



# Pennsylvania Municipal Retirement System

Executive Summary (Finalized)  
March 2020



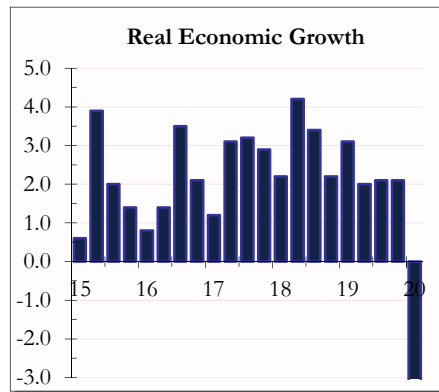
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## ECONOMIC ENVIRONMENT

### End of an Era

The COVID-19 pandemic has led to economic and social panic that hasn't been seen in the developed world in modern times. People are facing extraordinary circumstances, not only in financial markets but in everyday life. The 11-year expansion that followed the global financial crisis is finally ending. The current containment measures, supply chain disruptions, and financial stress are combining to create demand and supply shocks throughout the global economy.

It must be noted that the situation is fluid. The underlying facts and assumptions of this situation may need to be revisited as the



full impact of the virus becomes clearer. Predictions at this point are based on educated speculation and preliminary data analysis. As more data is released, we will likely see numbers that would have been unthinkable at the start of the year. However, the initial damage is already apparent. Jobless claims have

exploded, unemployment has increased, and bankruptcy claims have started to rise. Gross domestic product (GDP) decreased by 4.8% in the first quarter of 2020. The mean Wall Street full-year forecast for GDP is -4.0%.

Central bankers and politicians around the globe have responded meaningfully to the sharp projected downturn. In the United States, the Federal Reserve took bold steps, cutting rates for the first time since 2008. The current US federal funds rate now stands at 0-0.25%. The Fed also implemented a bond-buying program (that could be called, unofficially, QE4) to inject liquidity into the

market. Over the last few weeks, the Federal Reserve has been purchasing \$75 billion of Treasury securities and \$50 billion of agency MBS securities daily. At this pace, it will take less than two weeks for the Fed to purchase more securities than it did during the entirety of the 8-month QE2 program. The size of this new program was initially announced as \$700 billion, but just a week later was expanded to purchases "as needed" to support market liquidity. This stance is unusually loose, which shows the Federal Reserve will do whatever is needed to support markets. US Federal Reserve Chairman Jerome Powell stated the institution is "not going to run out of ammunition."

In March, Congress passed the Coronavirus Aid, Relief, and Economic Security (CARES) Act, a \$2.2 trillion package offering economic stabilization funds for businesses, states, municipalities, and families. This package is staggering when compared to the total federal spending in 2019 of \$4.5 trillion.

The European Central Bank announced the Pandemic Emergency Purchase Program (PEPP). The PEPP is a €750 billion bond-buying program, which added needed liquidity to the market and removed maximums on individual member state's debt. Central Bank President Christine Lagard has stated that there are "no limits" to the central bank's commitment to Union member's economies. In addition to the central bank's actions, governments across Europe have announced similar spending packages to those in the United States. These spending programs are supposed to help households and businesses plug their income gap during this period of disruption.

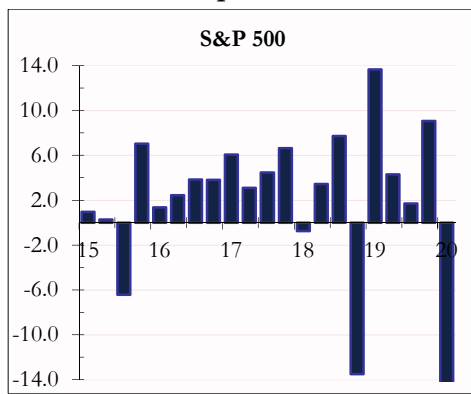
Many emerging markets are also taking monetary and fiscal actions. India, Chile, and Peru have significantly cut rates. South Africa has started a quantitative-easing program and Brazil is considering the same. China has not made many changes. The 20 basis point cut to China's policy rate and the lowering of reserve requirements, were token actions compared to other countries.

Adding to financial market stress, Saudi Arabia initiated an oil price war with Russia over proposed oil production cuts. Saudi Arabia is attempting to punish Russia for its unwillingness to curtail production. The announcement preceded a fall in oil prices, with Brent crude falling by more than 30%. This was the largest drop since the Gulf War. Over the Easter weekend, an agreement has been made to reduce oil output. Oil prices are still down more than 50%.

## DOMESTIC EQUITIES

### Volatility Rises

In the first quarter, US markets suffered severe declines and extreme daily swings in prices on a scale comparable to the crises of 2008 and 2011. The stock market tripped its “circuit breakers” on multiple occasions. This was the first time that the switches were triggered since they were overhauled more than ten years ago. It was only the second time that they have been triggered since 1997.



As the rate of COVID-19 infection accelerated, so did the market’s reaction. US stocks entered into a bear market at one of the quickest paces we have seen. Index levels plunged from an all-time high on February 19th into a bear market only 16 days later. For historical context, the Global Financial Crisis and Dot-Com drawdowns took six months and one year, respectively.

The selling pressure was widespread and indiscriminate. Core domestic equity benchmarks were down between 14%-36%. Small-

caps fell more than their large-cap counterparts. Some of this is attributable to the higher weighting of energy and financials within the small cap benchmark.

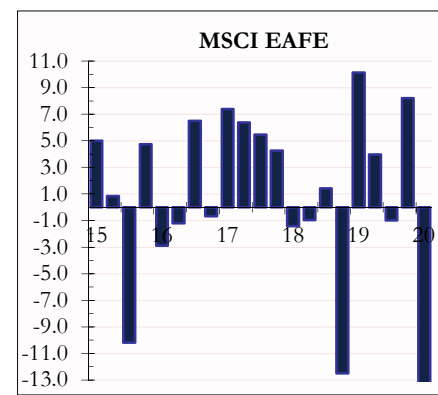
Growth outperformed value across all market capitalizations and in every region of the world. This divergence was due to the value indices substantial weighting towards financials and energy companies. The Russell 3000 Value has 23.4% more allocated to financial sector and 6.6% more allocated to the energy sector compared to the Russell 3000 Growth. These two sectors alone accounted for 93% of value’s return deficit. As of March 31st, the large cap growth equities posted the only positive return (0.8%) over the trailing 12 months of any equity benchmark.

## INTERNATIONAL EQUITIES

### Global Shock

International stocks declined more than US stocks. The MSCI EAFE index returned -22.7%, while the MSCI Emerging Markets index returned -23.6%. A strengthening US dollar acted as a further headwind.

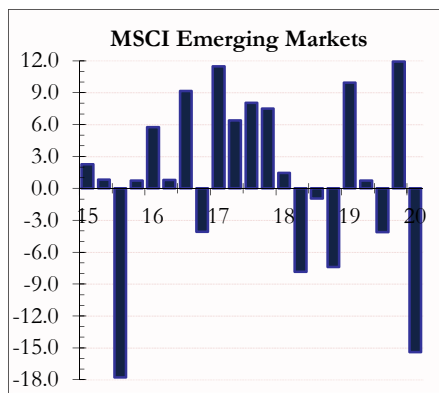
International developed markets, with the MSCI EAFE as a proxy, suffered losses in all 21 countries that comprise the index. Notably, Japanese equities made up the most significant percentage of the index (26.3%) and suffered the least (return of -16.6%). Japan has thus far been on a different virus trajectory than most other developed nations. COVID-19 has thus far had a slower spread and lower mortality rate than in other developed countries.



Three of the top countries by weight in the index sustained losses in excess of the index. The United Kingdom, France, and Germany all lost more than 26% of their value, and comprised nearly 35% of the weight in the index.

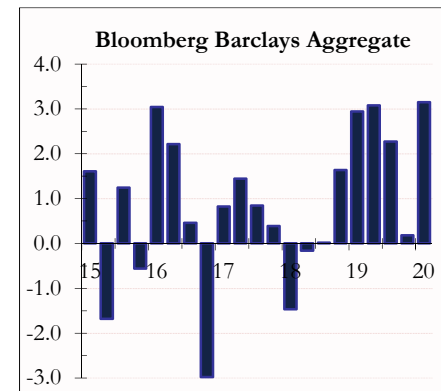
As with developed markets, all 26 emerging-market countries saw losses in the first quarter. Most EM countries were down considerably, with some down more than -30%. China was provided a little ballast as it only lost 10%, and it comprises 30% of the index.

Brazil was the weakest country in the emerging markets index. The country's two largest sectors (financials and energy) lost more than 50%.



High yield and leveraged loans, the lowest quality benchmarks we track, were down -12.7% and -13.0%, respectively. This performance was due to their allocation to finance, energy and financial companies, the three sectors most susceptible from COVID-19 and oil price declines.

Even with the historically high volatility in the market, corporate issuers were opportunistic and issued \$272 billion in bonds in March alone. Many corporations have stated that they are using the opportunity to increase the amount of working capital on their balance sheets. However, some industries are issuing debt to increase the chances of survival in a stressful economic time.



## BOND MARKET

### Quality Wins the Day

There was wide discrepancy in the returns of fixed-income benchmarks in Q1. Issuances with higher quality and longer duration performed best. Spreads widened due to a flight to quality and increased volatility caused by COVID-19 concerns.

Liquidity in the bond market was weak, showing signs of stress. Many fixed-income managers were having a hard time finding buyers in both high- and low-quality issues. However, it should be noted that these liquidity pressures have lessened by central bank bond-buying programs.

## CASH EQUIVALENTS

### Low and Lower

The three-month T-Bill returned 0.5% for the 1st quarter. Future returns for cash equivalents seem dim, with the Fed Funds rate at 0-0.25%. The 3-month LIBOR spiked as commercial paper issuers had challenges rolling their maturities. The implied inflation expectation from the 10-year TIPS breakeven inflation rate was notably lower in the quarter, settling below 1%.

## Economic Statistics

	Current Quarter	Previous Quarter
GDP	-4.8%	2.1%
Unemployment	4.4%	3.5%
CPI All Items Year/Year	1.5%	2.3%
Fed Funds Rate	0.25%	1.75%
Industrial Capacity	75.5%	77.1%
US Dollars per Euro	1.10	1.12%

## Major Index Returns

Index	Quarter	12 Months
Russell 3000	-20.9%	-9.1%
S&P 500	-19.6%	-7.0%
Russell Midcap	-27.1%	-18.3%
Russell 2000	-30.6%	-24.0%
MSCI EAFE	-22.7%	-13.9%
MSCI Emg Markets	-23.6%	-17.4%
NCREIF ODCE	0.0%	3.9%
U.S. Aggregate	3.1%	8.9%
90 Day T-bills	0.3%	1.7%

## Domestic Equity Return Distributions

Quarter	Trailing Year		
	VAL	COR	GRO
LC	-26.7	-20.2	-14.1
MC	-31.7	-27.1	-20.0
SC	-35.7	-30.6	-25.8

## Market Summary

- Coronavirus news dominated headlines
- Global Equity markets suffered
- Growth outpaces Value
- Credit spreads widened
- The Federal Reserve cut rates to 0.0-0.25%

## **INVESTMENT RETURN**

On March 31st, 2020, the Pennsylvania Municipal Retirement System was valued at \$2,358,476,552, a decrease of \$442,337,784 from the December ending value of \$2,800,814,336. Last quarter, the account recorded total net withdrawals of \$12,093,905 in addition to \$430,243,879 in net investment losses. The fund's net investment loss was a result of income receipts totaling \$4,129,058 and realized and unrealized capital losses totaling \$434,372,937.

## **RELATIVE PERFORMANCE**

### **Total Fund**

During the first quarter, the total portfolio lost 15.4%, which was 0.6% less than the Shadow Index's return of -14.8% and ranked in the 83rd percentile of the Public Fund universe. Over the trailing year, the portfolio returned -6.7%, which was equal to the benchmark's -6.7% performance, and ranked in the 81st percentile. Since December 1985, the account returned 8.3% per annum. For comparison, the Shadow Index returned an annualized 8.6% over the same time frame.

### **Large Cap Equity**

The large cap equity segment lost 20.5% last quarter, 0.9% below the S&P 500 Index's return of -19.6% and ranked in the 48th percentile of the Large Cap universe. Over the trailing twelve months, the large cap equity portfolio returned -6.8%, 0.2% greater than the benchmark's -7.0% performance, and ranked in the 37th percentile. Since December 1985, this component returned 10.3% on an annualized basis. For comparison, the S&P 500 returned an annualized 10.1% during the same period.

### **Small Cap Equity**

The small cap equity portfolio returned -32.2% in the first quarter, 1.6% less than the Russell 2000 Index's return of -30.6% and ranked in the 57th percentile of the Small Cap universe. Over the trailing twelve-month period, the small cap equity portfolio returned -24.9%; that return was 0.9% less than the benchmark's -24.0% return, and ranked in the 57th percentile.

### **International Equity**

The international equity portfolio lost 23.4% in the first quarter, 0.7% below the Blended International Index's return of -22.7% and ranked in the 46th percentile of the International Equity universe. Over the trailing year, this segment returned -12.3%, 1.6% above the benchmark's -13.9% performance, and ranked in the 30th percentile.

### **Emerging Markets Equity**

The emerging markets equity segment returned -23.9% during the first quarter, 0.3% less than the Blended Emerging Markets Index's return of -23.6% and ranked in the 45th percentile of the Emerging Markets universe. Over the trailing twelve-month period, this segment returned -18.0%; that return was 0.6% less than the benchmark's -17.4% return, and ranked in the 53rd percentile.

### **Real Estate**

During the first quarter, the real estate portion of the portfolio gained 1.1%, which was 0.4% above the NCREIF Property Index's return of 0.7%. Over the trailing twelve-month period, this component returned 4.0%, which was 1.3% less than the benchmark's 5.3% performance. Since December 1985, this component returned 6.9% per annum, while the NCREIF Property Index returned an annualized 7.8% over the same period.

## Fixed Income

The fixed income portion of the portfolio returned 3.1% in the first quarter, equal to the Bloomberg Barclays Aggregate Index's return of 3.1% and ranked in the 30th percentile of the Core Fixed Income universe. Over the trailing twelve-month period, this segment returned 8.9%, equal to the benchmark's 8.9% return, ranking in the 31st percentile. Since December 1985, this component returned 6.5% per annum. For comparison, the Bloomberg Barclays Aggregate Index returned an annualized 6.4% during the same time frame.

## ASSET ALLOCATION

On March 31, 2020, the allocation of assets was as follows\*:

<b>TOTAL PORTFOLIO</b>	<b>100.0%</b>	<b>\$2,358,476,552</b>
Domestic Large Cap	25.0%	\$588,496,650
Domestic Small Cap	11.5%	\$271,263,111
<b>Total Domestic Equity</b>	<b>36.5%</b>	<b>\$859,759,761</b>
International Developed Markets	13.8%	\$326,463,112
International Emerging Markets	8.9%	\$210,526,987
<b>Total International Equity</b>	<b>22.8%</b>	<b>\$536,990,099</b>
<b>Total Equity</b>	<b>59.2%</b>	<b>\$1,396,749,860</b>
<b>Real Estate</b>	<b>21.4%</b>	<b>\$504,648,174</b>
<b>Fixed Income</b>	<b>17.6%</b>	<b>\$415,403,984</b>
<b>Cash and Equivalents</b>	<b>1.8%</b>	<b>\$41,674,534</b>

\* Numbers may not add to 100% due to rounding.

