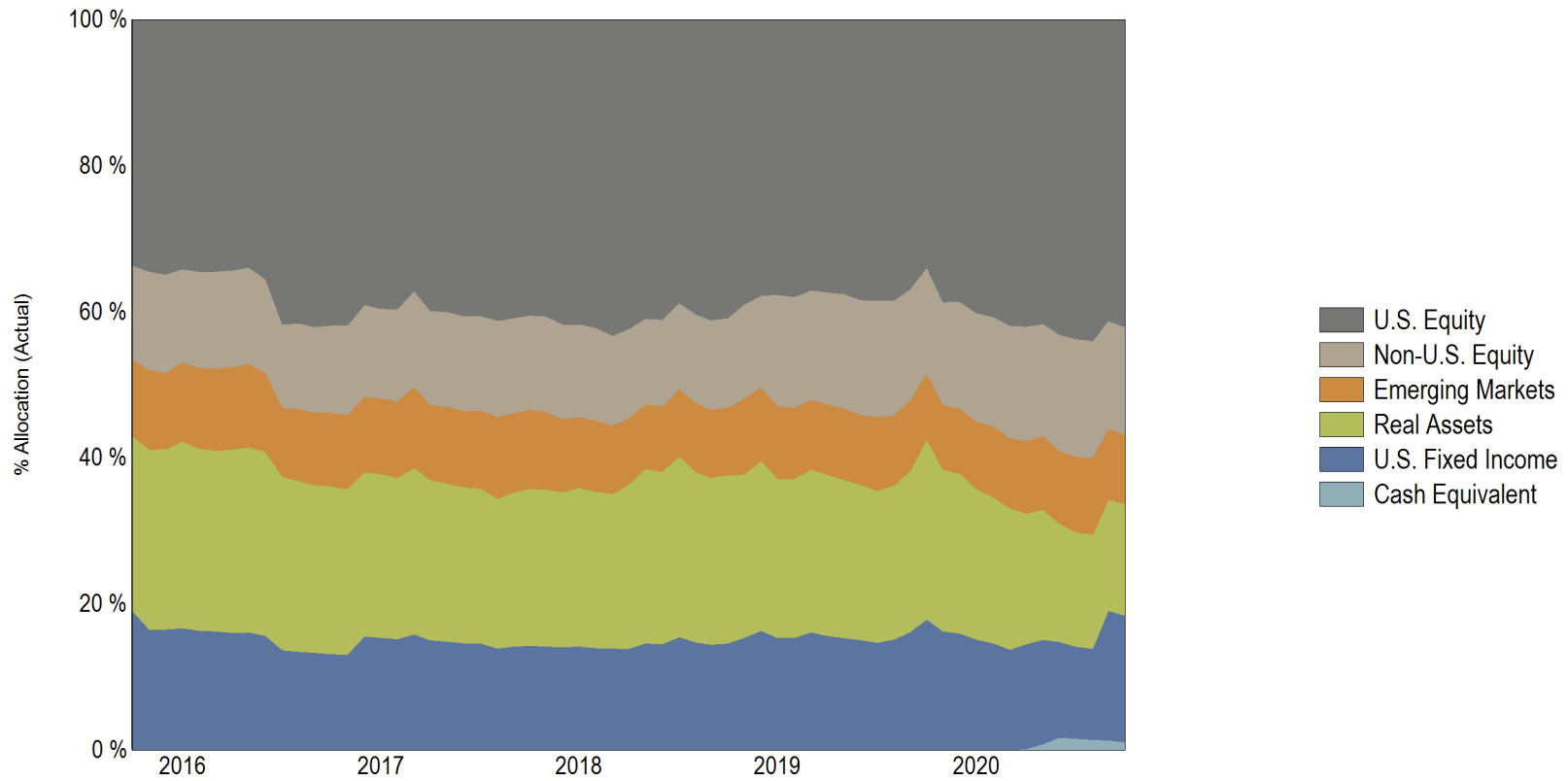
V. Appendix



Cash Flow Summary by Manager From January 01, 2021 to March 31, 2021

	Beginning Market Value	Net Cash Flow	Net Investment Change	Ending Market Value
Eagle Asset Mgmt	\$187,492,599	-\$331,279	\$21,114,901	\$208,276,222
LSV Large Cap Value	\$177,886,570	-\$155,404	\$28,728,106	\$206,459,272
SSGA S&P 500	\$138,153,423	-\$39,250,000	\$8,064,065	\$106,967,487
Polen Focus Growth	\$268,937,017	-\$256,131	\$4,793,202	\$273,474,088
William & Blair Large Cap Growth	\$68,729,994	-\$75,121	\$1,598,164	\$70,253,037
LSV Small Cap Value	\$77,491,991	-\$102,034	\$18,175,536	\$95,565,493
Smith, Graham & Co Small Cap Value	\$90,353,847	-\$141,741	\$19,356,210	\$109,568,316
SSGA Russell 2000	\$182,632,053	-\$94,625,000	\$25,895,702	\$113,902,756
Copeland Small Cap Dividend Growth	\$51,068,311	-\$59,326	\$7,411,244	\$58,420,228
AMI Small Cap Growth	\$48,579,801	-\$84,900	\$1,591,184	\$50,086,085
Emerald Small Cap Growth	\$96,746,112	-\$112,711	\$2,201,489	\$98,834,891
SSGA MSCI World ex US	\$188,392,327	-\$36,475,000	\$7,791,731	\$159,709,059
Hardman Johnston Int'l Equity	\$172,918,927	-\$249,187	-\$6,106,481	\$166,563,260
HGK Int'l Equity	\$151,255,266	-\$236,101	\$7,462,790	\$158,481,955
Jarislowsky, Fraser Limited	\$328,271	\$0	-\$15,075	\$313,195
Mercator Asset Management	\$19,774	\$0	-\$780	\$18,994
GlobeFlex Capital	\$2,974	\$0	-\$340	\$2,634
WHV Investment Management	\$3,271	\$0	-\$129	\$3,142
SSGA MSCI Emerging Markets Index	\$327,138,321	-\$21,580,000	\$9,191,348	\$314,749,668
Forest Investment Associates	\$130,234,184	-\$1,200,000	\$7,021,567	\$136,055,751
PRISA LP	\$52,490,938	-\$127,168	\$1,109,520	\$53,473,289
PRISA II	\$105,185,529	-\$290,441	\$2,177,192	\$107,072,280
PennMuni-Nuveen U.S. Real Estate Fund	\$207,812,483	-\$809,607	\$0	\$207,002,876
N. Front Street (Nuveen)	\$2,099,000	-\$38,051	\$0	\$2,060,949
SSGA US Aggregate Bond Index	\$399,941,590	\$191,930,000	-\$17,758,008	\$574,113,582
Cash Management	\$5,367,800	\$1,700,722	-\$3,052	\$7,065,471
Pool 999	\$44,548,623	-\$16,969,485	\$0	\$27,579,138
Total	\$3,175,810,996	-\$19,537,964	\$149,800,086	\$3,306,073,118