## EXECUTIVE SUMMARY - GROSS OF FEES

## PERFORMANCE SUMMARY

	Qtr / YTD	1 Year	3 Year	5 Year	10 Year	Since 12/85
<b>Total Portfolio</b>	-15.4	-6.7	3.4	4.2	7.0	8.3
<i>PUBLIC FUND RANK</i>	(83)	(81)	(32)	(23)	(20)	----
Shadow Index	-14.8	-6.7	2.4	3.6	6.7	8.6
<b>Domestic Equity</b>	-24.6	-13.2	3.0	4.6	9.5	----
<i>DOMESTIC EQUITY RANK</i>	(49)	(44)	(41)	(40)	(46)	----
Russell 3000	-20.9	-9.1	4.0	5.8	10.1	9.9
<b>Large Cap Equity</b>	-20.5	-6.8	7.3	7.7	11.4	10.3
<i>LARGE CAP RANK</i>	(48)	(37)	(28)	(27)	(29)	----
S&P 500	-19.6	-7.0	5.1	6.7	10.5	10.1
<b>Small Cap Equity</b>	-32.2	-24.9	-4.9	-0.8	7.3	----
<i>SMALL CAP RANK</i>	(57)	(57)	(51)	(61)	(60)	----
Russell 2000	-30.6	-24.0	-4.7	-0.3	6.9	8.2
<b>International Equity</b>	-23.4	-12.3	1.0	1.9	4.7	----
<i>INTERNATIONAL EQUITY RANK</i>	(46)	(30)	(27)	(27)	(35)	----
Int'l Index	-22.7	-13.9	-1.3	0.0	3.3	----
S&P BMI Ex US	-23.7	-15.1	-1.8	0.0	3.3	----
MSCI World Ex US	-23.9	-15.3	-1.9	-0.4	2.9	6.5
MSCI EAFE	-22.7	-13.9	-1.3	-0.1	3.2	6.9
<b>Emerging Markets Equity</b>	-23.9	-18.0	-1.7	-0.4	0.5	----
<i>EMERGING MARKETS RANK</i>	(45)	(53)	(43)	(48)	(84)	----
EM Index	-23.6	-17.4	-1.3	0.0	1.0	----
S&P BMI EMGM	-24.6	-18.2	-1.6	0.1	1.1	----
MSCI Emg Mkts	-23.6	-17.4	-1.3	0.0	1.0	----
<b>Real Estate</b>	1.1	4.0	6.5	7.6	8.9	6.9
NCREIF NPI	0.7	5.3	6.4	7.6	10.2	7.8
Aggregate Index	3.1	8.9	4.8	3.4	3.9	6.4
<b>Fixed Income</b>	3.1	8.9	4.8	3.4	3.9	6.5
<i>CORE FIXED INCOME RANK</i>	(30)	(31)	(49)	(71)	(84)	----
Aggregate Index	3.1	8.9	4.8	3.4	3.9	6.4

## ASSET ALLOCATION

Large Cap Equity	25.0%	\$ 588,496,650
Small Cap	11.5%	271,263,111
Int'l Equity	13.8%	326,463,112
Emerging Markets	8.9%	210,526,987
Real Estate	21.4%	504,648,174
Fixed Income	17.6%	415,403,984
Cash	1.8%	41,674,534
<b>Total Portfolio</b>	<b>100.0%</b>	<b>2,358,476,552</b>

## INVESTMENT RETURN

Market Value 12/2019	\$ 2,800,814,336
Contribs / Withdrawals	- 12,093,905
Income	4,129,058
Capital Gains / Losses	-434,372,937
Market Value 3/2020	\$ 2,358,476,552



**EXECUTIVE SUMMARY - NET OF FEES****PERFORMANCE SUMMARY**

	Qtr / YTD	1 Year	3 Year	5 Year	10 Year
<b>Total Portfolio - Net</b>	-15.5	-7.2	2.9	3.7	6.5
Shadow Index	-14.8	-6.7	2.4	3.6	6.7
<b>Domestic Equity - Net</b>	-24.7	-13.7	2.5	4.1	9.0
Russell 3000	-20.9	-9.1	4.0	5.8	10.1
<b>Large Cap Equity - Net</b>	-20.6	-7.2	6.8	7.1	10.9
S&P 500	-19.6	-7.0	5.1	6.7	10.5
<b>Small Cap Equity - Net</b>	-32.3	-25.4	-5.4	-1.3	6.8
Russell 2000	-30.6	-24.0	-4.7	-0.3	6.9
<b>International Equity - Net</b>	-23.5	-12.7	0.5	1.4	4.2
Int'l Index	-22.7	-13.9	-1.3	0.0	3.3
S&P BMI Ex US	-23.7	-15.1	-1.8	0.0	3.3
MSCI World Ex US	-23.9	-15.3	-1.9	-0.4	2.9
MSCI EAFE	-22.7	-13.9	-1.3	-0.1	3.2
<b>Emerging Markets Equity - Net</b>	-23.9	-18.0	-1.8	-0.5	0.5
EM Index	-23.6	-17.4	-1.3	0.0	1.0
S&P BMI EMGM	-24.6	-18.2	-1.6	0.1	1.1
MSCI Emg Mkts	-23.6	-17.4	-1.3	0.0	1.0
<b>Real Estate - Net</b>	0.9	3.0	5.6	6.7	7.9
NCREIF NPI	0.7	5.3	6.4	7.6	10.2
Aggregate Index	3.1	8.9	4.8	3.4	3.9
<b>Fixed Income - Net</b>	3.1	8.8	4.8	3.3	3.9
Aggregate Index	3.1	8.9	4.8	3.4	3.9

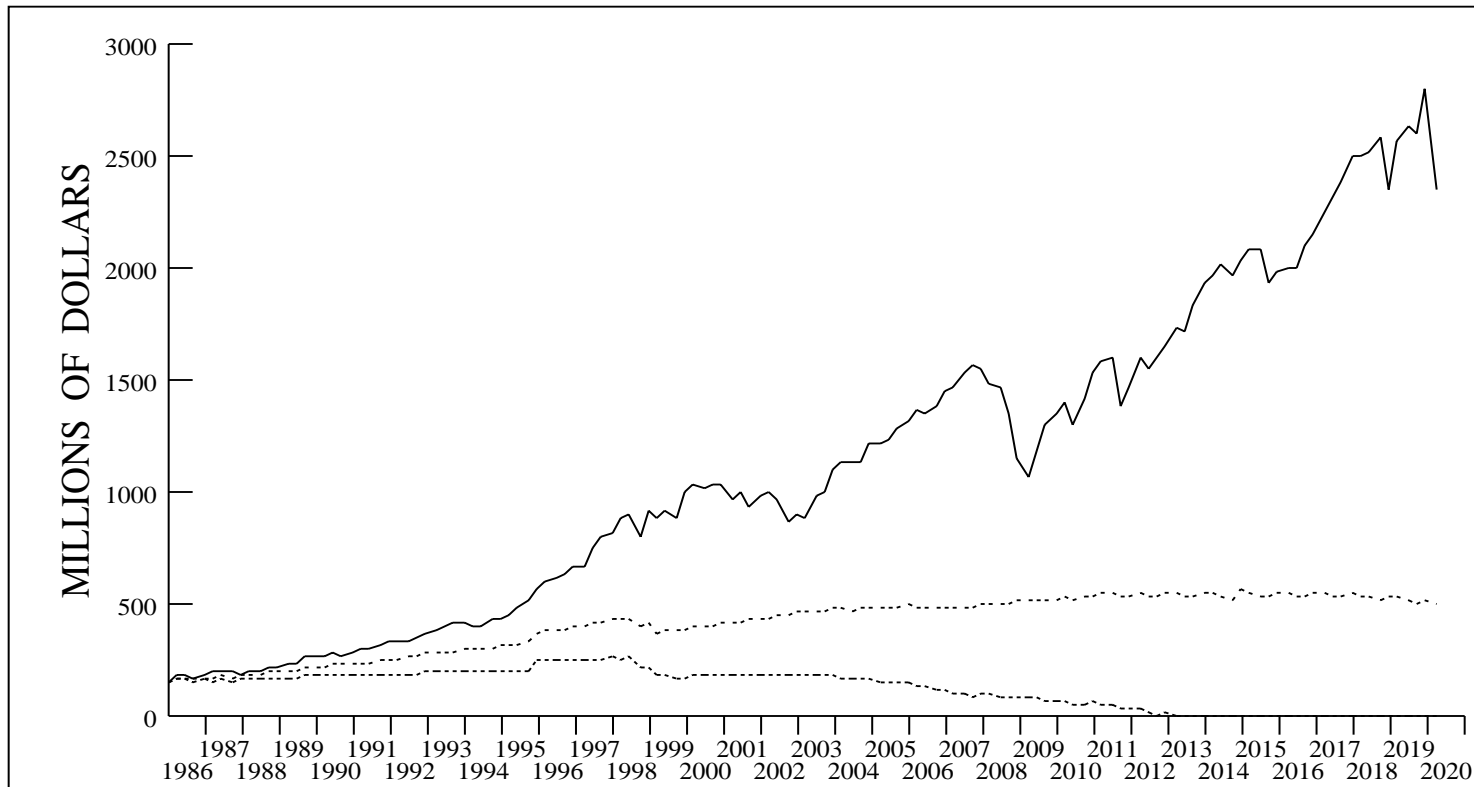
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Int'l Equity	13.8%	326,463,112
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Real Estate	21.4%	504,648,174
Fixed Income	17.6%	415,403,984
Cash	1.8%	41,674,534
<b>Total Portfolio</b>	<b>100.0%</b>	<b>2,358,476,552</b>

**INVESTMENT RETURN**

Market Value 12/2019	\$ 2,800,814,336
Contribs / Withdrawals	- 12,093,905
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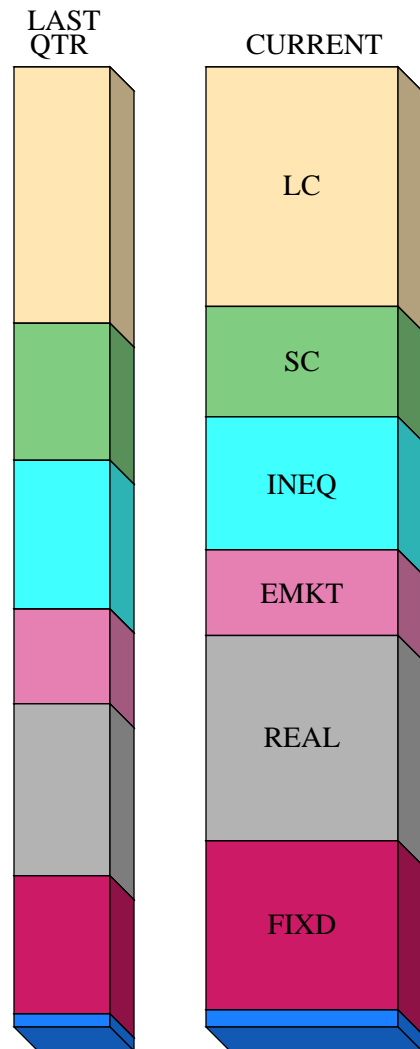
**INVESTMENT GROWTH**



— ACTUAL RETURN  
 - - - 5.25%  
 ..... 0.0%

VALUE ASSUMING  
 5.25% RETURN \$ 511,978,746

	LAST QUARTER	PERIOD 12/85 - 3/20
BEGINNING VALUE	\$ 2,800,814,336	\$ 162,395,431
NET CONTRIBUTIONS	- 12,093,905	-389,511,455
<u>INVESTMENT RETURN</u>	<u>-430,243,879</u>	<u>2,585,592,576</u>
ENDING VALUE	\$ 2,358,476,552	\$ 2,358,476,552
INCOME	4,129,058	571,866,116
<u>CAPITAL GAINS (LOSSES)</u>	<u>-434,372,937</u>	<u>2,013,726,460</u>
INVESTMENT RETURN	-430,243,879	2,585,592,576



	<u>VALUE</u>	<u>PERCENT</u>	<u>TARGET</u>	<u>DIFFERENCE</u> <u>+ / -</u>
<span style="color: orange;">■</span> LARGE CAP EQUITY	\$ 588,496,650	25.0%	25.0%	0.0%
<span style="color: green;">■</span> SMALL CAP EQUITY	271,263,111	11.5%	15.0%	-3.5%
<span style="color: cyan;">■</span> INTERNATIONAL EQUITY	326,463,112	13.8%	15.0%	-1.2%
<span style="color: pink;">■</span> EMERGING MARKETS EQUITY	210,526,987	8.9%	10.0%	-1.1%
<span style="color: grey;">■</span> REAL ESTATE	504,648,174	21.4%	20.0%	1.4%
<span style="color: red;">■</span> FIXED INCOME	415,403,984	17.6%	15.0%	2.6%
<span style="color: blue;">■</span> CASH & EQUIVALENT	41,674,534	1.8%	0.0%	1.8%
<b>TOTAL FUND</b>	<b>\$ 2,358,476,552</b>	<b>100.0%</b>		

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
ALLOCATIONS & TARGETS AS OF MARCH 2020**

<b>Manager</b>	<b>Target</b>	<b>Market Value</b>	<b>%</b>	<b>+ / -</b>	<b>Market Value Ex-cash</b>	<b>%</b>	<b>+ / -</b>
<b>Total Portfolio</b>	<b>-</b>	<b>\$2,358,476,552</b>	<b>100%</b>		<b>\$2,358,476,552</b>	<b>100%</b>	
<b>Large Cap</b>	<b>25</b>	<b>605,112,702</b>	<b>25.7</b>	<b>0.7</b>	<b>588,496,650</b>	<b>25.0</b>	<b>0.0</b>
Eagle		124,409,687	5.3		123,966,198	5.3	
Federated		92,989,446	3.9		88,261,495	3.7	
LSV Large Cap		121,382,935	5.1		120,353,459	5.1	
Polen		217,553,364	9.2		207,138,228	8.8	
SSgA S&P 500		48,777,270	2.1		48,777,270	2.1	
<b>Small Cap</b>	<b>15</b>	<b>276,413,233</b>	<b>11.7</b>	<b>-3.3</b>	<b>271,263,111</b>	<b>11.5</b>	<b>-3.5</b>
AMI		28,343,080	1.2		27,722,865	1.2	
Copeland		35,137,059	1.5		33,603,413	1.4	
Emerald		52,750,893	2.2		50,581,660	2.1	
LSV Small Cap		46,342,787	2.0		45,757,340	1.9	
Smith, Graham & Co		49,898,253	2.1		49,656,672	2.1	
SSgA Russell 2000		63,941,161	2.7		63,941,161	2.7	
<b>International Equity</b>	<b>15</b>	<b>337,259,775</b>	<b>14.3</b>	<b>-0.7</b>	<b>326,463,112</b>	<b>13.8</b>	<b>-1.2</b>
GlobeFlex		4,229	0.0		4,229	0.0	
HGK		102,728,434	4.4		98,363,733	4.2	
Jarislowsky Fraser		519,575	0.0		296,629	0.0	
Johnston		99,950,310	4.2		93,741,294	4.0	
Mercator		17,732	0.0		17,732	0.0	
SSgA International		134,036,562	5.7		134,036,562	5.7	
WHV		2,933	0.0		2,933	0.0	
<b>Emerging Markets</b>	<b>10</b>	<b>210,526,987</b>	<b>8.9</b>	<b>-1.1</b>	<b>210,526,987</b>	<b>8.9</b>	<b>-1.1</b>
SSgA Emerging Mkts		210,526,987	8.9		210,526,987	8.9	
<b>Real Assets</b>	<b>20</b>	<b>504,648,174</b>	<b>21.4</b>	<b>1.4</b>	<b>504,648,174</b>	<b>21.4</b>	<b>1.4</b>
Forest		134,303,095	5.7		134,303,095	5.7	
PRISA I		52,416,298	2.2		52,416,298	2.2	
PRISA II		106,418,646	4.5		106,418,646	4.5	
TIAA N. Front St.		2,315,169	0.1		2,315,169	0.1	
TIAA CREF		209,194,966	8.9		209,194,966	8.9	
<b>Fixed Income</b>	<b>15</b>	<b>415,403,984</b>	<b>17.6</b>	<b>2.6</b>	<b>415,403,984</b>	<b>17.6</b>	<b>2.6</b>
SSgA BC Aggregate		415,403,984	17.6		415,403,984	17.6	
<b>Cash &amp; Equivalents</b>	<b>0</b>	<b>9,111,697</b>	<b>0.4</b>	<b>0.4</b>	<b>41,674,534</b>	<b>1.8</b>	<b>1.8</b>
BNY Cash		3,619,101	0.2		3,619,101	0.2	
STIP Cash		5,492,596	0.2		5,492,596	0.2	
Manager Cash		n/a	-		32,562,837	1.4	

**MANAGER QUARTERLY FEE SUMMARY**

ALL FEES ARE ESTIMATED / ACCRUED

<b>PORTFOLIO</b>	<b>TOTAL RETURN (GROSS OF FEES)</b>	<b>FEE</b>	<b>% FEE</b>
<b>AMI</b>	-24.3%	\$74,397	0.20%
<b>COPELAND</b>	-26.5%	\$99,507	0.21%
<b>EAGLE</b>	-23.7%	\$277,710	0.17%
<b>EMERALD</b>	-24.7%	\$85,170	0.12%
<b>FEDERATED</b>	-15.2%	\$195,058	0.18%
<b>FOREST</b>	0.4%	\$248,634	0.19%
<b>HARDMAN JOHNSTON</b>	-21.3%	\$178,376	0.14%
<b>HGK</b>	-24.2%	\$197,320	0.15%
<b>LSV LARGE CAP</b>	-30.5%	\$139,932	0.08%
<b>LSV SMALL CAP</b>	-40.7%	\$90,511	0.12%
<b>POLEN</b>	-13.0%	\$250,173	0.10%
<b>PRISA SA</b>	1.7%	\$125,453	0.24%
<b>PRISA II</b>	1.3%	\$290,750	0.28%
<b>SMITH, GRAHAM &amp; CO</b>	-37.1%	\$115,467	0.15%
<b>SSgA</b>	-13.3%	\$117,036	0.01%
<b>CONSERVATIVE S&amp;P 500</b>	-19.6%	\$4,876	0.01%
<b>RUSSELL 2000</b>	-30.6%	\$9,076	0.01%
<b>DEVELOPED INTERNATIONAL</b>	-23.1%	\$23,038	0.01%
<b>EMERGING MARKETS</b>	-23.9%	\$48,179	0.02%
<b>BOND MARKET INDEX</b>	3.1%	\$31,866	0.01%
<b>TIAA CREF</b>	1.4%	\$468,690	0.22%
<b>TIAA N. FRONT STREET</b>	0.0%	\$12,500	0.54%