Asset Allocation History



Policy Index History

Total Fund Composite		
10/1/2020	Present	25% S&P 500 / 15% Russell 2000 / 15% MSCI EAFE / 10% MSCI Emerging Markets / 20% NFI / 15% BBgBarc US Aggregate TR
Total Equity Composite		
10/1/2020	Present	MSCI ACWI IMI Net USD
U.S. Equity Composite		
1/1/2006	Present	Russell 3000
Large Cap U.S. Equity Composite		
1/1/1986	Present	S&P 500
Small Cap U.S. Equity Composite		
1/1/1993	Present	Russell 2000
Non-U.S Equity Composite		
5/31/2012	Present	MSCI ACWI ex USA
Developed Non-U.S. Equity Composite		
1/1/1993	Present	MSCI EAFE
Emerging Markets Composite		
1/1/2009	Present	MSCI Emerging Markets
Real Assets Composite		
4/1/1993	Present	NFI
Total Fixed Income Composite		
1/31/1986	Present	BBgBarc US Aggregate TR
Cash Composite		
	Present	91 Day T-Bills

Pennsylvania Municipal Retirement System

Fee Summary

As of March 31, 2021

Account	Fee Schedule	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
Eagle Asset Mgmt	1.00% of First 5.0 Mil, 0.75% Thereafter	6.3%	\$1,574,572	0.76%
LSV Large Cap Value	0.60% of First 25.0 Mil, 0.50% of Next 25.0 Mil, 0.40% of Next 50.0 Mil, 0.30% of Next 100.0 Mil, 0.30% Thereafter	6.2%	\$794,378	0.38%
SSGA S&P 500	0.03% of Assets	3.2%	\$32,090	0.03%
Polen Focus Growth	0.40% of Assets	8.3%	\$1,093,896	0.40%
William & Blair Large Cap Growth	0.50% of First 50.0 Mil, 0.35% of Next 50.0 Mil, 0.30% of Next 150.0 Mil, 0.25% Thereafter	2.1%	\$320,886	0.46%
LSV Small Cap Value	0.75% of First 25.0 Mil, 0.65% of Next 25.0 Mil, 0.55% Thereafter	2.9%	\$600,610	0.63%
Smith, Graham & Co Small Cap Value	0.75% of First 50.0 Mil, 0.60% Thereafter	3.3%	\$732,410	0.67%
SSGA Russell 2000	0.04% of First 50.0 Mil, 0.03% Thereafter	3.4%	\$39,171	0.03%
Copeland Small Cap Dividend Growth	0.50% of Assets	1.8%	\$292,101	0.50%
AMI Small Cap Growth	0.90% of First 10.0 Mil, 0.80% of Next 15.0 Mil, 0.70% of Next 25.0 Mil, 0.60% Thereafter	1.5%	\$385,517	0.77%
Emerald Small Cap Growth	0.60% of First 10.0 Mil, 0.55% of Next 5.0 Mil, 0.50% Thereafter	3.0%	\$506,674	0.51%

Pennsylvania Municipal Retirement System

Fee Summary

As of March 31, 2021

Account	Fee Schedule	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
SSGA MSCI World ex US	0.05% of Assets	4.8%	\$79,855	0.05%
Hardman Johnston Int'l Equity	0.75% of First 25.0 Mil, 0.60% Thereafter	5.0%	\$1,036,880	0.62%
HGK Int'l Equity	0.90% of First 5.0 Mil, 0.80% of Next 5.0 Mil, 0.70% of Next 15.0 Mil, 0.65% Thereafter	4.8%	\$1,057,633	0.67%
SSGA MSCI Emerging Markets Index	0.08% of First 50.0 Mil, 0.05% Thereafter	9.5%	\$172,375	0.05%
Forest Investment Associates	0.75% of Assets	4.1%	\$1,020,418	0.75%
PRISA LP	1.00% of First 25.0 Mil, 0.95% of Next 25.0 Mil, 0.85% of Next 50.0 Mil, 0.75% of Next 100.0 Mil, 0.70% of Next 100.0 Mil, 0.65% Thereafter	1.6%	\$517,023	0.97%
PRISA II	1.20% of First 25.0 Mil, 1.15% of Next 25.0 Mil, 1.05% of Next 50.0 Mil, 0.95% of Next 100.0 Mil, 0.90% of Next 100.0 Mil, 0.85% Thereafter	3.2%	\$1,179,687	1.10%
PennMuni-Nuveen U.S. Real Estate Fund	0.85% of Assets	6.3%	\$1,759,524	0.85%
N. Front Street (Nuveen)	0.85% of Assets	0.1%	\$17,518	0.85%
SSGA US Aggregate Bond Index	0.02% of Assets	17.4%	\$114,823	0.02%
Cash Management	No Fee	0.2%	--	--
Pool 999	No Fee	0.8%	--	--
Investment Management Fee		100.0%	\$13,328,039	0.40%

Characteristics

	Portfolio	Russell 3000
Number of Holdings	2,714	3,035
Weighted Avg. Market Cap. (\$B)	250.2	385.9
Median Market Cap. (\$B)	2.0	2.3
Price To Earnings	26.3	29.5
Price To Book	3.7	4.3
Price To Sales	2.0	3.0
Return on Equity (%)	11.5	15.2
Yield (%)	1.0	1.4

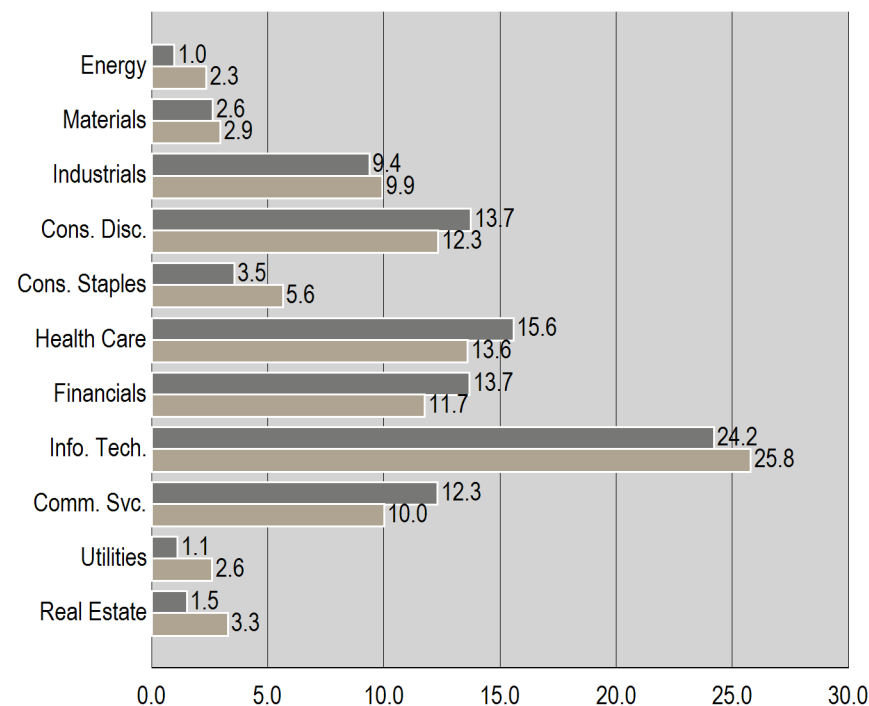
Top Holdings

MICROSOFT CORP	3.7%
FACEBOOK INC	2.8%
ALPHABET INC	2.7%
AMAZON.COM INC	2.4%
ADOBE INC	1.5%
UNITEDHEALTH GROUP INC	1.5%
ABBOTT LABORATORIES	1.3%
COMCAST CORP	1.3%
MASTERCARD INC	1.3%
ACCENTURE PLC	1.2%
Total	19.6%

Market Capitalization

	Small Cap	Mid Cap	Large Cap	Unclassified
U.S. Equity Composite	24.7%	25.2%	48.3%	1.8%
Russell 3000	5.3%	24.5%	70.3%	0.0%
<i>Weight Over/Under</i>	<i>19.5%</i>	<i>0.7%</i>	<i>-22.0%</i>	<i>1.8%</i>

Sector Allocation (%) vs Russell 3000



Common Holdings Matrix

	<i>Eagle Asset Mgmt</i>		<i>LSV Large Cap Value</i>		<i>SSGA S&P 500</i>		<i>Polen Focus Growth</i>		<i>William & Blair Large Cap Growth</i>		<i>LSV Small Cap Value</i>		<i>Smith, Graham & Co Small Cap Value</i>		<i>SSGA Russell 2000</i>		<i>Copeland Small Cap Dividend Growth</i>		<i>AMI Small Cap Growth</i>		<i>Emerald Small Cap Growth</i>	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Eagle Asset Mgmt	--	--	6	6	24	21	6	34	5	26	0	0	0	0	0	0	0	0	0	0	0	0
LSV Large Cap Value	6	20	--	--	94	16	0	0	1	3	23	14	1	0	20	2	2	4	0	0	1	0
SSGA S&P 500	24	93	94	76	--	--	24	98	31	97	1	1	1	1	2	1	1	1	0	0	0	0
Polen Focus Growth	6	32	0	0	24	24	--	--	15	60	0	0	0	0	0	0	0	0	0	0	0	0
William & Blair Large Cap Growth	5	29	1	1	31	23	15	67	--	--	0	0	0	0	0	0	0	0	0	0	0	0
LSV Small Cap Value	0	0	23	10	1	0	0	0	0	0	--	--	15	22	170	10	3	6	0	0	4	3
Smith, Graham & Co Small Cap Value	0	0	1	1	1	0	0	0	0	0	15	10	--	--	59	5	2	3	3	9	3	3
SSGA Russell 2000	0	0	20	7	2	0	0	0	0	0	170	75	59	89	--	--	42	67	24	70	102	84
Copeland Small Cap Dividend Growth	0	0	2	0	1	0	0	0	0	0	3	2	2	2	42	4	--	--	0	0	2	2
AMI Small Cap Growth	0	0	0	0	0	0	0	0	0	0	0	0	3	4	24	3	0	0	--	--	4	4
Emerald Small Cap Growth	0	0	1	1	0	0	0	0	0	0	4	3	3	5	102	10	2	3	4	15	--	--

Characteristics

	Portfolio	S&P 500
Number of Holdings	577	505
Weighted Avg. Market Cap. (\$B)	397.2	467.6
Median Market Cap. (\$B)	29.5	29.5
Price To Earnings	28.5	30.1
Price To Book	4.5	4.5
Price To Sales	2.7	3.2
Return on Equity (%)	23.5	27.1
Yield (%)	1.1	1.4

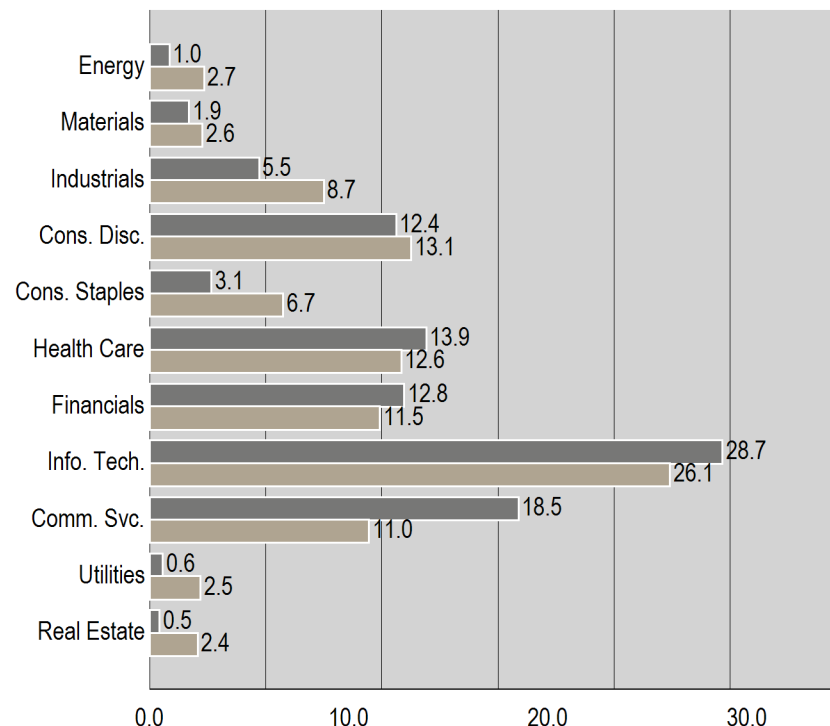
Top Holdings

MICROSOFT CORP	5.9%
FACEBOOK INC	4.5%
ALPHABET INC	4.4%
AMAZON.COM INC	3.8%
ADOBE INC	2.4%
UNITEDHEALTH GROUP INC	2.4%
ABBOTT LABORATORIES	2.0%
COMCAST CORP	2.0%
MASTERCARD INC	2.0%
ACCENTURE PLC	1.8%
Total	31.4%

Market Capitalization

	Small Cap	Mid Cap	Large Cap	Unclassified
Large Cap U.S. Equity Composite	1.1%	20.1%	77.5%	1.2%
S&P 500	0.0%	16.5%	83.5%	0.0%
<i>Weight Over/Under</i>	1.1%	3.6%	-6.0%	1.2%

Sector Allocation (%) vs S&P 500



Common Holdings Matrix

	<i>Eagle Asset Mgmt</i>		<i>LSV Large Cap Value</i>		<i>SSGA S&P 500</i>		<i>Polen Focus Growth</i>		<i>William & Blair Large Cap Growth</i>	
	#	%	#	%	#	%	#	%	#	%
Eagle Asset Mgmt	--	--	6	6	24	21	6	34	5	26
LSV Large Cap Value	6	20	--	--	94	16	0	0	1	3
SSGA S&P 500	24	93	94	76	--	--	24	98	31	97
Polen Focus Growth	6	32	0	0	24	24	--	--	15	60
William & Blair Large Cap Growth	5	29	1	1	31	23	15	67	--	--

Characteristics

	Portfolio	Russell 2000
Number of Holdings	2,175	2,023
Weighted Avg. Market Cap. (\$B)	3.7	3.7
Median Market Cap. (\$B)	1.3	1.1
Price To Earnings	22.7	23.9
Price To Book	2.8	2.9
Price To Sales	1.5	1.8
Return on Equity (%)	-1.5	-7.2
Yield (%)	1.0	0.9