## MANAGER PERFORMANCE SUMMARY - GROSS OF FEES

Portfolio	(Universe)	QTR	CYTD	1 Year	3 Years	5 Years	10 Years	Inception	
Composite	(Public Fund)	-15.4 (83)	-15.4 (83)	-6.7 (81)	3.4 (32)	4.2 (23)	7.0 (20)	8.3 ----	12/85
<i>Shadow Index</i>		<i>-14.8 ----</i>	<i>-14.8 ----</i>	<i>-6.7 ----</i>	<i>2.4 ----</i>	<i>3.6 ----</i>	<i>6.7 ----</i>	<i>8.6 ----</i>	<i>12/85</i>
SSgA	(Balanced)	-13.3 (40)	-13.3 (40)	-6.4 (58)	1.0 (76)	1.6 (82)	3.3 (94)	5.8 ----	03/97
<i>Shadow Index</i>		<i>-13.3 ----</i>	<i>-13.3 ----</i>	<i>-6.3 ----</i>	<i>1.2 ----</i>	<i>1.7 ----</i>	<i>3.5 ----</i>	<i>6.5 ----</i>	<i>03/97</i>
Federated	(LC Growth)	-15.2 (62)	-15.2 (62)	-1.1 (52)	11.1 (46)	---- ----	---- ----	8.5 (68)	06/15
<i>Russell 1000G</i>		<i>-14.1 ----</i>	<i>-14.1 ----</i>	<i>0.9 ----</i>	<i>11.3 ----</i>	<i>10.4 ----</i>	<i>13.0 ----</i>	<i>10.9 ----</i>	<i>06/15</i>
Polen	(LC Growth)	-13.0 (35)	-13.0 (35)	3.3 (12)	15.5 (12)	13.9 (4)	---- ----	15.5 (8)	09/10
<i>Russell 1000G</i>		<i>-14.1 ----</i>	<i>-14.1 ----</i>	<i>0.9 ----</i>	<i>11.3 ----</i>	<i>10.4 ----</i>	<i>13.0 ----</i>	<i>13.7 ----</i>	<i>09/10</i>
Eagle	(LC Value)	-23.7 (29)	-23.7 (29)	-9.8 (17)	4.3 (7)	---- ----	---- ----	8.7 (5)	03/16
<i>Russell 1000V</i>		<i>-26.7 ----</i>	<i>-26.7 ----</i>	<i>-17.2 ----</i>	<i>-2.2 ----</i>	<i>1.9 ----</i>	<i>7.7 ----</i>	<i>2.8 ----</i>	<i>03/16</i>
<i>Russell 1000</i>		<i>-20.2 ----</i>	<i>-20.2 ----</i>	<i>-8.0 ----</i>	<i>4.6 ----</i>	<i>6.2 ----</i>	<i>10.4 ----</i>	<i>7.7 ----</i>	<i>03/16</i>
LSV Large Cap	(LC Value)	-30.5 (82)	-30.5 (82)	-21.4 (79)	-3.9 (73)	0.2 (79)	7.6 (61)	6.3 ----	03/04
<i>Russell 1000V</i>		<i>-26.7 ----</i>	<i>-26.7 ----</i>	<i>-17.2 ----</i>	<i>-2.2 ----</i>	<i>1.9 ----</i>	<i>7.7 ----</i>	<i>5.9 ----</i>	<i>03/04</i>
AMI	(SC Growth)	-24.3 (57)	-24.3 (57)	-25.9 (93)	---- ----	---- ----	---- ----	-9.2 (92)	09/17
<i>Russell 2000G</i>		<i>-25.8 ----</i>	<i>-25.8 ----</i>	<i>-18.6 ----</i>	<i>0.1 ----</i>	<i>1.7 ----</i>	<i>8.9 ----</i>	<i>-4.0 ----</i>	<i>09/17</i>
Copeland	(SC Growth)	-26.5 (74)	-26.5 (74)	-16.1 (55)	---- ----	---- ----	---- ----	-1.7 (66)	09/17
<i>Russell 2000G</i>		<i>-25.8 ----</i>	<i>-25.8 ----</i>	<i>-18.6 ----</i>	<i>0.1 ----</i>	<i>1.7 ----</i>	<i>8.9 ----</i>	<i>-4.0 ----</i>	<i>09/17</i>
Emerald	(SC Growth)	-24.7 (60)	-24.7 (60)	-18.2 (64)	2.9 (60)	3.8 (58)	11.9 (22)	9.8 ----	09/98
<i>Russell 2000G</i>		<i>-25.8 ----</i>	<i>-25.8 ----</i>	<i>-18.6 ----</i>	<i>0.1 ----</i>	<i>1.7 ----</i>	<i>8.9 ----</i>	<i>6.5 ----</i>	<i>09/98</i>
LSV Small Cap	(SC Value)	-40.7 (90)	-40.7 (90)	-34.4 (89)	-12.3 (90)	---- ----	---- ----	-11.5 (91)	12/16
<i>Russell 2000V</i>		<i>-35.7 ----</i>	<i>-35.7 ----</i>	<i>-29.7 ----</i>	<i>-9.5 ----</i>	<i>-2.4 ----</i>	<i>4.8 ----</i>	<i>-8.9 ----</i>	<i>12/16</i>
Smith, Graham & Co	(SC Value)	-37.1 (70)	-37.1 (70)	-25.2 (33)	-10.3 (73)	---- ----	---- ----	-9.0 (69)	12/16
<i>Russell 2000V</i>		<i>-35.7 ----</i>	<i>-35.7 ----</i>	<i>-29.7 ----</i>	<i>-9.5 ----</i>	<i>-2.4 ----</i>	<i>4.8 ----</i>	<i>-8.9 ----</i>	<i>12/16</i>
HGK	(Intl Eq)	-24.2 (53)	-24.2 (53)	-12.7 (33)	0.7 (29)	2.2 (24)	---- ----	6.5 (9)	03/12
<i>S&amp;P BMI Ex US</i>		<i>-23.7 ----</i>	<i>-23.7 ----</i>	<i>-15.1 ----</i>	<i>-1.8 ----</i>	<i>0.0 ----</i>	<i>3.3 ----</i>	<i>3.2 ----</i>	<i>03/12</i>
Hardman Johnston	(Intl Eq)	-21.3 (28)	-21.3 (28)	-8.5 (17)	4.4 (9)	4.2 (9)	---- ----	6.7 (9)	03/12
<i>S&amp;P BMI Ex US</i>		<i>-23.7 ----</i>	<i>-23.7 ----</i>	<i>-15.1 ----</i>	<i>-1.8 ----</i>	<i>0.0 ----</i>	<i>3.3 ----</i>	<i>3.2 ----</i>	<i>03/12</i>
PRISA II SA		1.3 ----	1.3 ----	6.8 ----	8.4 ----	10.1 ----	14.2 ----	4.9 ----	06/07
<i>NCREIF ODCE</i>		<i>1.0 ----</i>	<i>1.0 ----</i>	<i>4.9 ----</i>	<i>6.8 ----</i>	<i>8.5 ----</i>	<i>11.4 ----</i>	<i>5.6 ----</i>	<i>06/07</i>
PRISA SA		1.7 ----	1.7 ----	6.2 ----	7.6 ----	9.0 ----	12.3 ----	7.9 ----	12/90
<i>NCREIF ODCE</i>		<i>1.0 ----</i>	<i>1.0 ----</i>	<i>4.9 ----</i>	<i>6.8 ----</i>	<i>8.5 ----</i>	<i>11.4 ----</i>	<i>7.5 ----</i>	<i>12/90</i>
TIAA CREF		1.4 ----	1.4 ----	8.3 ----	8.4 ----	9.0 ----	8.8 ----	4.0 ----	06/08
<i>NCREIF ODCE</i>		<i>1.0 ----</i>	<i>1.0 ----</i>	<i>4.9 ----</i>	<i>6.8 ----</i>	<i>8.5 ----</i>	<i>11.4 ----</i>	<i>5.4 ----</i>	<i>06/08</i>
TIAA 1721 N. Front St.		0.7 ----	0.7 ----	5.2 ----	3.4 ----	---- ----	---- ----	0.7 ----	06/16
<i>NCREIF NPI</i>		<i>0.7 ----</i>	<i>0.7 ----</i>	<i>5.3 ----</i>	<i>6.4 ----</i>	<i>7.6 ----</i>	<i>10.2 ----</i>	<i>6.5 ----</i>	<i>06/16</i>
Forest		0.4 ----	0.4 ----	-4.9 ----	2.4 ----	4.0 ----	4.4 ----	4.8 ----	03/99
<i>NCREIF Timber</i>		<i>0.1 ----</i>	<i>0.1 ----</i>	<i>1.3 ----</i>	<i>2.5 ----</i>	<i>2.8 ----</i>	<i>4.5 ----</i>	<i>6.0 ----</i>	<i>03/99</i>

## MANAGER PERFORMANCE SUMMARY - NET OF FEES

Portfolio	QTR	CYTD	1 Year	3 Years	5 Years	10 Years	Inception	
Composite	-15.5	-15.5	-7.2	2.9	3.7	6.5	----	12/85
<i>Shadow Index</i>	<i>-14.8</i>	<i>-14.8</i>	<i>-6.7</i>	<i>2.4</i>	<i>3.6</i>	<i>6.7</i>	<i>8.6</i>	<i>12/85</i>
SSgA	-13.3	-13.3	-6.5	1.0	1.6	3.3	5.8	03/97
<i>Shadow Index</i>	<i>-13.3</i>	<i>-13.3</i>	<i>-6.3</i>	<i>1.2</i>	<i>1.7</i>	<i>3.5</i>	<i>6.5</i>	<i>03/97</i>
Federated	-15.4	-15.4	-1.8	10.2	----	----	7.7	06/15
<i>Russell 1000G</i>	<i>-14.1</i>	<i>-14.1</i>	<i>0.9</i>	<i>11.3</i>	<i>10.4</i>	<i>13.0</i>	<i>10.9</i>	<i>06/15</i>
Polen	-13.1	-13.1	2.9	15.1	13.4	----	15.0	09/10
<i>Russell 1000G</i>	<i>-14.1</i>	<i>-14.1</i>	<i>0.9</i>	<i>11.3</i>	<i>10.4</i>	<i>13.0</i>	<i>13.7</i>	<i>09/10</i>
Eagle	-23.9	-23.9	-10.5	3.5	----	----	7.9	03/16
<i>Russell 1000V</i>	<i>-26.7</i>	<i>-26.7</i>	<i>-17.2</i>	<i>-2.2</i>	<i>1.9</i>	<i>7.7</i>	<i>2.8</i>	<i>03/16</i>
<i>Russell 1000</i>	<i>-20.2</i>	<i>-20.2</i>	<i>-8.0</i>	<i>4.6</i>	<i>6.2</i>	<i>10.4</i>	<i>7.7</i>	<i>03/16</i>
LSV Large Cap	-30.6	-30.6	-21.7	-4.2	-0.2	7.2	5.9	03/04
<i>Russell 1000V</i>	<i>-26.7</i>	<i>-26.7</i>	<i>-17.2</i>	<i>-2.2</i>	<i>1.9</i>	<i>7.7</i>	<i>5.9</i>	<i>03/04</i>
AMI	-24.5	-24.5	-26.5	----	----	----	-9.9	09/17
<i>Russell 2000G</i>	<i>-25.8</i>	<i>-25.8</i>	<i>-18.6</i>	<i>0.1</i>	<i>1.7</i>	<i>8.9</i>	<i>-4.0</i>	<i>09/17</i>
Copeland	-26.7	-26.7	-16.8	----	----	----	-2.6	09/17
<i>Russell 2000G</i>	<i>-25.8</i>	<i>-25.8</i>	<i>-18.6</i>	<i>0.1</i>	<i>1.7</i>	<i>8.9</i>	<i>-4.0</i>	<i>09/17</i>
Emerald	-24.8	-24.8	-18.6	2.4	3.3	11.4	9.3	09/98
<i>Russell 2000G</i>	<i>-25.8</i>	<i>-25.8</i>	<i>-18.6</i>	<i>0.1</i>	<i>1.7</i>	<i>8.9</i>	<i>6.5</i>	<i>09/98</i>
LSV Small Cap	-40.8	-40.8	-34.9	-12.8	----	----	-12.0	12/16
<i>Russell 2000V</i>	<i>-35.7</i>	<i>-35.7</i>	<i>-29.7</i>	<i>-9.5</i>	<i>-2.4</i>	<i>4.8</i>	<i>-8.9</i>	<i>12/16</i>
Smith, Graham & Co	-37.3	-37.3	-25.8	-10.9	----	----	-9.6	12/16
<i>Russell 2000V</i>	<i>-35.7</i>	<i>-35.7</i>	<i>-29.7</i>	<i>-9.5</i>	<i>-2.4</i>	<i>4.8</i>	<i>-8.9</i>	<i>12/16</i>
HGK	-24.3	-24.3	-13.3	0.0	1.5	----	5.8	03/12
<i>S&amp;P BMI Ex US</i>	<i>-23.7</i>	<i>-23.7</i>	<i>-15.1</i>	<i>-1.8</i>	<i>0.0</i>	<i>3.3</i>	<i>3.2</i>	<i>03/12</i>
Hardman Johnston	-21.4	-21.4	-9.1	3.8	3.6	----	6.0	03/12
<i>S&amp;P BMI Ex US</i>	<i>-23.7</i>	<i>-23.7</i>	<i>-15.1</i>	<i>-1.8</i>	<i>0.0</i>	<i>3.3</i>	<i>3.2</i>	<i>03/12</i>
PRISA II SA	1.0	1.0	5.7	7.2	9.0	13.0	3.8	06/07
<i>NCREIF ODCE</i>	<i>1.0</i>	<i>1.0</i>	<i>4.9</i>	<i>6.8</i>	<i>8.5</i>	<i>11.4</i>	<i>5.6</i>	<i>06/07</i>
PRISA SA	1.4	1.4	5.2	6.5	8.0	11.3	----	12/90
<i>NCREIF ODCE</i>	<i>1.0</i>	<i>1.0</i>	<i>4.9</i>	<i>6.8</i>	<i>8.5</i>	<i>11.4</i>	<i>7.5</i>	<i>12/90</i>
TIAA CREF	1.1	1.1	7.3	7.5	8.0	7.8	3.1	06/08
<i>NCREIF ODCE</i>	<i>1.0</i>	<i>1.0</i>	<i>4.9</i>	<i>6.8</i>	<i>8.5</i>	<i>11.4</i>	<i>5.4</i>	<i>06/08</i>
TIAA 1721 N. Front St.	0.1	0.1	3.1	1.2	----	----	-1.7	06/16
<i>NCREIF NPI</i>	<i>0.7</i>	<i>0.7</i>	<i>5.3</i>	<i>6.4</i>	<i>7.6</i>	<i>10.2</i>	<i>6.5</i>	<i>06/16</i>
Forest	0.2	0.2	-5.6	1.6	3.2	3.6	4.3	03/99
<i>NCREIF Timber</i>	<i>0.1</i>	<i>0.1</i>	<i>1.3</i>	<i>2.5</i>	<i>2.8</i>	<i>4.5</i>	<i>6.0</i>	<i>03/99</i>

## MANAGER VALUE ADDED

Portfolio	Benchmark	1 Quarter	1 Year	3 Years	5 Years
SSgA	Shadow Index	0.0	-0.1	-0.2	-0.1
Federated	Russell 1000G	-1.1	-2.0	-0.2	N/A
Polen	Russell 1000G	1.1	2.4	4.2	3.5
Eagle	Russell 1000V	3.0	7.4	6.5	N/A
LSV Large Cap	Russell 1000V	-3.8	-4.2	-1.7	-1.7
AMI	Russell 2000G	1.5	-7.3	N/A	N/A
Copeland	Russell 2000G	-0.7	2.5	N/A	N/A
Emerald	Russell 2000G	1.1	0.4	2.8	2.1
LSV Small Cap	Russell 2000V	-5.0	-4.7	-2.8	N/A
Smith, Graham & Co	Russell 2000V	-1.4	4.5	-0.8	N/A
HGK	S&P BMI Ex US	-0.5	2.4	2.5	2.2
Hardman Johnston	S&P BMI Ex US	2.4	6.6	6.2	4.2
PRISA II SA	NCREIF ODCE	0.3	1.9	1.6	1.6
PRISA SA	NCREIF ODCE	0.7	1.3	0.8	0.5
TIAA CREF	NCREIF ODCE	0.4	3.4	1.6	0.5
TIAA 1721 N. Front St.	NCREIF NPI	0.0	-0.1	-3.0	N/A
Forest	NCREIF Timber	0.3	-6.2	-0.1	1.2
<b>Total Portfolio</b>	<b>Shadow Index</b>	<b>-0.6</b>	<b>0.0  </b>	<b>1.0</b>	<b>0.6</b>



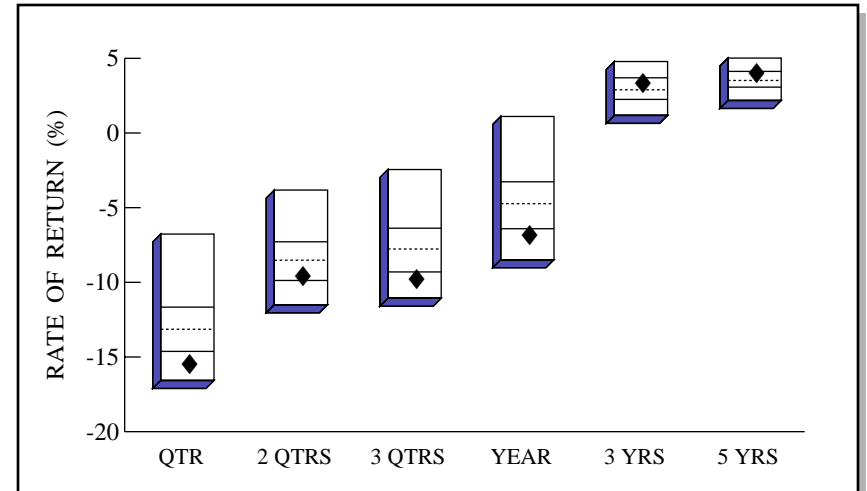
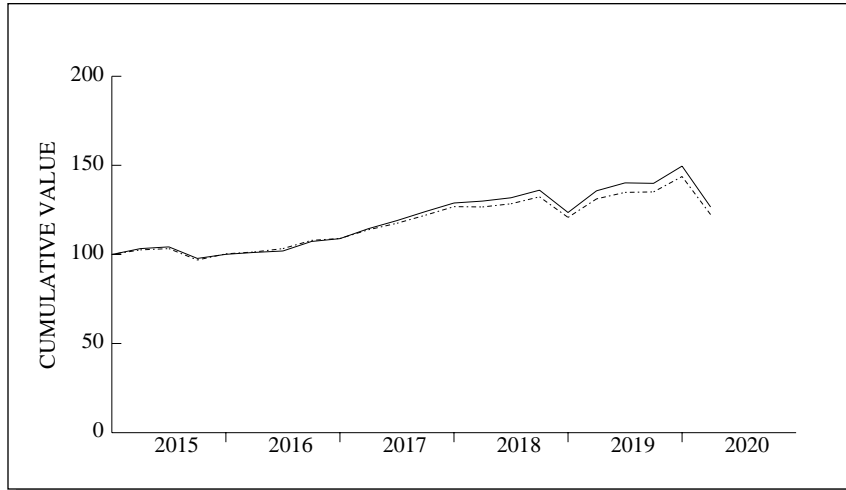
## INVESTMENT RETURN SUMMARY - ONE QUARTER