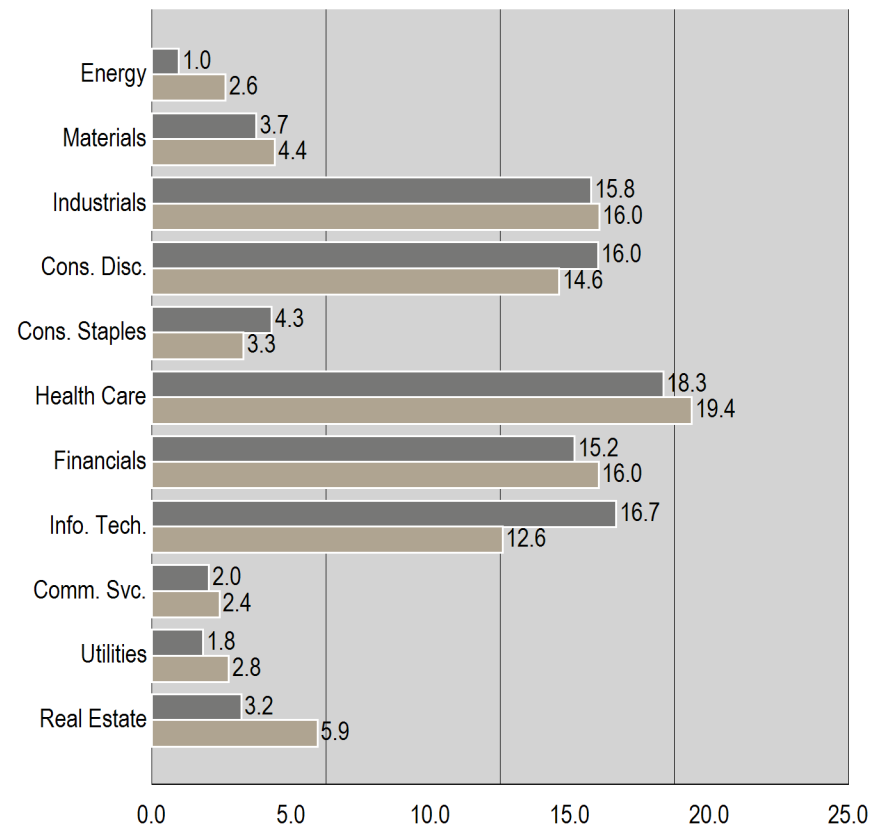
Top Holdings

SELECT MEDICAL HOLDINGS CORP	0.9%
TETRA TECH INC	0.8%
LIGAND PHARMACEUTICALS INC	0.7%
M.D.C. HOLDINGS INC.	0.7%
LITHIA MOTORS INC.	0.7%
OWENS & MINOR INC.	0.7%
SIMPLY GOOD FOODS CO (THE)	0.6%
ULTRA CLEAN HOLDINGS INC	0.6%
HIBBETT SPORTS INC	0.6%
DYCOM INDUSTRIES INC.	0.6%
Total	6.9%

Market Capitalization

	Small Cap	Mid Cap	Large Cap	Unclassified
Small Cap U.S. Equity Composite	63.8%	33.5%	0.0%	2.7%
Russell 2000	67.5%	32.5%	0.0%	0.0%
<i>Weight Over/Under</i>	<i>-3.7%</i>	<i>1.0%</i>	<i>0.0%</i>	<i>2.7%</i>

Sector Allocation (%) vs Russell 2000



Common Holdings Matrix

	<i>LSV Small Cap Value</i>		<i>Smith, Graham & Co Small Cap Value</i>		<i>SSGA Russell 2000</i>		<i>Copeland Small Cap Dividend Growth</i>		<i>AMI Small Cap Growth</i>		<i>Emerald Small Cap Growth</i>	
	#	%	#	%	#	%	#	%	#	%	#	%
LSV Small Cap Value	--	--	15	22	170	10	3	6	0	0	4	3
Smith, Graham & Co Small Cap Value	15	10	--	--	59	5	2	3	3	9	3	3
SSGA Russell 2000	170	75	59	89	--	--	42	67	24	70	102	84
Copeland Small Cap Dividend Growth	3	2	2	2	42	4	--	--	0	0	2	2
AMI Small Cap Growth	0	0	3	4	24	3	0	0	--	--	4	4
Emerald Small Cap Growth	4	3	3	5	102	10	2	3	4	15	--	--

Characteristics

	Portfolio	MSCI ACWI ex USA
Number of Holdings	2,217	2,345
Weighted Avg. Market Cap. (\$B)	125.2	102.8
Median Market Cap. (\$B)	9.0	9.7
Price To Earnings	22.0	21.6
Price To Book	3.4	2.7
Price To Sales	1.7	1.5
Return on Equity (%)	10.2	10.4
Yield (%)	1.5	2.3

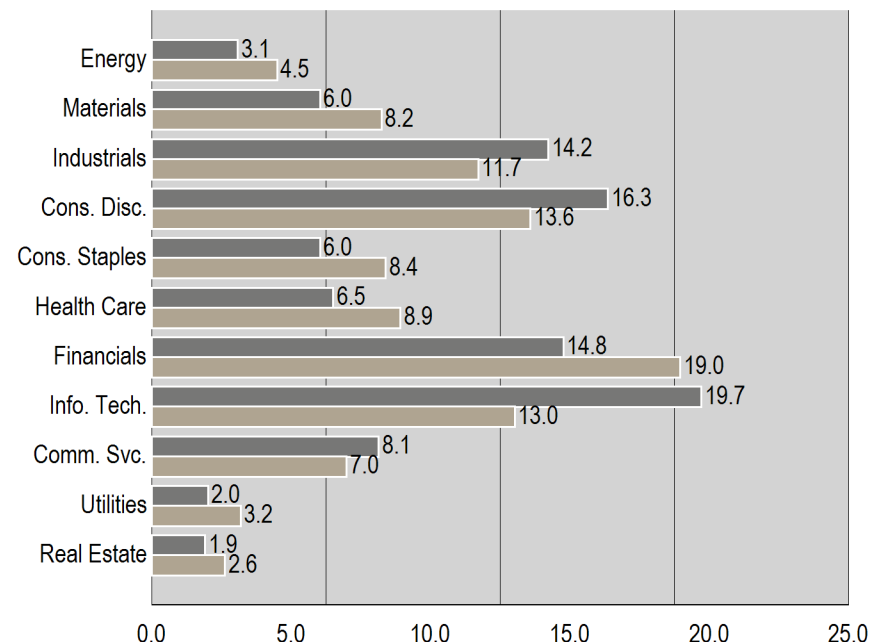
Top Holdings

TENCENT HOLDINGS LTD	3.5%
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	2.9%
ALIBABA GROUP HOLDING LTD	2.5%
SAMSUNG ELECTRONICS CO LTD	2.0%
ASML HOLDING NV	1.2%
SK HYNIX INC	1.1%
WUXI BIOLOGICS (CAYMAN) INC	1.1%
SAFRAN SA	1.1%
AIRBUS SE	1.1%
MELCO RESORTS & ENTERTAINMENT LTD	1.1%
Total	17.9%

Market Capitalization

	Small Cap	Mid Cap	Large Cap	Unclassified
Non-U.S Equity Composite	8.0%	26.7%	60.7%	4.6%
MSCI ACWI ex USA	9.6%	23.8%	66.7%	0.0%
<i>Weight Over/Under</i>	<i>-1.6%</i>	<i>2.9%</i>	<i>-6.0%</i>	<i>4.6%</i>

Sector Allocation (%) vs MSCI ACWI ex USA



Region Allocation Summary

Region	% of Total	% of Bench	% Diff
North America ex U.S.	2.5%	6.7%	-4.3%
United States	0.3%	0.0%	0.3%
Europe Ex U.K.	23.1%	30.3%	-7.2%
United Kingdom	6.7%	8.9%	-2.2%
Pacific Basin Ex Japan	8.9%	7.4%	1.5%
Japan	9.8%	15.5%	-5.7%
Emerging Markets	48.0%	30.6%	17.4%
Other	0.8%	0.6%	0.3%
Total	100.0%	100.0%	0.0%