Name	Quarter Total Return	Market Value December 31st, 2019	Net Cashflow	Net Investment Return	Market Value March 31st, 2020
SSgA S&P 500 (LCC)	-19.6	60,655,056	0	-11,877,786	48,777,270
Federated (LCG)	-15.2	109,912,186	-200,874	-16,721,866	92,989,446
Polen (LCG)	-13.0	250,171,677	-242,426	-32,375,887	217,553,364
Eagle (LCV)	-23.7	163,486,666	-303,202	-38,773,777	124,409,687
LSV Large Cap (LCV)	-30.5	174,824,518	-158,911	-53,282,672	121,382,935
SSgA Russell 2000 (SMDC)	-30.6	92,132,296	0	-28,191,135	63,941,161
AMI (SCG)	-24.3	37,513,048	-71,802	-9,098,166	28,343,080
Copeland (SCG)	-26.5	47,878,090	-58,946	-12,682,085	35,137,059
Emerald (SCG)	-24.7	70,152,540	-88,130	-17,313,517	52,750,893
LSV Small Cap (SCV)	-40.7	78,265,826	-111,240	-31,811,799	46,342,787
Smith, Graham & Co (SCV)	-37.1	79,486,947	-133,159	-29,455,535	49,898,253
GlobeFlex (INEQ)	---	4,291	0	-62	4,229
HGK (INEQ)	-24.2	135,684,705	-221,570	-32,734,701	102,728,434
Hardman Johnston (INEQ)	-21.3	127,212,909	-194,630	-27,067,969	99,950,310
Mercator (INEQ)	---	18,141	0	-409	17,732
WHV (INEQ)	---	3,721	-715	-73	2,933
Jarislowsky Fraser (INEG)	---	522,816	0	-3,241	519,575
SSgA World Ex-US (INEQ)	-23.1	174,294,490	0	-40,257,928	134,036,562
SSgA Emerging Markets (EMKT)	-23.9	276,636,099	0	-66,109,112	210,526,987
PRISA II SA (REAL)	1.3	105,315,951	-290,750	1,393,445	106,418,646
PRISA SA (REAL)	1.7	51,683,670	-125,453	858,081	52,416,298
TIAA CREF (REAL)	1.4	208,328,085	-1,446,377	2,313,258	209,194,966
TIAA 1721 N. Front St. (REAL)	0.7	2,312,412	0	2,757	2,315,169
Forest (TIMB)	0.4	133,807,118	0	495,977	134,303,095
SSgA Bond Market (CFI)	3.1	403,053,072	0	12,350,912	415,403,984
BNY Cash (CASH)	---	2,459,919	1,143,052	16,130	3,619,101
Treasury STIP (CASH)	---	14,998,087	-9,588,772	83,281	5,492,596
<b>Total Portfolio</b>	<b>-15.4</b>	<b>2,800,814,336</b>	<b>-12,093,905</b>	<b>-430,243,879</b>	<b>2,358,476,552</b>

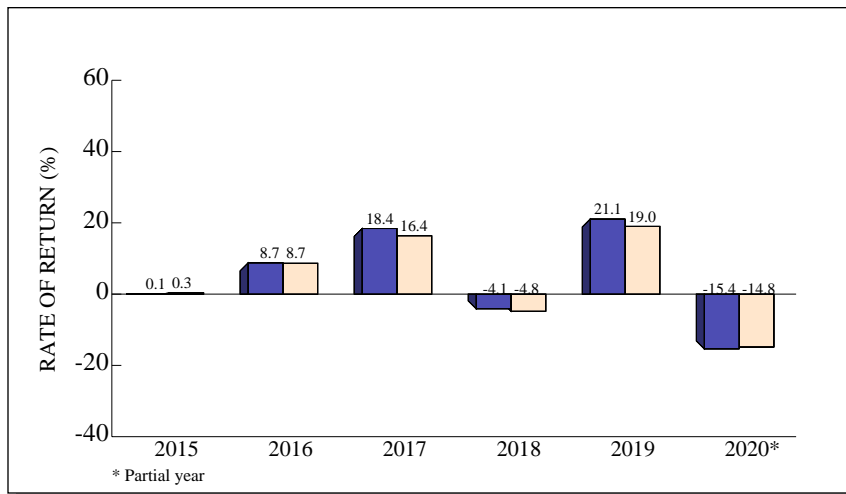
## MANAGER RISK STATISTICS SUMMARY - FIVE-YEAR HISTORY

Name	Alpha	Batting Average	Sharpe Ratio	Information Ratio	Up Capture	Down Capture
SSgA <i>Shadow Index</i>	-0.09	0.650	0.10	-0.39	98.8	100.0
SSgA S&P 500 <i>S&amp;P 500</i>	0.00	0.900	0.46	-0.31	99.8	99.8
Polen <i>Russell 1000G</i>	4.45	0.700	0.98	0.77	105.1	73.4
LSV Large Cap <i>Russell 1000V</i>	-1.64	0.500	0.05	-0.32	98.4	109.9
SSgA Russell 2000 <i>Russell 2000</i>	0.08	0.950	0.05	1.39	100.3	99.8
Emerald <i>Russell 2000G</i>	2.22	0.650	0.24	0.46	112.7	99.5
HGK <i>S&amp;P BMI Ex US</i>	2.44	0.600	0.16	0.54	116.2	95.7
Hardman Johnston <i>S&amp;P BMI Ex US</i>	4.53	0.700	0.27	0.90	136.7	96.4
SSgA World Ex-US <i>MSCI World Ex US</i>	0.02	0.550	-0.01	0.03	99.3	99.0
SSgA Emerging Markets <i>EM Index</i>	-0.41	0.400	0.01	-0.80	99.2	101.8
PRISA II SA <i>NCREIF ODCE</i>	0.59	0.800	4.72	1.87	119.6	----
PRISA SA <i>NCREIF ODCE</i>	1.08	0.550	4.88	0.65	106.0	----
TIAA CREF <i>NCREIF ODCE</i>	5.80	0.650	4.16	0.27	106.4	----
Forest <i>NCREIF Timber</i>	4.64	0.450	0.66	0.28	113.3	----
SSgA Bond Market <i>Aggregate Index</i>	0.01	1.000	0.69	0.06	99.9	99.6

**TOTAL RETURN COMPARISONS**



Public Fund Universe

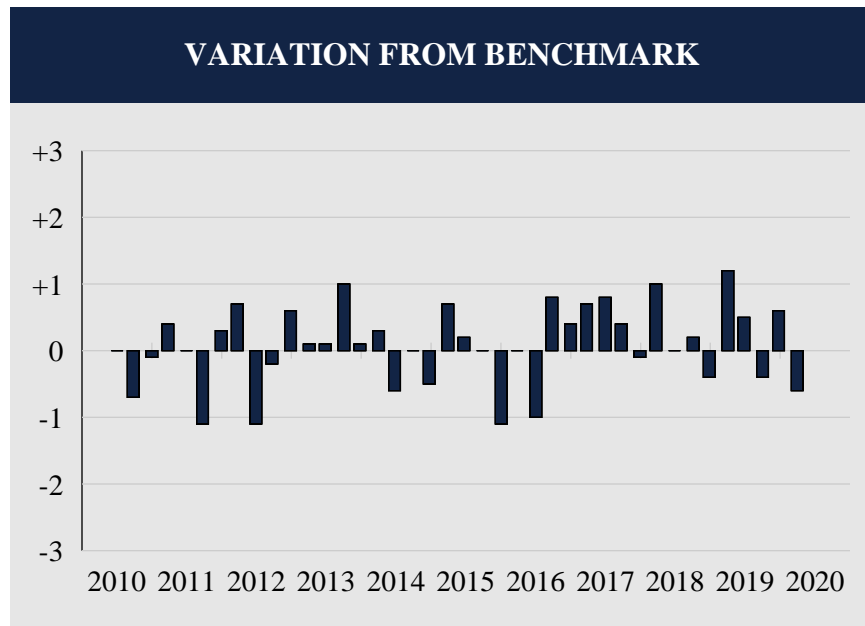


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-15.4	-9.5	-9.7	-6.7	3.4	4.2
(RANK)	(83)	(69)	(81)	(81)	(32)	(23)
5TH %ILE	-6.8	-3.8	-2.5	1.1	4.8	5.0
25TH %ILE	-11.7	-7.3	-6.4	-3.3	3.7	4.1
MEDIAN	-13.1	-8.5	-7.8	-4.7	2.9	3.5
75TH %ILE	-14.6	-9.9	-9.3	-6.4	2.3	3.1
95TH %ILE	-16.6	-11.5	-11.1	-8.5	1.2	2.2
<i>Shadow Idx</i>	<i>-14.8</i>	<i>-9.4</i>	<i>-9.2</i>	<i>-6.7</i>	<i>2.4</i>	<i>3.6</i>

Public Fund Universe

**TOTAL PORTFOLIO QUARTERLY PERFORMANCE SUMMARY - 10 YEARS**

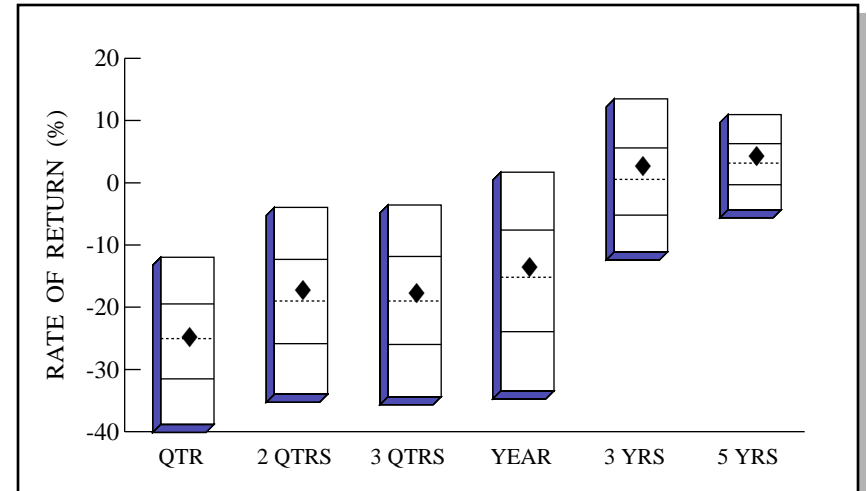
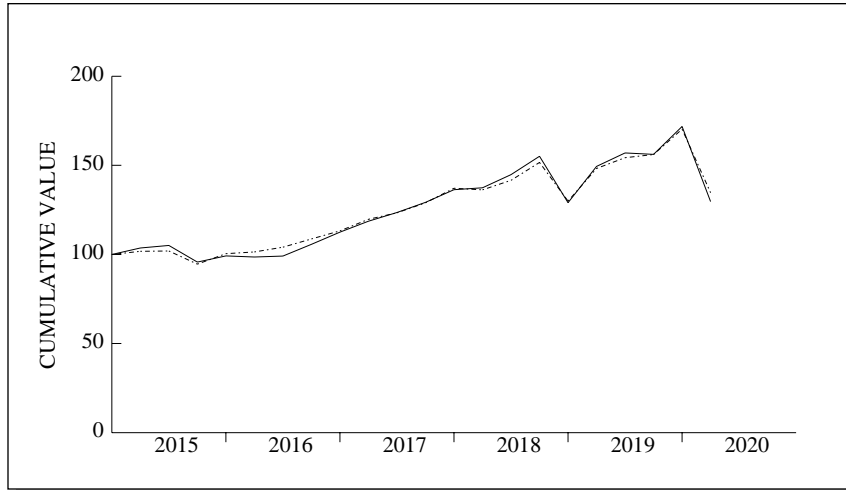
**COMPARATIVE BENCHMARK: SHADOW INDEX**



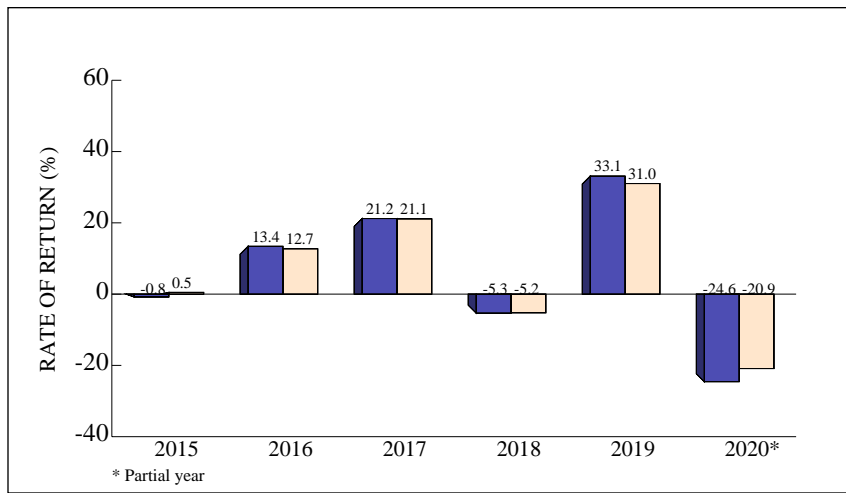
RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
6/10	-6.0	-6.0	0.0
9/10	9.1	9.8	-0.7
12/10	7.3	7.4	-0.1
3/11	4.3	3.9	0.4
6/11	0.6	0.6	0.0
9/11	-12.1	-11.0	-1.1
12/11	6.6	6.3	0.3
3/12	9.2	8.5	0.7
6/12	-3.3	-2.2	-1.1
9/12	4.5	4.7	-0.2
12/12	2.5	1.9	0.6
3/13	5.5	5.4	0.1
6/13	0.4	0.3	0.1
9/13	6.6	5.6	1.0
12/13	5.8	5.7	0.1
3/14	1.8	1.5	0.3
6/14	3.3	3.9	-0.6
9/14	-1.5	-1.5	0.0
12/14	2.0	2.5	-0.5
3/15	3.3	2.6	0.7
6/15	0.9	0.7	0.2
9/15	-6.2	-6.2	0.0
12/15	2.4	3.5	-1.1
3/16	1.1	1.1	0.0
6/16	0.8	1.8	-1.0
9/16	5.2	4.4	0.8
12/16	1.5	1.1	0.4
3/17	5.1	4.4	0.7
6/17	4.0	3.2	0.8
9/17	4.2	3.8	0.4
12/17	3.9	4.0	-0.1
3/18	0.8	-0.2	1.0
6/18	1.4	1.4	0.0
9/18	3.3	3.1	0.2
12/18	-9.2	-8.8	-0.4
3/19	9.8	8.6	1.2
6/19	3.3	2.8	0.5
9/19	-0.2	0.2	-0.4
12/19	7.0	6.4	0.6
3/20	-15.4	-14.8	-0.6

<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>27</b>
<b>Quarters Below the Benchmark</b>	<b>13</b>
<b>Batting Average</b>	<b>.675</b>

**DOMESTIC EQUITY RETURN COMPARISONS**



Domestic Equity Universe

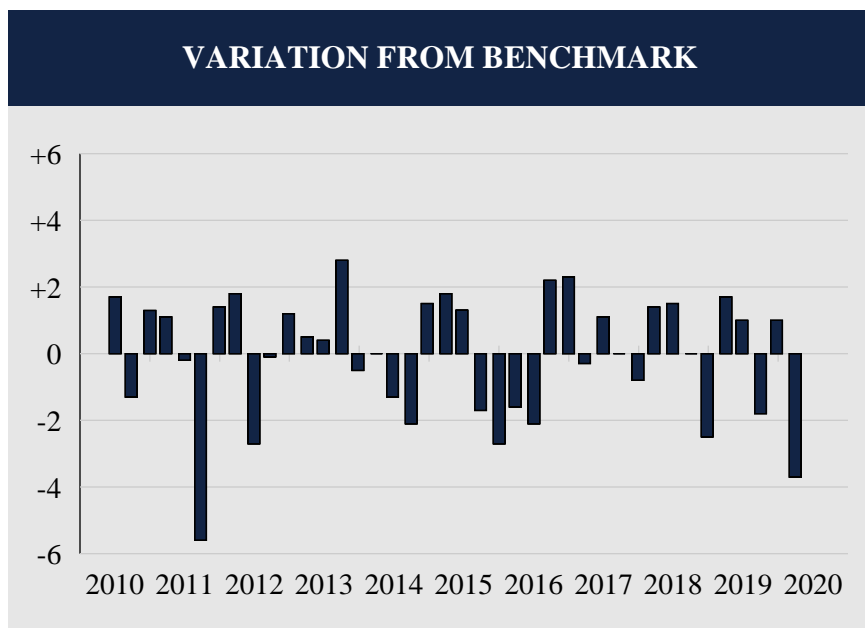


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-24.6	-17.0	-17.4	-13.2	3.0	4.6
(RANK)	(49)	(43)	(46)	(44)	(41)	(40)
5TH %ILE	-12.0	-4.0	-3.6	1.7	13.5	10.9
25TH %ILE	-19.5	-12.3	-11.8	-7.6	5.6	6.3
MEDIAN	-25.1	-19.0	-19.0	-15.2	0.6	3.2
75TH %ILE	-31.5	-25.9	-26.0	-23.9	-5.2	-0.3
95TH %ILE	-38.8	-34.0	-34.4	-33.4	-11.1	-4.4
<b>Russ 3000</b>	<b>-20.9</b>	<b>-13.7</b>	<b>-12.7</b>	<b>-9.1</b>	<b>4.0</b>	<b>5.8</b>