Common Holdings Matrix

	<i>SSGA MSCI World ex US</i>		<i>Hardman Johnston Int'l Equity</i>		<i>HGK Int'l Equity</i>		<i>SSGA MSCI Emerging Markets Index</i>	
	#	%	#	%	#	%	#	%
SSGA MSCI World ex US	--	--	19	75	9	25	858	90
Hardman Johnston Int'l Equity	19	5	--	--	0	0	3	6
HGK Int'l Equity	9	1	0	0	--	--	2	1
SSGA MSCI Emerging Markets Index	858	28	3	11	2	6	--	--

Pennsylvania Municipal Retirement System

Monthly Performance Report
As of April 30, 2021



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EXHIBITS

Market Environment..... I
Portfolio Review..... II

I. Market Environment



Market Tracker

April 2021

U.S. Equity Returns

	Apr	YTD	1 Yr
S&P 500	5.3%	11.8%	46.0%
Russell 3000	5.2%	11.8%	50.9%
NASDAQ	5.4%	8.5%	58.3%
Dow Jones	2.8%	11.3%	42.1%

Non-U.S. Equity Returns

	Apr	YTD	1 Yr
ACWI	4.4%	9.1%	45.7%
ACWI ex. US	2.9%	6.5%	43.0%
EAFE Index	3.0%	6.6%	39.9%
EAFE Local	1.3%	9.0%	31.2%
EAFE Growth	4.2%	3.6%	38.3%
EAFE Value	1.9%	9.5%	40.9%
EAFE Small Cap	4.0%	8.7%	52.6%
Emerging Markets	2.5%	4.8%	48.7%
EM Small Cap	6.0%	14.2%	74.2%

Regional Returns

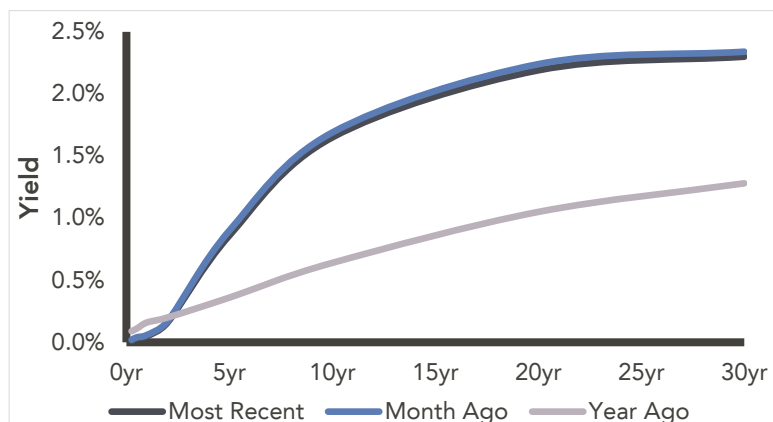
	Apr	YTD	1 Yr
Europe	4.4%	8.6%	42.5%
Asia ex-Japan	2.5%	5.2%	48.0%
EM Latin America	3.7%	-1.8%	46.4%
U.K	4.4%	10.8%	32.6%
Germany	3.4%	7.8%	50.1%
France	6.2%	10.9%	52.5%
Japan	-1.5%	0.0%	30.6%
China	1.4%	1.0%	37.0%
Brazil	6.4%	-4.2%	47.9%
India	-0.9%	4.1%	50.4%

Real Estate Returns*

	Qtr	YTD	1 Yr
NCREIF NPI National	1.2%	1.6%	1.6%
FTSE NAREIT	9.2%	-5.9%	-5.9%

*Returns as of December 2020

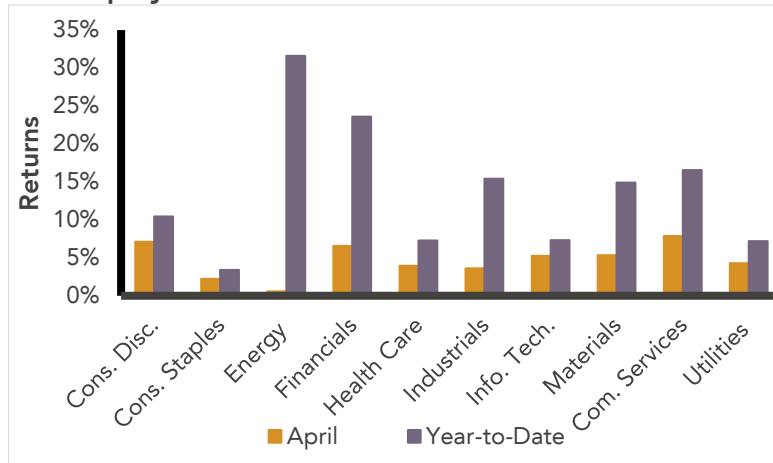
Yield Curve



Style Index Returns

	April			Year-to-Date		
	Value	Core	Growth	Value	Core	Growth
Large	4.0%	5.4%	6.8%	15.7%	11.6%	7.8%
Mid	4.8%	5.1%	5.6%	18.5%	13.7%	5.0%
Small	2.0%	2.1%	2.2%	23.6%	15.1%	7.2%

U.S. Equity Sector Returns



Fixed Income Returns

	Apr	YTD	1 Yr
Aggregate	0.8%	-2.6%	-0.3%
Universal	0.8%	-2.2%	1.8%
Government	0.7%	-3.4%	-4.2%
Treasury	0.8%	-3.5%	-4.3%
Long Gov/Credit	2.0%	-8.7%	-4.4%
TIPS	1.4%	-0.1%	6.1%
Municipal 5 Year	0.4%	0.1%	5.7%
High Yield	1.1%	1.9%	19.7%
Bank Loans	0.5%	2.5%	16.4%
Global Hedged	0.3%	-2.2%	0.1%
EM Debt Hard Currency	2.2%	-2.4%	16.0%

Hedge Fund Returns

	Apr	YTD	1 Yr
HFRX Fund Weighted	1.8%	3.1%	14.9%
Hedged Equity	3.2%	6.0%	22.4%
Event Driven	1.6%	3.3%	15.9%
Macro	1.4%	1.9%	7.0%
Relative Value	0.4%	0.1%	10.6%
CBOE PutWrite	1.0%	7.1%	31.0%

Commodity Returns

	Apr	YTD	1 Yr
GSCI Total	8.2%	22.9%	80.0%
Precious Metals	3.6%	-6.0%	12.7%
Livestock	-1.5%	8.8%	22.2%
Industrial Metals	8.8%	17.0%	63.1%
Energy	7.1%	25.6%	52.4%
Agriculture	14.0%	21.8%	66.9%
WTI Crude Oil	7.4%	31.5%	154.8%
Gold	3.0%	-7.1%	1.3%



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Marquette was founded in 1986 with the sole objective of providing investment consulting at the highest caliber of service. Our expertise is grounded in our commitment to client service — our team aims to be a trusted partner and as fiduciaries, our clients' interests and objectives are at the center of everything we do. Our approach brings together the real-world experience of our people and our dedication to creativity and critical thinking in order to empower our clients to meet their goals. For more information, please visit www.MarquetteAssociates.com.