Domestic Equity Universe

**DOMESTIC EQUITY QUARTERLY PERFORMANCE SUMMARY - 10 YEARS**

**COMPARATIVE BENCHMARK: RUSSELL 3000**



<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>23</b>
<b>Quarters Below the Benchmark</b>	<b>17</b>
<b>Batting Average</b>	<b>.575</b>

<b>RATES OF RETURN</b>			
Date	Portfolio	Benchmark	Difference
6/10	-9.6	-11.3	1.7
9/10	10.2	11.5	-1.3
12/10	12.9	11.6	1.3
3/11	7.5	6.4	1.1
6/11	-0.2	0.0	-0.2
9/11	-20.9	-15.3	-5.6
12/11	13.5	12.1	1.4
3/12	14.7	12.9	1.8
6/12	-5.8	-3.1	-2.7
9/12	6.1	6.2	-0.1
12/12	1.5	0.3	1.2
3/13	11.6	11.1	0.5
6/13	3.1	2.7	0.4
9/13	9.2	6.4	2.8
12/13	9.6	10.1	-0.5
3/14	2.0	2.0	0.0
6/14	3.6	4.9	-1.3
9/14	-2.1	0.0	-2.1
12/14	6.7	5.2	1.5
3/15	3.6	1.8	1.8
6/15	1.4	0.1	1.3
9/15	-8.9	-7.2	-1.7
12/15	3.6	6.3	-2.7
3/16	-0.6	1.0	-1.6
6/16	0.5	2.6	-2.1
9/16	6.6	4.4	2.2
12/16	6.5	4.2	2.3
3/17	5.4	5.7	-0.3
6/17	4.1	3.0	1.1
9/17	4.6	4.6	0.0
12/17	5.5	6.3	-0.8
3/18	0.8	-0.6	1.4
6/18	5.4	3.9	1.5
9/18	7.1	7.1	0.0
12/18	-16.8	-14.3	-2.5
3/19	15.7	14.0	1.7
6/19	5.1	4.1	1.0
9/19	-0.6	1.2	-1.8
12/19	10.1	9.1	1.0
3/20	-24.6	-20.9	-3.7

## LARGE CAP EQUITY MANAGERS

PMRB's aggregate large cap portfolio (excluding cash) returned -20.5%, which was 90 basis points below the S&P 500 return of -19.6%. Two of the four active large cap managers outperformed their benchmarks: one on the growth side (Polen) and one on the value side (Eagle).

**SSgA S&P 500  
(Core)**

SSgA's S&P 500 fund continued to closely track the S&P 500 index over the short and long term. At quarter-end, this fund was valued at \$48,777,270.

**Federated  
(Growth)**

While the extra emphasis on Health Care stocks was advantageous, the relatively lower allocation to Information Technology had the opposite effect, since both sectors performed better than most others. Selection also produced mixed effects—three sectors, including Health Care outperformed their bogies, but the remaining invested sectors fell short.

**Polen  
(Growth)**

The concentration in Information Technology and Health Care helped the portfolio to slightly curb losses last quarter, as those sectors fared better than most. The portfolio's avoidance of the Industrials sector was also beneficial, since that sector had significant representation in the index and saw steep declines during the quarter. The portfolio also found positive returns in the Financials sector.

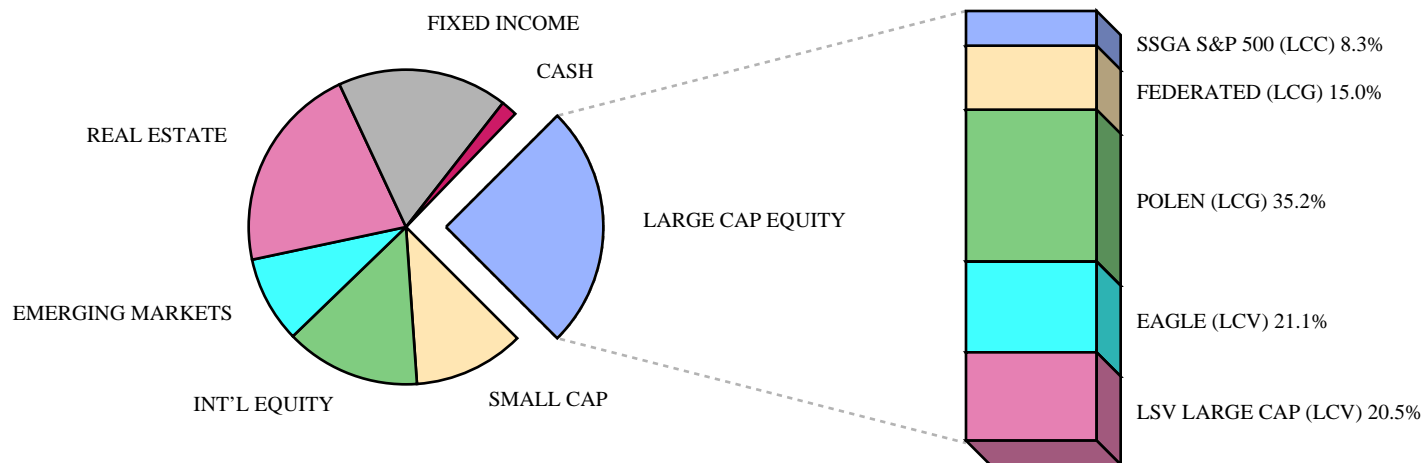
**Eagle  
(Value)**

Better selection in the Communication Services, Consumer Discretionary, and Information Technology sectors, which represented over 60% of the portfolio, combined helped the portfolio to moderate losses and come out ahead of the benchmark.

**LSV Large Cap  
(Value)**

Despite positive allocation effects resulting from greater weight in the Health Care and Information Technology sectors, the portfolio retreated further than the Russell 1000 Value index during the first quarter. Stock selection in almost every sector produced sub-par returns. The portfolio's general bias toward lower market capitalization put it at a disadvantage, as lower cap stocks declined at a faster rate.

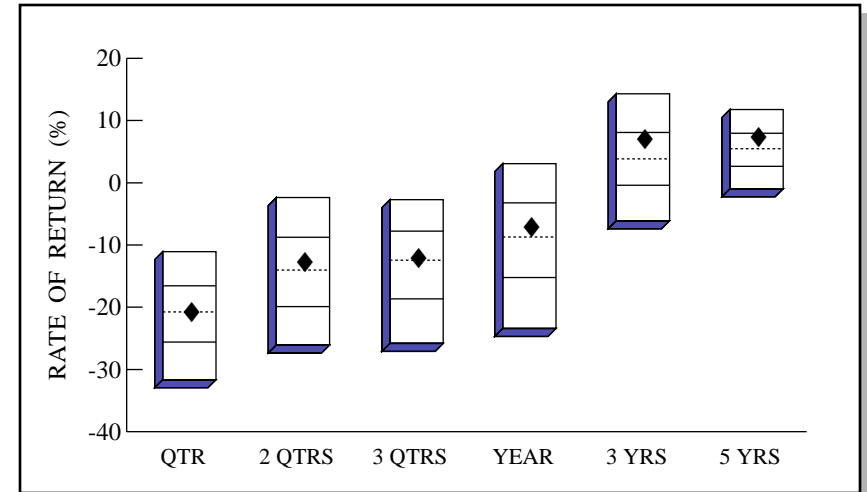
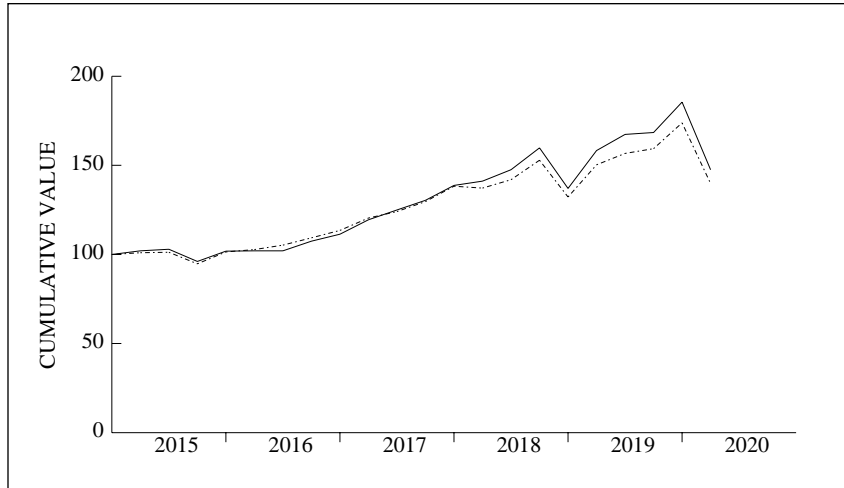
### LARGE CAP EQUITY MANAGER SUMMARY



COMPONENT RETURNS AND RANKINGS							
MANAGER	(UNIVERSE)	QTR	YTD	1 YEAR	3 YEARS	5 YEARS	MARKET VALUE
SSGA S&P 500	(Large Cap Core)	-19.6 (40)	-19.6 (40)	-7.0 (32)	5.1 (34)	6.7 (23)	\$48,777,270
<i>S&amp;P 500</i>		<i>-19.6 ---</i>	<i>-19.6 ---</i>	<i>-7.0 ---</i>	<i>5.1 ---</i>	<i>6.7 ---</i>	<i>---</i>
FEDERATED	(Large Cap Growth)	-15.5 (64)	-15.5 (64)	-1.0 (52)	11.6 (41)	----	\$88,261,495
POLEN	(Large Cap Growth)	-13.2 (40)	-13.2 (40)	3.4 (11)	16.2 (8)	14.4 (3)	\$207,138,228
<i>Russell 1000 Growth</i>		<i>-14.1 ---</i>	<i>-14.1 ---</i>	<i>0.9 ---</i>	<i>11.3 ---</i>	<i>10.4 ---</i>	<i>---</i>
EAGLE	(Large Cap Value)	-24.0 (31)	-24.0 (31)	-9.7 (16)	4.4 (7)	----	\$123,966,198
LSV LARGE CAP	(Large Cap Value)	-30.7 (83)	-30.7 (83)	-21.4 (79)	-3.9 (74)	0.2 (79)	\$120,353,459
<i>Russell 1000 Value</i>		<i>-26.7 ---</i>	<i>-26.7 ---</i>	<i>-17.2 ---</i>	<i>-2.2 ---</i>	<i>1.9 ---</i>	<i>---</i>
<b>TOTAL</b>	<b>(Large Cap)</b>	<b>-20.5 (48)</b>	<b>-20.5 (48)</b>	<b>-6.8 (37)</b>	<b>7.3 (28)</b>	<b>7.7 (27)</b>	<b>\$588,496,650</b>
<i>S&amp;P 500</i>		<i>-19.6 ---</i>	<i>-19.6 ---</i>	<i>-7.0 ---</i>	<i>5.1 ---</i>	<i>6.7 ---</i>	<i>---</i>

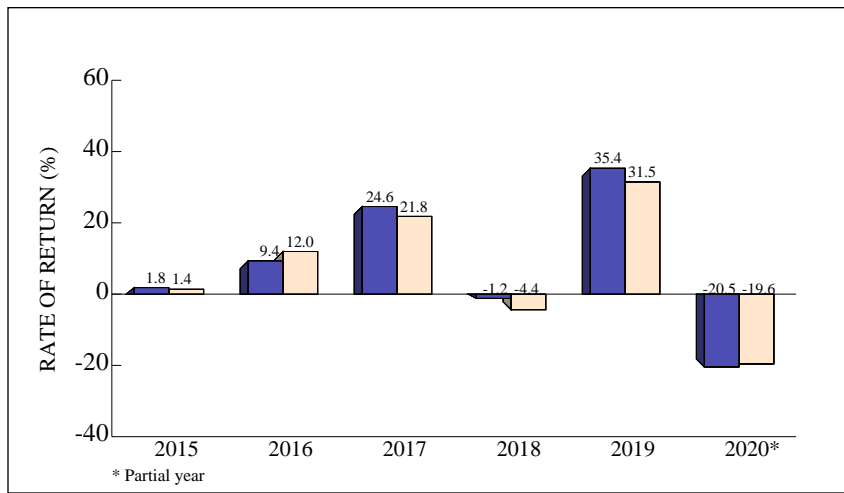


**LARGE CAP EQUITY RETURN COMPARISONS**



■ ——— PORTFOLIO  
■ - - - - S&P 500

Large Cap Universe

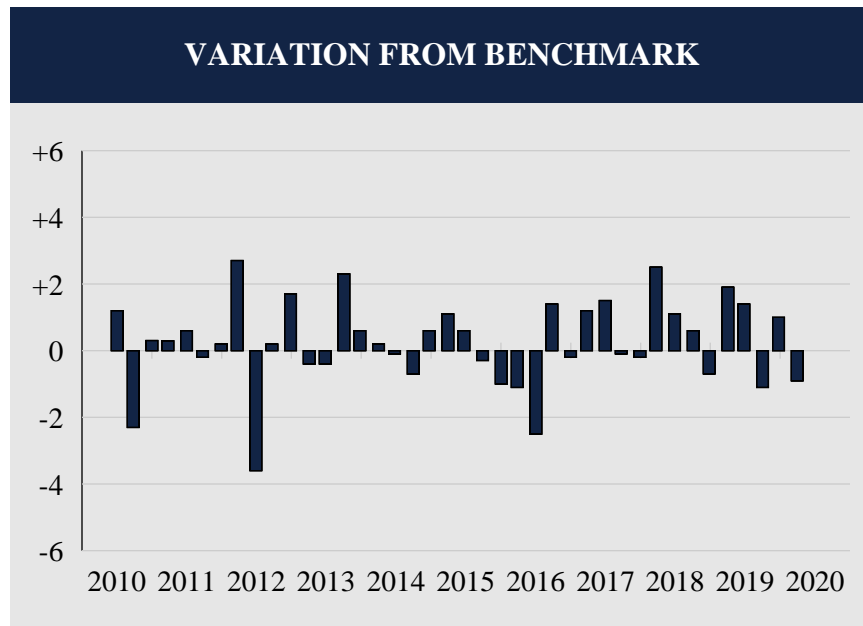


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-20.5	-12.4	-11.8	-6.8	7.3	7.7
(RANK)	(48)	(41)	(46)	(37)	(28)	(27)
5TH %ILE	-11.1	-2.4	-2.7	3.1	14.3	11.8
25TH %ILE	-16.5	-8.8	-7.8	-3.2	8.1	7.9
MEDIAN	-20.8	-14.0	-12.5	-8.7	3.8	5.5
75TH %ILE	-25.6	-19.9	-18.6	-15.3	-0.4	2.6
95TH %ILE	-31.7	-26.1	-25.8	-23.4	-6.1	-1.0
<b>S&amp;P 500</b>	<b>-19.6</b>	<b>-12.3</b>	<b>-10.8</b>	<b>-7.0</b>	<b>5.1</b>	<b>6.7</b>

Large Cap Universe

**LARGE CAP EQUITY QUARTERLY PERFORMANCE SUMMARY - 10 YEARS**

**COMPARATIVE BENCHMARK: S&P 500**



<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>23</b>
<b>Quarters Below the Benchmark</b>	<b>17</b>
<b>Batting Average</b>	<b>.575</b>

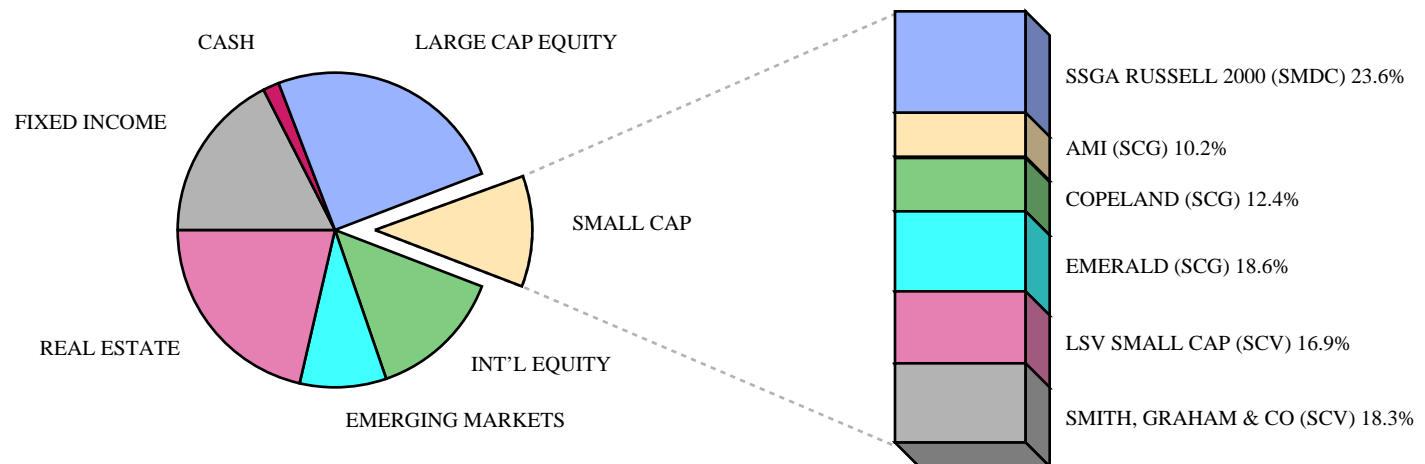
RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
6/10	-10.2	-11.4	1.2
9/10	9.0	11.3	-2.3
12/10	11.1	10.8	0.3
3/11	6.2	5.9	0.3
6/11	0.7	0.1	0.6
9/11	-14.1	-13.9	-0.2
12/11	12.0	11.8	0.2
3/12	15.3	12.6	2.7
6/12	-6.4	-2.8	-3.6
9/12	6.5	6.3	0.2
12/12	1.3	-0.4	1.7
3/13	10.2	10.6	-0.4
6/13	2.5	2.9	-0.4
9/13	7.5	5.2	2.3
12/13	11.1	10.5	0.6
3/14	2.0	1.8	0.2
6/14	5.1	5.2	-0.1
9/14	0.4	1.1	-0.7
12/14	5.5	4.9	0.6
3/15	2.0	0.9	1.1
6/15	0.9	0.3	0.6
9/15	-6.7	-6.4	-0.3
12/15	6.0	7.0	-1.0
3/16	0.2	1.3	-1.1
6/16	0.0	2.5	-2.5
9/16	5.3	3.9	1.4
12/16	3.6	3.8	-0.2
3/17	7.3	6.1	1.2
6/17	4.6	3.1	1.5
9/17	4.4	4.5	-0.1
12/17	6.4	6.6	-0.2
3/18	1.7	-0.8	2.5
6/18	4.5	3.4	1.1
9/18	8.3	7.7	0.6
12/18	-14.2	-13.5	-0.7
3/19	15.5	13.6	1.9
6/19	5.7	4.3	1.4
9/19	0.6	1.7	-1.1
12/19	10.1	9.1	1.0
3/20	-20.5	-19.6	-0.9

## SMALL CAP EQUITY MANAGERS

Last quarter, the Russell 2000 Growth Index returned -25.8% versus -35.7% for the Russell 2000 Value Index. The portfolio's small cap component (excluding cash) lost 32.2%, 1.6% below the Russell 2000 index return of -30.6%. Of the five active small cap managers, only AMI and Emerald came out ahead of their benchmarks.

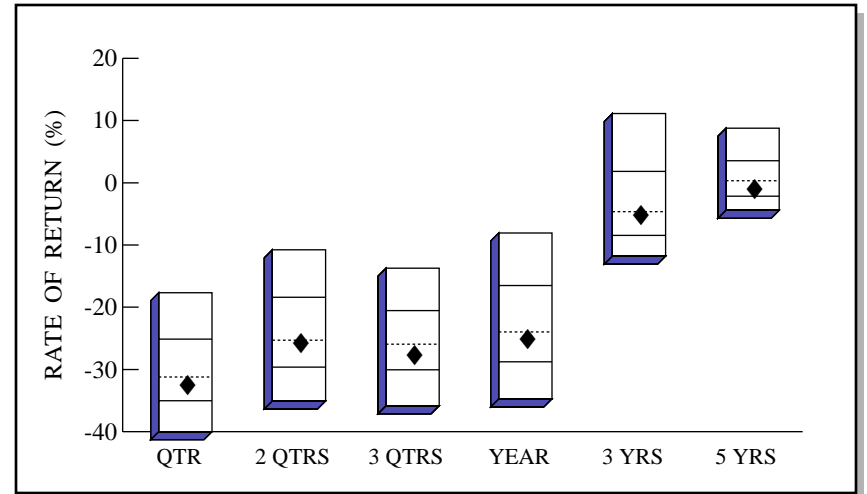
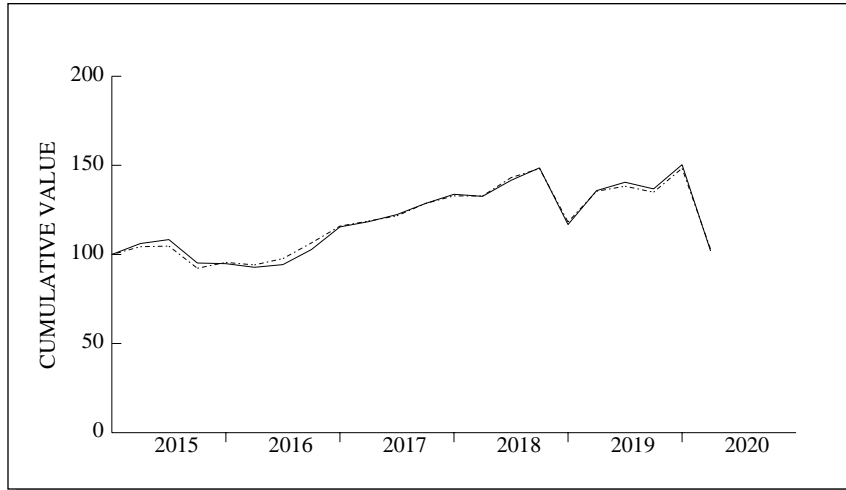
<b>SSgA (Core)</b>	The SSgA small cap component performed in line with the Russell 2000 index. At quarter end, this investment was valued at \$63,941,161.
<b>AMI (Growth)</b>	The additional weight in the Consumer Staples and Information Technology sectors helped the portfolio stay ahead of the benchmark, since these two sectors were among the better performers; however this effect was partially eclipsed by the underweight to Health Care, which was the top performing sector. The portfolio also added value through better selection in the Consumer Staples, Health Care, and Materials sectors.
<b>Copeland (Growth)</b>	Selection effects were mixed, with some sectors such as Communication Services, Consumer Discretionary, Industrials, and Real Estate beating their index counterparts. Conversely, the Consumer Staples, Financials, and Health Care sectors underperformed. The effect of a lower allocation to the Health Care sector, which made up about a third of the index was to put the portfolio at a disadvantage, since that sector was a top performer for the quarter.
<b>Emerald (Growth)</b>	Most invested sectors beat their index counterparts last quarter, and those that underperformed, which included Health Care, Information Technology, and Materials, did so by small margins. The cumulative effect of better selection gave the portfolio its lead over the index.
<b>LSV Small Cap (Value)</b>	Mixed allocation effects and decidedly negative selection effects resulted in the portfolio's underperformance against the benchmark. The increased concentration in the Health Care sector was helpful, since that sector performed better than most, but the effect was partially eclipsed by reduced exposure to Utilities, which offered an amount of safety similar to that of the Health Care sector. Unfavorable selection in all but two sectors (Communication Services and Consumer Staples—both representing minor allocations) exacerbated the rapid contraction experienced in the small cap value market.
<b>Smith, Graham &amp; Co (Value)</b>	Selection effects were mixed last quarter; half of the invested sectors beat their marks. The portfolio's edge over the index came from increased positions in the Health Care and Information Technology sectors, which had better resiliency than most other sectors over the quarter.

**SMALL CAP EQUITY MANAGER SUMMARY**

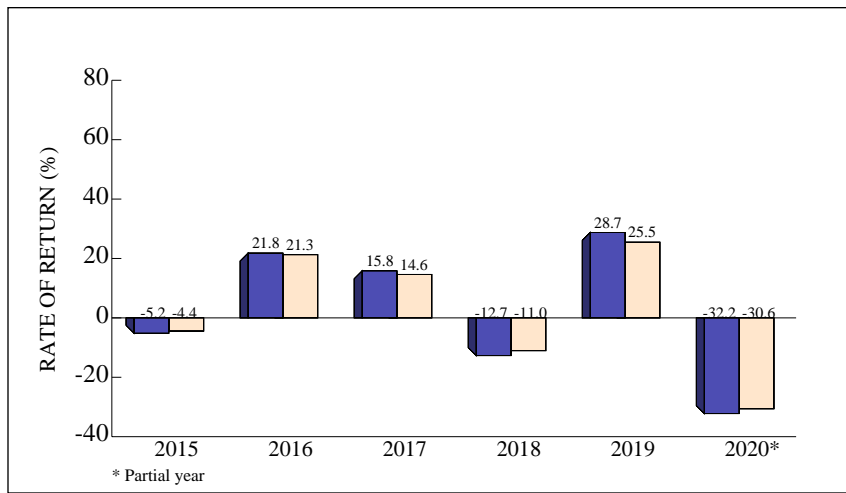


COMPONENT RETURNS AND RANKINGS							
MANAGER	(UNIVERSE)	QTR	YTD	1 YEAR	3 YEARS	5 YEARS	MARKET VALUE
SSGA RUSSELL 2000	(Small Cap)	-30.6 (49)	-30.6 (49)	-24.0 (50)	-4.6 (50)	-0.2 (56)	\$63,941,161
<i>Russell 2000</i>		<i>-30.6 ---</i>	<i>-30.6 ---</i>	<i>-24.0 ---</i>	<i>-4.7 ---</i>	<i>-0.3 ---</i>	<i>---</i>
AMI	(Small Cap Growth)	-25.4 (62)	-25.4 (62)	-27.1 (95)	---	---	\$27,722,865
COPELAND	(Small Cap Growth)	-27.2 (77)	-27.2 (77)	-16.5 (58)	---	---	\$33,603,413
EMERALD	(Small Cap Growth)	-25.3 (62)	-25.3 (62)	-18.7 (66)	2.9 (59)	3.8 (58)	\$50,581,660
<i>Russell 2000 Growth</i>		<i>-25.8 ---</i>	<i>-25.8 ---</i>	<i>-18.6 ---</i>	<i>0.1 ---</i>	<i>1.7 ---</i>	<i>---</i>
LSV SMALL CAP	(Small Cap Value)	-41.1 (93)	-41.1 (93)	-34.9 (90)	-12.5 (91)	---	\$45,757,340
SMITH, GRAHAM & CO	(Small Cap Value)	-37.3 (71)	-37.3 (71)	-25.3 (33)	-10.3 (73)	---	\$49,656,672
<i>Russell 2000 Value</i>		<i>-35.7 ---</i>	<i>-35.7 ---</i>	<i>-29.7 ---</i>	<i>-9.5 ---</i>	<i>-2.4 ---</i>	<i>---</i>
<b>TOTAL</b>	<b>(Small Cap)</b>	<b>-32.2 (57)</b>	<b>-32.2 (57)</b>	<b>-24.9 (57)</b>	<b>-4.9 (51)</b>	<b>-0.8 (61)</b>	<b>\$271,263,111</b>
<i>Russell 2000</i>		<i>-30.6 ---</i>	<i>-30.6 ---</i>	<i>-24.0 ---</i>	<i>-4.7 ---</i>	<i>-0.3 ---</i>	<i>---</i>

**SMALL CAP EQUITY RETURN COMPARISONS**



Small Cap Universe

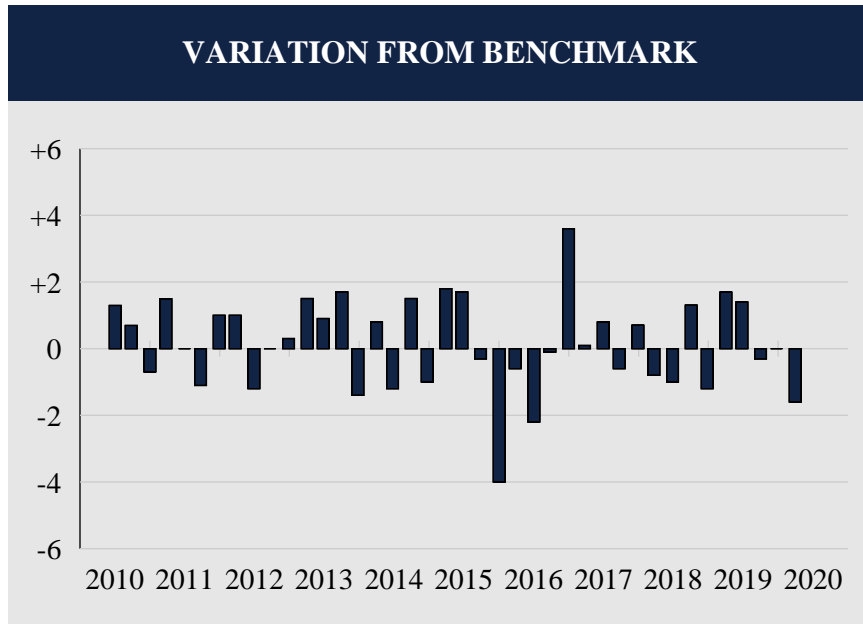


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED----- 3 YRS	5 YRS
RETURN	-32.2	-25.5	-27.4	-24.9	-4.9	-0.8
(RANK)	(57)	(51)	(58)	(57)	(51)	(61)
5TH %ILE	-17.7	-10.8	-13.7	-8.1	11.1	8.8
25TH %ILE	-25.2	-18.4	-20.5	-16.5	1.8	3.5
MEDIAN	-31.2	-25.3	-25.9	-24.0	-4.7	0.4
75TH %ILE	-35.0	-29.6	-30.1	-28.8	-8.5	-2.2
95TH %ILE	-40.0	-35.1	-35.8	-34.7	-11.8	-4.5
<b>Russ 2000</b>	<b>-30.6</b>	<b>-23.7</b>	<b>-25.6</b>	<b>-24.0</b>	<b>-4.7</b>	<b>-0.3</b>

Small Cap Universe

**SMALL CAP EQUITY QUARTERLY PERFORMANCE SUMMARY - 10 YEARS**

**COMPARATIVE BENCHMARK: RUSSELL 2000**



RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
6/10	-8.6	-9.9	1.3
9/10	12.0	11.3	0.7
12/10	15.6	16.3	-0.7
3/11	9.4	7.9	1.5
6/11	-1.6	-1.6	0.0
9/11	-23.0	-21.9	-1.1
12/11	16.5	15.5	1.0
3/12	13.4	12.4	1.0
6/12	-4.7	-3.5	-1.2
9/12	5.2	5.2	0.0
12/12	2.1	1.8	0.3
3/13	13.9	12.4	1.5
6/13	4.0	3.1	0.9
9/13	11.9	10.2	1.7
12/13	7.3	8.7	-1.4
3/14	1.9	1.1	0.8
6/14	0.8	2.0	-1.2
9/14	-5.9	-7.4	1.5
12/14	8.7	9.7	-1.0
3/15	6.1	4.3	1.8
6/15	2.1	0.4	1.7
9/15	-12.2	-11.9	-0.3
12/15	-0.4	3.6	-4.0
3/16	-2.1	-1.5	-0.6
6/16	1.6	3.8	-2.2
9/16	8.9	9.0	-0.1
12/16	12.4	8.8	3.6
3/17	2.6	2.5	0.1
6/17	3.3	2.5	0.8
9/17	5.1	5.7	-0.6
12/17	4.0	3.3	0.7
3/18	-0.9	-0.1	-0.8
6/18	6.8	7.8	-1.0
9/18	4.9	3.6	1.3
12/18	-21.4	-20.2	-1.2
3/19	16.3	14.6	1.7
6/19	3.5	2.1	1.4
9/19	-2.7	-2.4	-0.3
12/19	9.9	9.9	0.0
3/20	-32.2	-30.6	-1.6

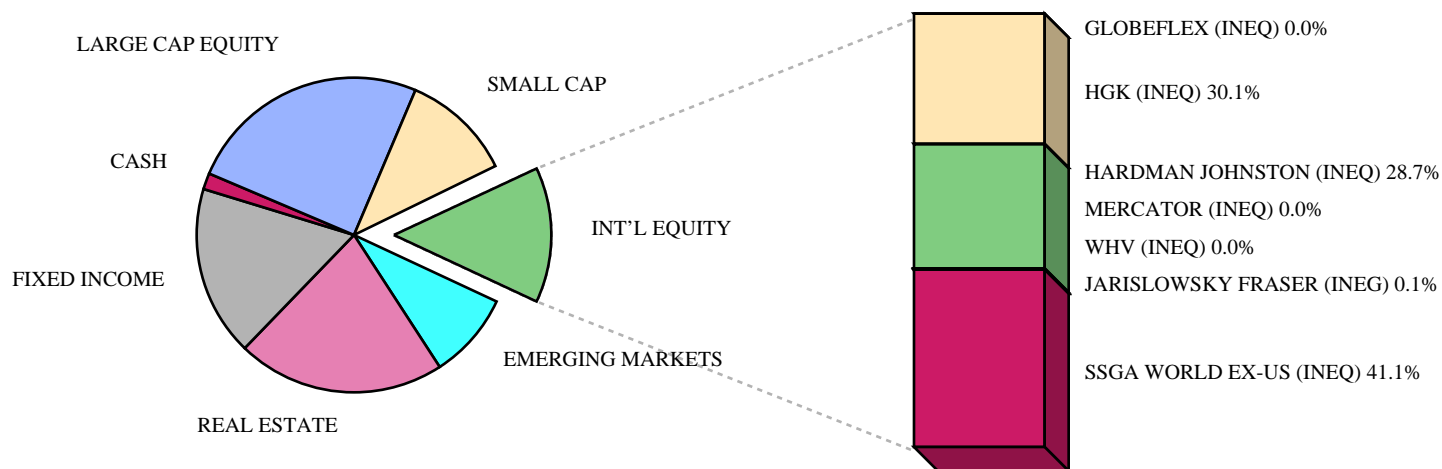
<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>23</b>
<b>Quarters Below the Benchmark</b>	<b>17</b>
<b>Batting Average</b>	<b>.575</b>

## **INTERNATIONAL & EMERGING MARKETS EQUITY MANAGERS**

PMRB's aggregate developed international portfolio (excluding cash) returned -23.4% over the quarter, 0.7% below the MSCI EAFE Index return of -22.7%. The S&P BMI Developed Markets Ex US returned -23.7% vs -23.9% for the MSCI World Ex US. The Emerging Markets portfolio, driven by its only manager, SSgA, lost 23.9%, while the MSCI Emerging Markets Index returned -23.6%.