II. Portfolio Review



Observations

- Market Value as of April 30, 2021 was \$3,396,472,545
- Apr '21 Return: Total Fund 2.9% (net) vs. Policy Index 2.5%; investment gain of \$97 million.
- Year-to-date Return: Total Fund 7.7% (net) vs. Policy Index 6.6%; investment gain of \$244 million.
- Contributors Apr '21 Performance:
 - Domestic and International Growth Equity Managers
- Detractors Apr '21 Performance:
 - Deeper value positions in U.S. Equities
 - Overweight to U.S. Small Cap Equities relative to the broad market (Russell 3000)
- 1 Year Return: Total Fund 39.9% (net) vs. Policy Index 31.9%; investment gain of \$899 million.
- 5 Year Return: Total Fund 12.7% (net) vs. Policy Index 10.9%; investment gain of \$1.56 billion.
- Estimated Annual Plan Investment Management Expenses: 0.40%

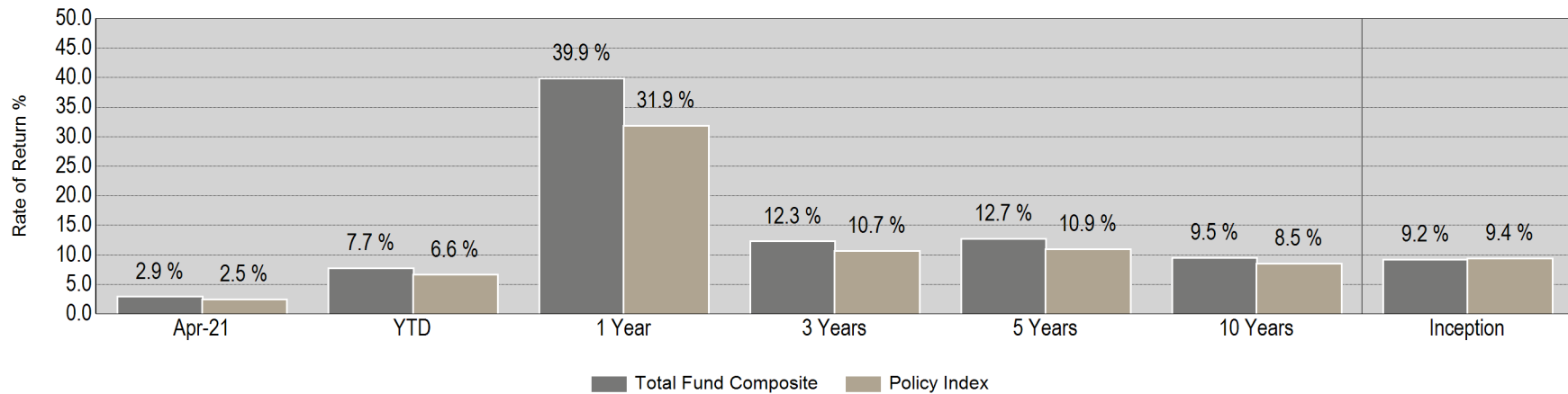
Looking Ahead

- Asset Allocation Study Review
- Passive Investment Management Search
- Upcoming Investment Manager Searches

Summary of Cash Flows

	Last Month	Year-To-Date	One Year	Three Years	Five Years	Ten Years
Beginning Market Value	\$3,306,072,818	\$3,175,810,695	\$2,521,371,080	\$2,506,293,865	\$2,020,666,418	\$1,641,677,270
Net Cash Flow	-\$6,633,754	-\$23,603,239	-\$24,261,280	-\$116,289,271	-\$179,308,501	-\$325,518,848
Net Investment Change	\$97,033,482	\$244,265,089	\$899,362,745	\$1,006,467,951	\$1,555,114,628	\$2,080,314,123
Ending Market Value	\$3,396,472,545	\$3,396,472,545	\$3,396,472,545	\$3,396,472,545	\$3,396,472,545	\$3,396,472,545

Return Summary (Net)



Asset Allocation vs. Target

	Current	Policy	Difference*
U.S. Equity	41.5%	40.0%	\$49,671,255
Non-U.S. Equity	14.8%	15.0%	-\$5,919,767
Emerging Markets	9.5%	10.0%	-\$17,049,382
Real Assets	14.8%	20.0%	-\$176,117,284
U.S. Fixed Income	18.5%	15.0%	\$119,164,418
Cash Equivalent	0.9%	0.0%	\$30,250,759
Total	100.0%	100.0%	