<b>SSgA Developed</b>	The SSgA developed markets component returned -23.1% during the quarter. Over the trailing year, this component was down 14.4%. This investment was valued at \$134,036,562 at quarter end.
<b>Hardman Johnston</b>	The Hardman Johnston international equity component lost 21.9% over the quarter. Over the last four quarters, the component lost 9.1%, while the S&P BMI Developed Ex US returned -23.7% and -15.1% over the quarter and trailing year.
<b>HGK</b>	HGK's equity component returned -25.2% last quarter. Over the trailing year, the HGK international equity component lost 13.5%.
<b>SSgA Emerging</b>	The SSgA emerging markets fund lost 23.9% during the quarter. Over the trailing five years, annualized, this component returned -0.4%. At quarter end, this fund was valued at \$210,526,987.

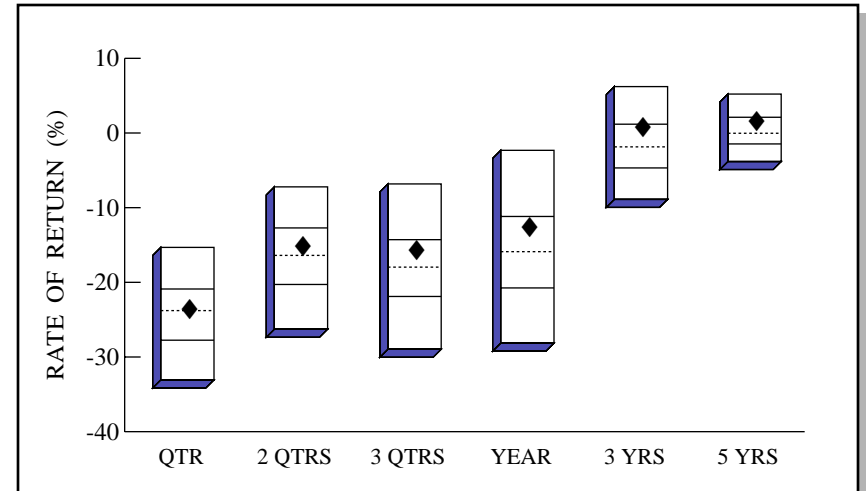
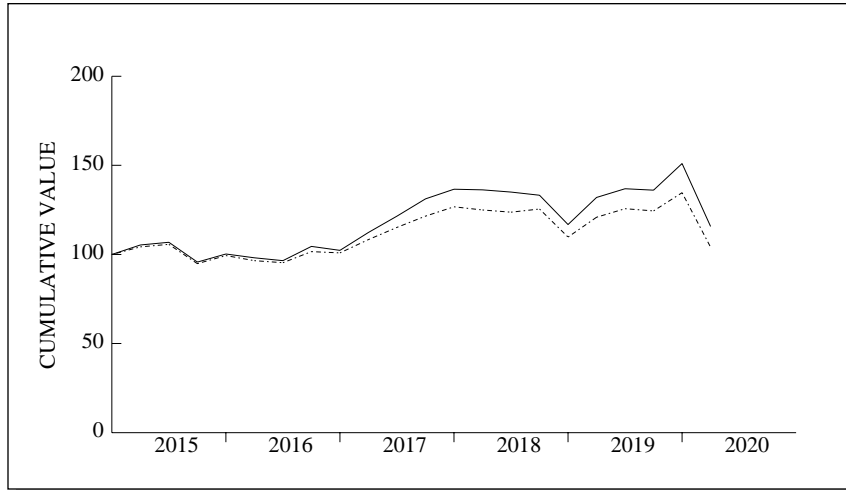
### INTERNATIONAL EQUITY MANAGER SUMMARY



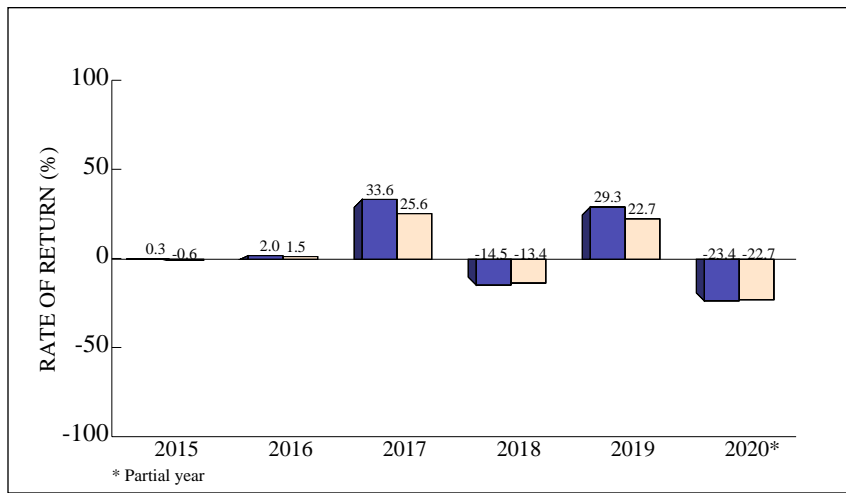
COMPONENT RETURNS AND RANKINGS								
MANAGER	(UNIVERSE)	QTR	YTD	1 YEAR	3 YEARS	5 YEARS	MARKET VALUE	
GLOBEFLEX	(International Equity)	----	----	----	----	----	\$4,229	
HGK	(International Equity)	-25.2 (60)	-25.2 (60)	-13.5 (37)	0.6 (29)	2.3 (24)	\$98,363,733	
HARDMAN JOHNSTON	(International Equity)	-21.9 (33)	-21.9 (33)	-9.1 (19)	4.1 (10)	4.1 (11)	\$93,741,294	
MERCATOR	(International Equity)	-----	----	----	----	----	\$17,732	
WHV	(International Equity)	----	----	----	----	----	\$2,933	
<i>S&amp;P BMI Developed Ex US Index</i>		<i>-23.7 ---</i>	<i>-23.7 ---</i>	<i>-15.1 ---</i>	<i>-1.8 ---</i>	<i>0.0 ---</i>	<i>---</i>	
JARISLOWSKY FRASER	(International Equity)	----	----	----	----	----	\$296,629	
<i>MSCI EAFE</i>		<i>-22.7 ---</i>	<i>-22.7 ---</i>	<i>-13.9 ---</i>	<i>-1.3 ---</i>	<i>-0.1 ---</i>	<i>---</i>	
SSGA WORLD EX-US	(International Equity)	-23.1 (45)	-23.1 (45)	-14.4 (42)	-1.7 (48)	-0.4 (54)	\$134,036,562	
<i>MSCI World Ex US</i>		<i>-23.9 ---</i>	<i>-23.9 ---</i>	<i>-15.3 ---</i>	<i>-1.9 ---</i>	<i>-0.4 ---</i>	<i>---</i>	
<b>TOTAL</b>	<b>(International Equity)</b>	<b>-23.4 (46)</b>	<b>-23.4 (46)</b>	<b>-12.3 (30)</b>	<b>1.0 (27)</b>	<b>1.9 (27)</b>	<b>\$326,463,112</b>	
<i>Blended International Index</i>		<i>-22.7 ---</i>	<i>-22.7 ---</i>	<i>-13.9 ---</i>	<i>-1.3 ---</i>	<i>0.0 ---</i>	<i>---</i>	



INTERNATIONAL EQUITY RETURN COMPARISONS



International Equity Universe

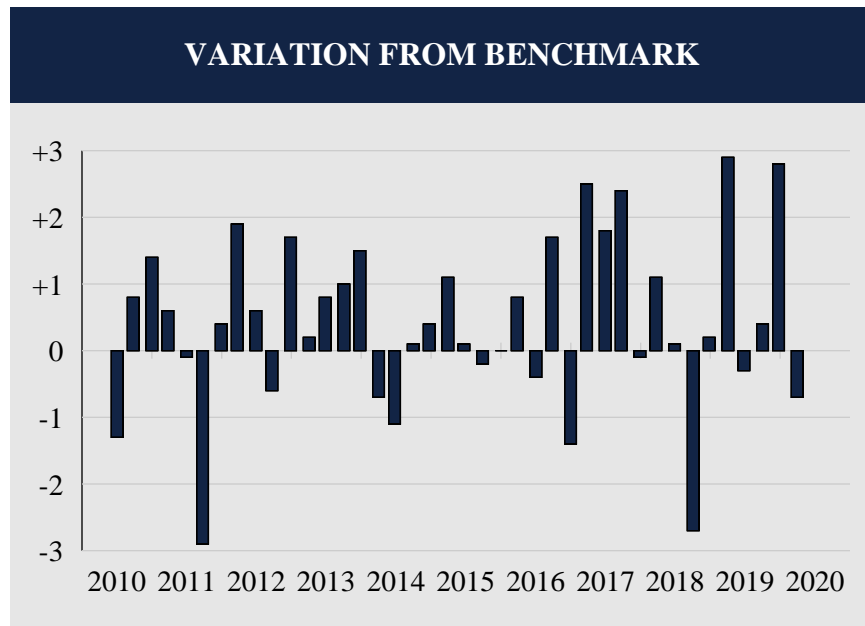


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-23.4	-14.9	-15.5	-12.3	1.0	1.9
(RANK)	(46)	(40)	(32)	(30)	(27)	(27)
5TH %ILE	-15.3	-7.2	-6.8	-2.3	6.2	5.2
25TH %ILE	-20.9	-12.7	-14.3	-11.2	1.2	2.1
MEDIAN	-23.8	-16.4	-18.0	-15.9	-1.9	0.0
75TH %ILE	-27.8	-20.3	-21.9	-20.7	-4.7	-1.5
95TH %ILE	-33.1	-26.3	-29.0	-28.1	-8.9	-3.8
<b>Intl Index</b>	<b>-22.7</b>	<b>-16.4</b>	<b>-17.2</b>	<b>-13.9</b>	<b>-1.3</b>	<b>0.0</b>

International Equity Universe

## INTERNATIONAL EQUITY QUARTERLY PERFORMANCE SUMMARY - 10 YEARS

**COMPARATIVE BENCHMARK: BLENDED INTERNATIONAL INDEX**

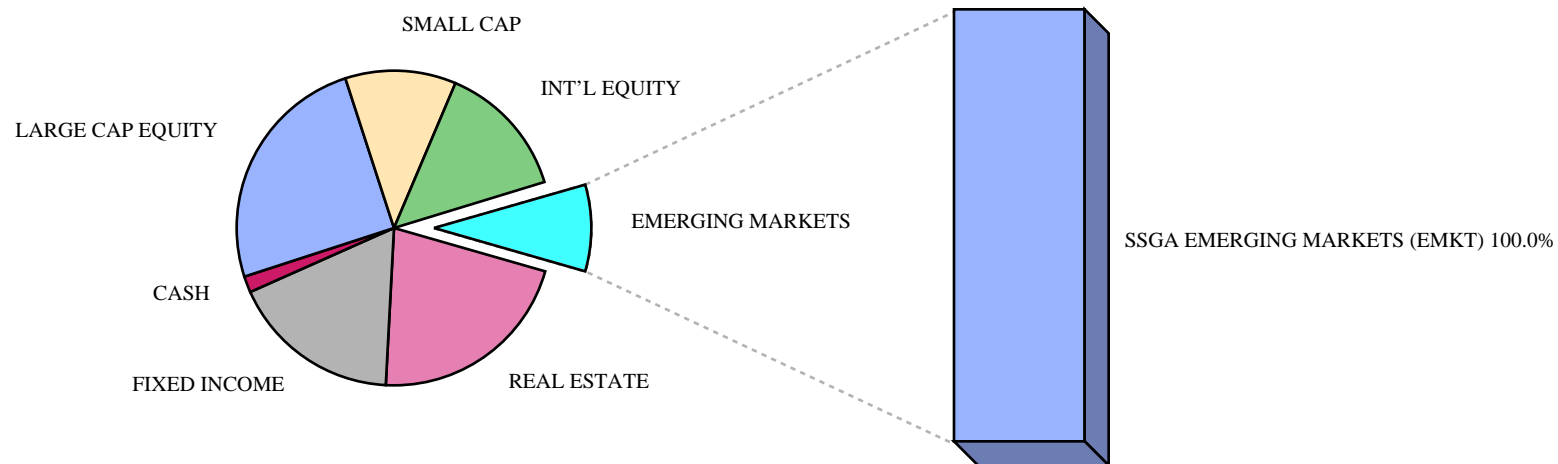


### RATES OF RETURN

Date	Portfolio	Benchmark	Difference
6/10	-14.0	-12.7	-1.3
9/10	17.3	16.5	0.8
12/10	9.5	8.1	1.4
3/11	4.6	4.0	0.6
6/11	0.5	0.6	-0.1
9/11	-22.2	-19.3	-2.9
12/11	3.7	3.3	0.4
3/12	14.2	12.3	1.9
6/12	-6.6	-7.2	0.6
9/12	7.1	7.7	-0.6
12/12	7.5	5.8	1.7
3/13	5.1	4.9	0.2
6/13	-1.0	-1.8	0.8
9/13	12.9	11.9	1.0
12/13	6.9	5.4	1.5
3/14	0.5	1.2	-0.7
6/14	3.7	4.8	-1.1
9/14	-5.8	-5.9	0.1
12/14	-3.3	-3.7	0.4
3/15	5.3	4.2	1.1
6/15	1.4	1.3	0.1
9/15	-10.4	-10.2	-0.2
12/15	4.7	4.7	0.0
3/16	-2.1	-2.9	0.8
6/16	-1.6	-1.2	-0.4
9/16	8.2	6.5	1.7
12/16	-2.1	-0.7	-1.4
3/17	9.9	7.4	2.5
6/17	8.2	6.4	1.8
9/17	7.9	5.5	2.4
12/17	4.2	4.3	-0.1
3/18	-0.3	-1.4	1.1
6/18	-0.9	-1.0	0.1
9/18	-1.3	1.4	-2.7
12/18	-12.3	-12.5	0.2
3/19	13.0	10.1	2.9
6/19	3.7	4.0	-0.3
9/19	-0.6	-1.0	0.4
12/19	11.0	8.2	2.8
3/20	-23.4	-22.7	-0.7

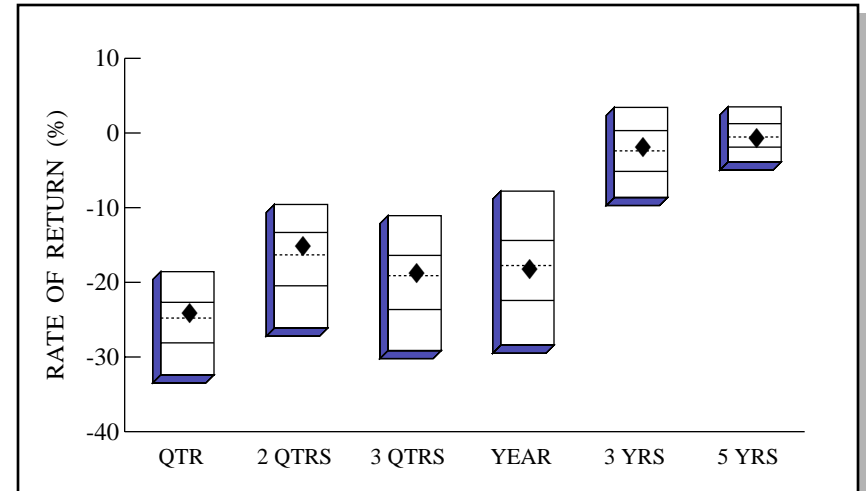
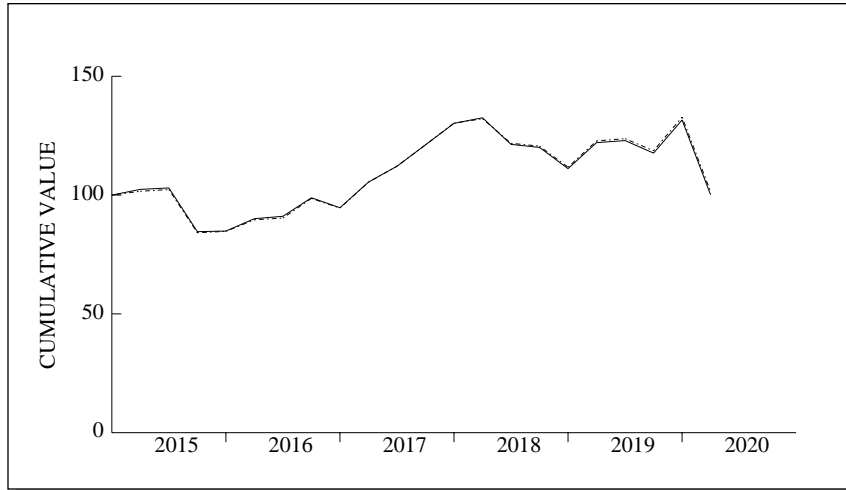
<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>27</b>
<b>Quarters Below the Benchmark</b>	<b>13</b>
<b>Batting Average</b>	<b>.675</b>