*Difference between Policy and Current Allocation

Pennsylvania Municipal Retirement System

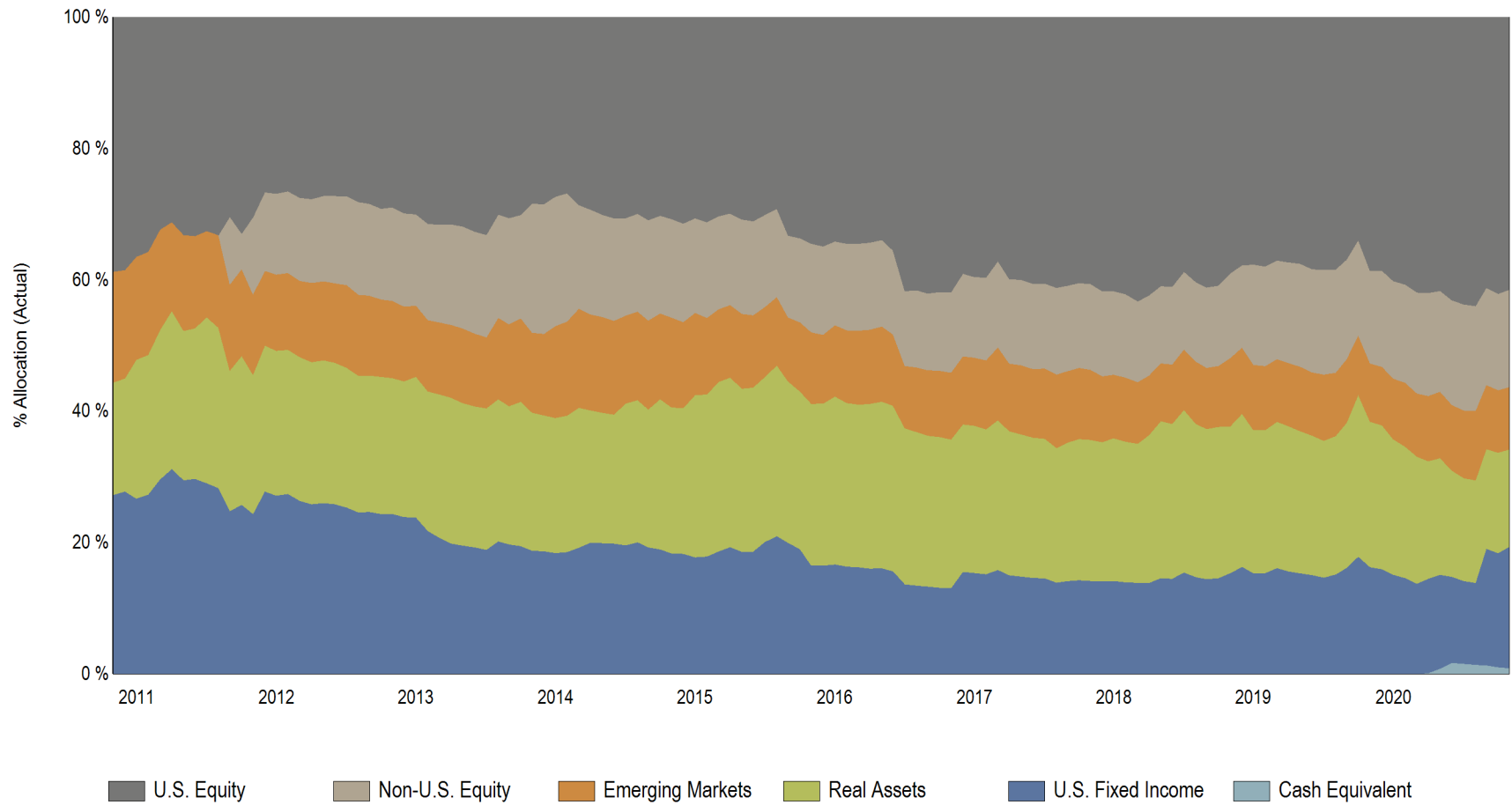
Asset Allocation Summary

As of April 30, 2021

	Market Value	% of Portfolio	Policy %	Policy Difference	1 Mo Net Cash Flows
Total Fund Composite	3,396,472,545	100.0	100.0	0.0	-8,522,429
Total Equity Composite	2,234,409,261	65.8	65.0	0.8	-51,636,042
U.S. Equity Composite	1,408,260,273	41.5	40.0	1.5	-51,120,940
Large Cap U.S. Equity Composite	886,866,385	26.1	25.0	1.1	-30,596,093
Eagle Asset Mgmt	223,132,369	6.6			-155,191
LSV Large Cap Value	212,236,568	6.2			-172,450
SSGA S&P 500	112,664,645	3.3			0
Polen Focus Growth	263,857,188	7.8			-30,268,452
William & Blair Large Cap Growth	74,975,615	2.2			0
Small Cap U.S. Equity Composite	521,393,889	15.4	15.0	0.4	-20,524,848
LSV Small Cap Value	97,984,140	2.9			-125,896
Smith, Graham & Co Small Cap Value	100,488,442	3.0			-10,174,065
SSGA Russell 2000	116,299,168	3.4			0
Copeland Small Cap Dividend Growth	60,546,890	1.8			0
AMI Small Cap Growth	53,279,087	1.6			-97,131
Emerald Small Cap Growth	92,796,162	2.7			-10,127,755
Non-U.S. Equity Composite	826,148,988	24.3	25.0	-0.7	-515,102
Developed Non-U.S. Equity Composite	503,551,115	14.8	15.0	-0.2	-515,102
SSGA MSCI World ex US	164,862,529	4.9			0
Hardman Johnston Int'l Equity	173,902,359	5.1			-262,158
HGK Int'l Equity	164,439,157	4.8			-252,944
Emerging Markets Composite	322,597,873	9.5	10.0	-0.5	
SSGA MSCI Emerging Markets Index	322,597,873	9.5			0
Real Assets Composite	503,177,225	14.8	20.0	-5.2	-2,487,620
Forest Investment Associates	136,055,751	4.0			0
PRISA LP	53,473,289	1.6			0
PRISA II	107,072,280	3.2			0
PennMuni-Nuveen U.S. Real Estate Fund	204,515,256	6.0			-2,487,620
N. Front Street (Nuveen)	2,060,649	0.1			0
Total Fixed Income Composite	628,635,299	18.5	15.0	3.5	50,000,000
SSGA US Aggregate Bond Index	628,635,299	18.5			50,000,000
Cash Composite	30,250,759	0.9	0.0	0.9	-4,398,766
Cash Management	9,305,375	0.3			2,234,988
Pool 999	20,945,384	0.6			-6,633,754

* Residual Value for Jarislowsky, Mercator, Globeflex and WHV (approx. \$347k) are included in Developed, Non-US Equity and Total Fund Composite values

Asset Allocation History
10 Years Ending April 30, 2021



Pennsylvania Municipal Retirement System

Annualized Performance (Net)

As of April 30, 2021

	1 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	Inception	Inception Date
Total Fund Composite	2.9	7.7	39.9	12.3	12.7	9.5	9.2	Jan-86
<i>Policy Index</i>	2.5	6.6	31.9	10.7	10.9	8.5	9.4	Jan-86
Total Equity Composite	4.3	12.0	--	--	--	--	33.6	Oct-20
<i>MSCI ACWI IMI Net USD</i>	4.3	9.7	--	--	--	--	26.9	Oct-20
U.S. Equity Composite	4.9	16.1	72.1	19.3	18.9	13.8	10.2	Jan-06
<i>Russell 3000</i>	5.2	11.8	50.9	18.9	17.7	14.0	10.6	Jan-06
Large Cap U.S. Equity Composite	6.0	14.4	62.1	21.0	19.7	15.6	11.6	Jan-86
<i>S&P 500</i>	5.3	11.8	46.0	18.7	17.4	14.2	11.3	Jan-86
Eagle Asset Mgmt	7.1	19.0	59.9	19.6	18.9	--	20.4	Feb-16
<i>Russell 1000 Value</i>	4.0	15.7	45.9	12.3	12.2	--	13.5	Feb-16
LSV Large Cap Value	2.8	19.3	54.9	10.7	12.7	11.4	9.0	Apr-04
<i>Russell 1000 Value</i>	4.0	15.7	45.9	12.3	12.2	11.1	8.5	Apr-04
SSGA S&P 500	5.3	11.8	45.9	18.6	17.3	14.1	9.2	Feb-97
<i>S&P 500</i>	5.3	11.8	46.0	18.7	17.4	14.2	9.2	Feb-97
Polen Focus Growth	7.6	9.4	47.9	28.2	23.8	18.3	19.1	Oct-10
<i>Russell 1000 Growth</i>	6.8	7.8	51.4	25.4	22.9	17.0	18.3	Oct-10
William & Blair Large Cap Growth	6.7	9.1	--	--	--	--	40.2	Jun-20
<i>Russell 1000 Growth</i>	6.8	7.8	--	--	--	--	41.9	Jun-20
Small Cap U.S. Equity Composite	2.9	18.6	89.3	15.0	17.0	11.9	11.3	Jan-93
<i>Russell 2000</i>	2.1	15.1	74.9	15.2	16.5	11.6	10.0	Jan-93
LSV Small Cap Value	2.5	26.4	83.0	10.2	--	--	8.8	Dec-16
<i>Russell 2000 Value</i>	2.0	23.6	79.0	11.7	--	--	10.4	Dec-16
Smith, Graham & Co Small Cap Value	1.1	22.5	94.6	15.3	--	--	12.0	Dec-16
<i>Russell 2000 Value</i>	2.0	23.6	79.0	11.7	--	--	10.4	Dec-16
SSGA Russell 2000	2.1	15.1	74.9	15.2	16.5	11.6	9.3	Mar-97
<i>Russell 2000</i>	2.1	15.1	74.9	15.2	16.5	11.6	9.3	Mar-97
Copeland Small Cap Dividend Growth	3.6	18.6	58.2	16.1	--	--	14.6	Sep-17
<i>Russell 2000</i>	2.1	15.1	74.9	15.2	--	--	13.9	Sep-17
AMI Small Cap Growth	6.4	9.7	61.4	10.6	--	--	12.1	Sep-17
<i>Russell 2000 Growth</i>	2.2	7.2	69.2	18.0	--	--	18.3	Sep-17
Emerald Small Cap Growth	4.5	6.7	69.5	20.6	21.0	14.8	12.1	Oct-98
<i>Russell 2000 Growth</i>	2.2	7.2	69.2	18.0	18.9	12.9	9.4	Oct-98

*Policy Index: 25% S&P 500, 15% Russell 2000, 15% MSCI EAFE, 10% MSCI Em Mrks, 20% NFI ODCE, 15% BBG Barc Agg

Pennsylvania Municipal Retirement System

Annualized Performance (Net)

As of April 30, 2021

	1 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	Inception	Inception Date
Non-U.S Equity Composite	3.3	5.5	49.3	9.2	12.8	--	9.7	May-12
<i>MSCI ACWI ex USA</i>	2.9	6.5	43.0	7.0	9.8	--	8.4	May-12
Developed Non-U.S. Equity Composite	3.8	5.7	52.6	11.1	13.6	7.8	8.3	Jan-93
<i>MSCI EAFE</i>	3.0	6.6	39.9	6.3	8.9	5.2	6.4	Jan-93
SSGA MSCI World ex US	3.2	7.5	41.1	7.0	9.3	--	7.3	Apr-12
<i>MSCI World ex USA</i>	3.1	7.3	40.6	6.6	8.9	--	6.9	Apr-12
Hardman Johnston Int'l Equity	4.4	0.6	57.5	15.7	17.7	--	11.9	Apr-12
<i>MSCI EAFE</i>	3.0	6.6	39.9	6.3	8.9	--	7.1	Apr-12
HGK Int'l Equity	3.8	8.7	49.0	8.8	11.6	--	10.6	Feb-12
<i>MSCI EAFE</i>	3.0	6.6	39.9	6.3	8.9	--	7.6	Feb-12
Emerging Markets Composite								
SSGA MSCI Emerging Markets Index	2.5	4.8	49.4	7.6	12.4	3.5	9.5	Nov-08
<i>MSCI Emerging Markets</i>	2.5	4.8	48.7	7.5	12.5	3.6	9.7	Nov-08
Real Assets Composite	-0.1	1.9	2.8	3.8	4.9	7.0	7.5	Apr-93
<i>NFI</i>	0.0	1.9	2.1	3.8	5.1	8.5	--	Apr-93
Forest Investment Associates	-0.2	5.0	3.8	0.8	2.5	4.1	3.8	Mar-99
<i>NCREIF Timberland Property Index</i>	0.0	0.0	0.7	1.5	2.4	4.5	5.8	Mar-99
PRISA LP	0.0	1.9	2.0	4.7	5.7	9.1	6.2	Jan-86
<i>NFI</i>	0.0	1.9	2.1	3.8	5.1	8.5	--	Jan-86
PRISA II	0.0	1.8	0.6	4.4	6.0	10.2	3.5	Jul-07
<i>NFI</i>	0.0	1.9	2.1	3.8	5.1	8.5	4.4	Jul-07
PennMuni-Nuveen U.S. Real Estate Fund	0.0	0.0	2.4	6.3	7.2	8.8	6.0	Dec-08
<i>NFI</i>	0.0	1.9	2.1	3.8	5.1	8.5	5.4	Dec-08
N. Front Street (Nuveen)	0.0	0.0	-9.2	-4.0	--	--	-6.3	Sep-16
<i>Consumer Price Index</i>	0.0	1.7	3.3	1.9	--	--	2.0	Sep-16

*Forest, PRISA & PRISA II as of 3-31-21; PennMuni Nuveen RE, N. Front Street valued as of 12-31-20

Pennsylvania Municipal Retirement System

Annualized Performance (Net)

As of April 30, 2021

	1 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	Inception	Inception Date
Total Fixed Income Composite								
SSGA US Aggregate Bond Index	0.8	-2.6	-0.2	5.2	3.2	3.4	5.1	Apr-97
<i>BBgBarc US Aggregate TR</i>	0.8	-2.6	-0.3	5.2	3.2	3.4	5.1	Apr-97
Cash Composite								
Cash Management								
Pool 999								

Pennsylvania Municipal Retirement System

Fee Summary

As of April 30, 2021

Account	Fee Schedule	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
Eagle Asset Mgmt	1.00% of First 5.0 Mil, 0.75% Thereafter	6.6%	\$1,685,993	0.76%
LSV Large Cap Value	0.60% of First 25.0 Mil, 0.50% of Next 25.0 Mil, 0.40% of Next 50.0 Mil, 0.30% of Next 100.0 Mil, 0.30% Thereafter	6.2%	\$811,710	0.38%
SSGA S&P 500	0.03% of Assets	3.3%	\$33,799	0.03%
Polen Focus Growth	0.40% of Assets	7.8%	\$1,055,429	0.40%
William & Blair Large Cap Growth	0.50% of First 50.0 Mil, 0.35% of Next 50.0 Mil, 0.30% of Next 150.0 Mil, 0.25% Thereafter	2.2%	\$337,415	0.45%
LSV Small Cap Value	0.75% of First 25.0 Mil, 0.65% of Next 25.0 Mil, 0.55% Thereafter	2.9%	\$613,913	0.63%
Smith, Graham & Co Small Cap Value	0.75% of First 50.0 Mil, 0.60% Thereafter	3.0%	\$677,931	0.67%
SSGA Russell 2000	0.04% of First 50.0 Mil, 0.03% Thereafter	3.4%	\$39,890	0.03%
Copeland Small Cap Dividend Growth	0.50% of Assets	1.8%	\$302,734	0.50%
AMI Small Cap Growth	0.90% of First 10.0 Mil, 0.80% of Next 15.0 Mil, 0.70% of Next 25.0 Mil, 0.60% Thereafter	1.6%	\$404,675	0.76%
Emerald Small Cap Growth	0.60% of First 10.0 Mil, 0.55% of Next 5.0 Mil, 0.50% Thereafter	2.7%	\$476,481	0.51%
SSGA MSCI World ex US	0.05% of Assets	4.9%	\$82,431	0.05%
Hardman Johnston Int'l Equity	0.75% of First 25.0 Mil, 0.60% Thereafter	5.1%	\$1,080,914	0.62%

Pennsylvania Municipal Retirement System

Fee Summary

As of April 30, 2021

Account	Fee Schedule	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
HGK Int'l Equity	0.90% of First 5.0 Mil, 0.80% of Next 5.0 Mil, 0.70% of Next 15.0 Mil, 0.65% Thereafter	4.8%	\$1,096,355	0.67%
SSGA MSCI Emerging Markets Index	0.08% of First 50.0 Mil, 0.05% Thereafter	9.5%	\$176,299	0.05%
Forest Investment Associates	0.75% of Assets	4.0%	\$1,020,418	0.75%
PRISA LP	1.00% of First 25.0 Mil, 0.95% of Next 25.0 Mil, 0.85% of Next 50.0 Mil, 0.75% of Next 100.0 Mil, 0.70% of Next 100.0 Mil, 0.65% Thereafter	1.6%	\$517,023	0.97%
PRISA II	1.20% of First 25.0 Mil, 1.15% of Next 25.0 Mil, 1.05% of Next 50.0 Mil, 0.95% of Next 100.0 Mil, 0.90% of Next 100.0 Mil, 0.85% Thereafter	3.2%	\$1,179,687	1.10%
PennMuni-Nuveen U.S. Real Estate Fund	0.85% of Assets	6.0%	\$1,738,380	0.85%
N. Front Street (Nuveen)	0.85% of Assets	0.1%	\$17,516	0.85%
SSGA US Aggregate Bond Index	0.02% of Assets	18.5%	\$125,727	0.02%
Cash Management	No Fee	0.3%	--	--
Pool 999	No Fee	0.6%	--	--
Investment Management Fee		100.0%	\$13,474,717	0.40%