**EMERGING MARKETS EQUITY MANAGER SUMMARY**

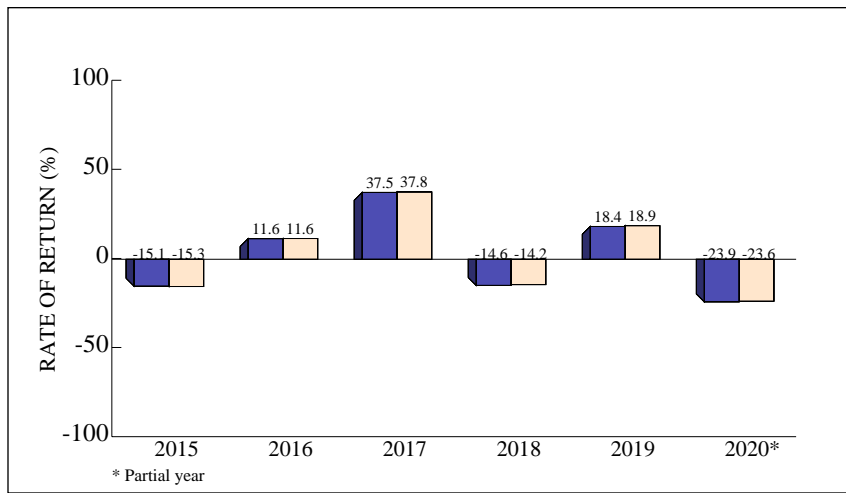
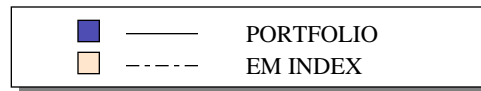


MANAGER	(UNIVERSE)	COMPONENT RETURNS AND RANKINGS					MARKET VALUE
		QTR	YTD	1 YEAR	3 YEARS	5 YEARS	
SSGA EMERGING MARKETS	(Emerging Markets)	-23.9 (45)	-23.9 (45)	-18.0 (53)	-1.7 (43)	-0.4 (48)	\$210,526,987
<i>Blended Emerging Markets Index</i>		<i>-23.6 ---</i>	<i>-23.6 ---</i>	<i>-17.4 ---</i>	<i>-1.3 ---</i>	<i>0.0 ---</i>	<i>---</i>
<b>TOTAL</b>	<b>(Emerging Markets)</b>	<b>-23.9 (45)</b>	<b>-23.9 (45)</b>	<b>-18.0 (53)</b>	<b>-1.7 (43)</b>	<b>-0.4 (48)</b>	<b>\$210,526,987</b>
<i>Blended Emerging Markets Index</i>		<i>-23.6 ---</i>	<i>-23.6 ---</i>	<i>-17.4 ---</i>	<i>-1.3 ---</i>	<i>0.0 ---</i>	<i>---</i>

### EMERGING MARKETS EQUITY RETURN COMPARISONS



Emerging Markets Universe

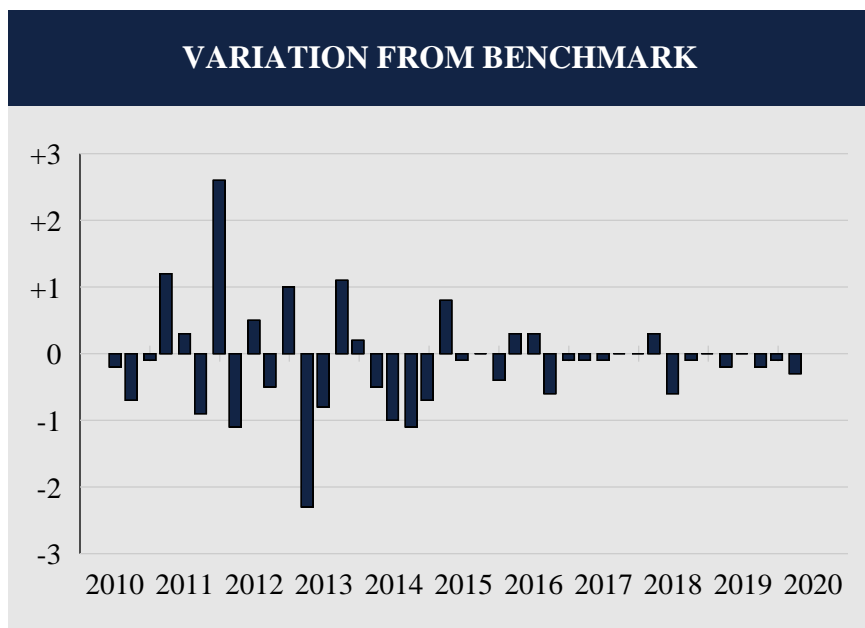


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-23.9	-14.9	-18.5	-18.0	-1.7	-0.4
(RANK)	(45)	(40)	(46)	(53)	(43)	(48)
5TH %ILE	-18.6	-9.6	-11.1	-7.8	3.4	3.5
25TH %ILE	-22.7	-13.3	-16.4	-14.4	0.3	1.2
MEDIAN	-24.8	-16.3	-19.1	-17.8	-2.4	-0.5
75TH %ILE	-28.1	-20.5	-23.6	-22.4	-5.2	-1.9
95TH %ILE	-32.4	-26.2	-29.1	-28.4	-8.6	-3.9
<b>EM Index</b>	<b>-23.6</b>	<b>-14.5</b>	<b>-18.0</b>	<b>-17.4</b>	<b>-1.3</b>	<b>0.0</b>

Emerging Markets Universe

## EMERGING MARKETS EQUITY QUARTERLY PERFORMANCE SUMMARY - 10 YEARS

**COMPARATIVE BENCHMARK: BLENDED EMERGING MARKETS INDEX**

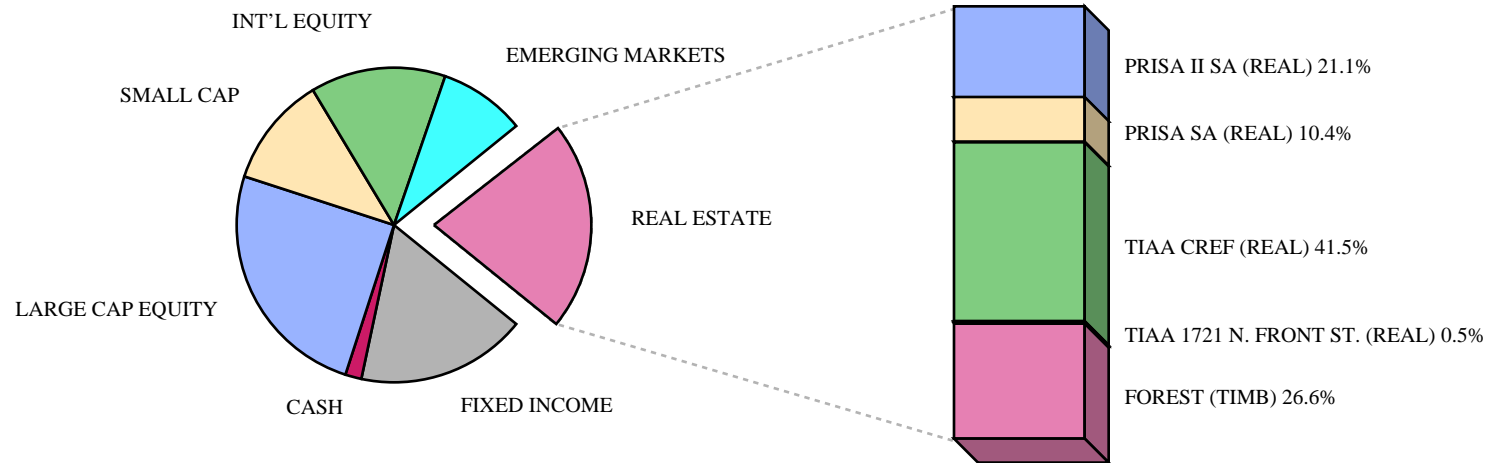


<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>16</b>
<b>Quarters Below the Benchmark</b>	<b>24</b>
<b>Batting Average</b>	<b>.400</b>

### RATES OF RETURN

Date	Portfolio	Benchmark	Difference
6/10	-8.4	-8.2	-0.2
9/10	17.9	18.6	-0.7
12/10	7.2	7.3	-0.1
3/11	1.9	0.7	1.2
6/11	-1.2	-1.5	0.3
9/11	-23.4	-22.5	-0.9
12/11	5.7	3.1	2.6
3/12	13.8	14.9	-1.1
6/12	-8.4	-8.9	0.5
9/12	7.0	7.5	-0.5
12/12	6.6	5.6	1.0
3/13	-2.6	-0.3	-2.3
6/13	-8.1	-7.3	-0.8
9/13	5.8	4.7	1.1
12/13	2.2	2.0	0.2
3/14	-0.7	-0.2	-0.5
6/14	6.6	7.6	-1.0
9/14	-3.6	-2.5	-1.1
12/14	-4.7	-4.0	-0.7
3/15	2.4	1.6	0.8
6/15	0.6	0.7	-0.1
9/15	-17.8	-17.8	0.0
12/15	0.3	0.7	-0.4
3/16	6.1	5.8	0.3
6/16	1.1	0.8	0.3
9/16	8.6	9.2	-0.6
12/16	-4.2	-4.1	-0.1
3/17	11.4	11.5	-0.1
6/17	6.3	6.4	-0.1
9/17	8.0	8.0	0.0
12/17	7.5	7.5	0.0
3/18	1.8	1.5	0.3
6/18	-8.5	-7.9	-0.6
9/18	-1.0	-0.9	-0.1
12/18	-7.4	-7.4	0.0
3/19	9.8	10.0	-0.2
6/19	0.7	0.7	0.0
9/19	-4.3	-4.1	-0.2
12/19	11.8	11.9	-0.1
3/20	-23.9	-23.6	-0.3

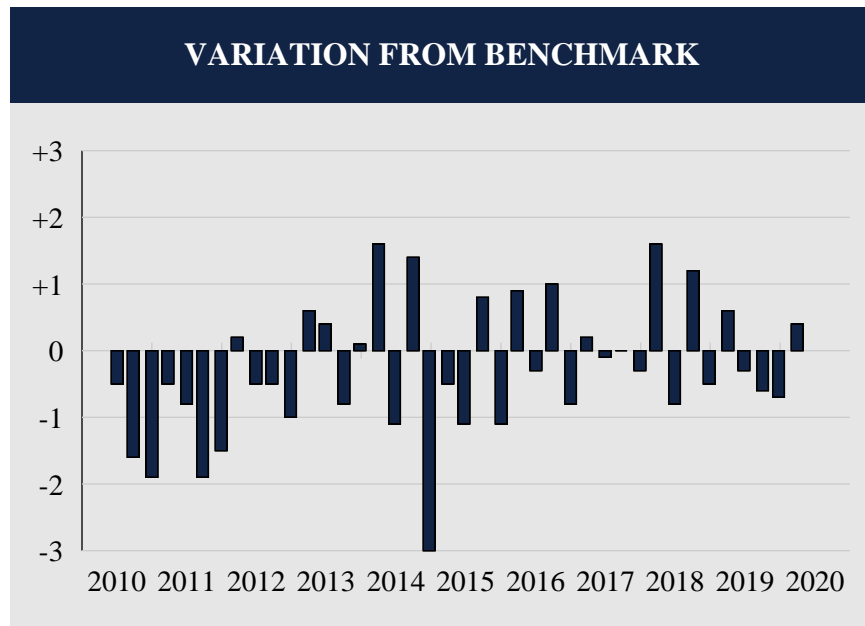
**REAL ESTATE MANAGER SUMMARY**



MANAGER	(UNIVERSE)	COMPONENT RETURNS AND RANKINGS					MARKET VALUE
		QTR	YTD	1 YEAR	3 YEARS	5 YEARS	
PRISA II SA		1.3 ---	1.3 ---	6.8 ---	8.4 ---	10.1 ---	\$106,418,646
PRISA SA		1.7 ---	1.7 ---	6.2 ---	7.6 ---	9.0 ---	\$52,416,298
TIAA CREF		1.4 ---	1.4 ---	8.3 ---	8.4 ---	9.0 ---	\$209,194,966
<i>NCREIF NFI-ODCE Index</i>		<i>1.0 ---</i>	<i>1.0 ---</i>	<i>4.9 ---</i>	<i>6.8 ---</i>	<i>8.5 ---</i>	---
TIAA 1721 N. FRONT ST.		0.7 ---	0.7 ---	5.2 ---	3.4 ---	---	\$2,315,169
<i>NCREIF Property Index</i>		<i>0.7 ---</i>	<i>0.7 ---</i>	<i>5.3 ---</i>	<i>6.4 ---</i>	<i>7.6 ---</i>	---
FOREST		0.4 ---	0.4 ---	-4.9 ---	2.4 ---	4.0 ---	\$134,303,095
<i>NCREIF Timber Index</i>		<i>0.1 ---</i>	<i>0.1 ---</i>	<i>1.3 ---</i>	<i>2.5 ---</i>	<i>2.8 ---</i>	---
<b>TOTAL</b>		<b>1.1 ---</b>	<b>1.1 ---</b>	<b>4.0 ---</b>	<b>6.5 ---</b>	<b>7.6 ---</b>	<b>\$504,648,174</b>
<i>NCREIF Property Index</i>		<i>0.7 ---</i>	<i>0.7 ---</i>	<i>5.3 ---</i>	<i>6.4 ---</i>	<i>7.6 ---</i>	---

**REAL ESTATE QUARTERLY PERFORMANCE SUMMARY - 10 YEARS**

**COMPARATIVE BENCHMARK: NCREIF PROPERTY INDEX**



<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>15</b>
<b>Quarters Below the Benchmark</b>	<b>25</b>
<b>Batting Average</b>	<b>.375</b>

<b>RATES OF RETURN</b>			
<b>Date</b>	<b>Portfolio</b>	<b>Benchmark</b>	<b>Difference</b>
6/10	2.8	3.3	-0.5
9/10	2.3	3.9	-1.6
12/10	2.7	4.6	-1.9
3/11	2.9	3.4	-0.5
6/11	3.1	3.9	-0.8
9/11	1.4	3.3	-1.9
12/11	1.5	3.0	-1.5
3/12	2.8	2.6	0.2
6/12	2.2	2.7	-0.5
9/12	1.8	2.3	-0.5
12/12	1.5	2.5	-1.0
3/13	3.2	2.6	0.6
6/13	3.3	2.9	0.4
9/13	1.8	2.6	-0.8
12/13	2.6	2.5	0.1
3/14	4.3	2.7	1.6
6/14	1.8	2.9	-1.1
9/14	4.0	2.6	1.4
12/14	0.0	3.0	-3.0
3/15	3.1	3.6	-0.5
6/15	2.0	3.1	-1.1
9/15	3.9	3.1	0.8
12/15	1.8	2.9	-1.1
3/16	3.1	2.2	0.9
6/16	1.7	2.0	-0.3
9/16	2.8	1.8	1.0
12/16	0.9	1.7	-0.8
3/17	1.7	1.5	0.2
6/17	1.7	1.8	-0.1
9/17	1.7	1.7	0.0
12/17	1.5	1.8	-0.3
3/18	3.3	1.7	1.6
6/18	1.0	1.8	-0.8
9/18	2.9	1.7	1.2
12/18	0.9	1.4	-0.5
3/19	2.4	1.8	0.6
6/19	1.2	1.5	-0.3
9/19	0.8	1.4	-0.6
12/19	0.8	1.5	-0.7
3/20	1.1	0.7	0.4

## **FIXED INCOME MANAGER**

---

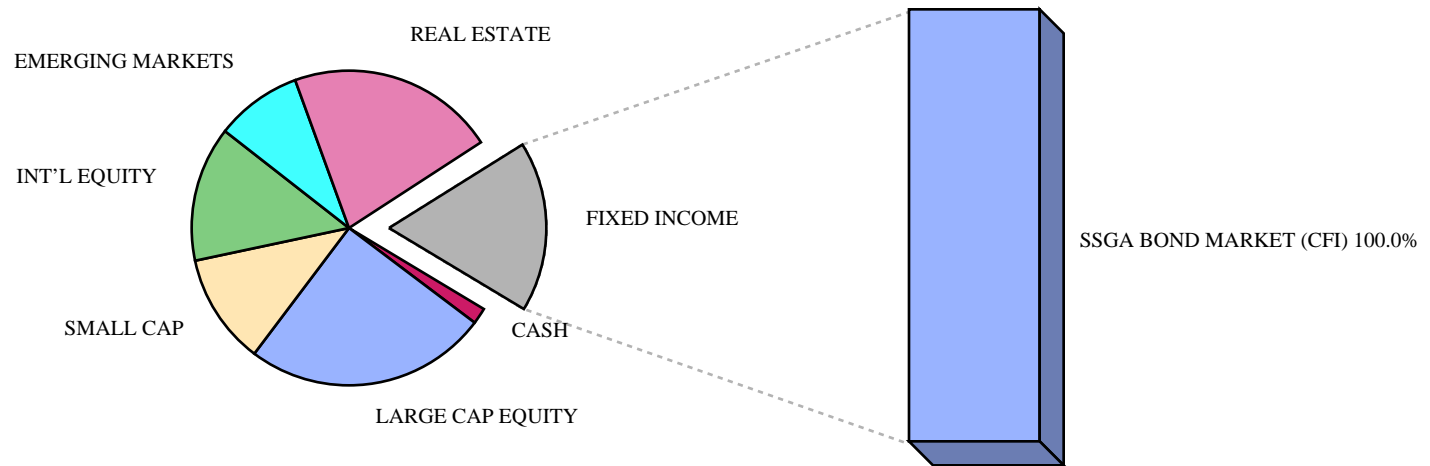
The Bloomberg Barclays US Aggregate Index returned 3.1% last quarter, while the Bloomberg Barclays Gov/Credit index was up 3.4%. For the trailing year they were up 8.9% and 9.8%, respectively.

**SSgA  
(Broad Market)**

The SSgA fixed income component returned 3.1% last quarter. Over the trailing five years, the fund rose 3.4% per annum, in line with the Bloomberg Barclays Aggregate Index. At year end, this investment was valued at \$415,403,984.

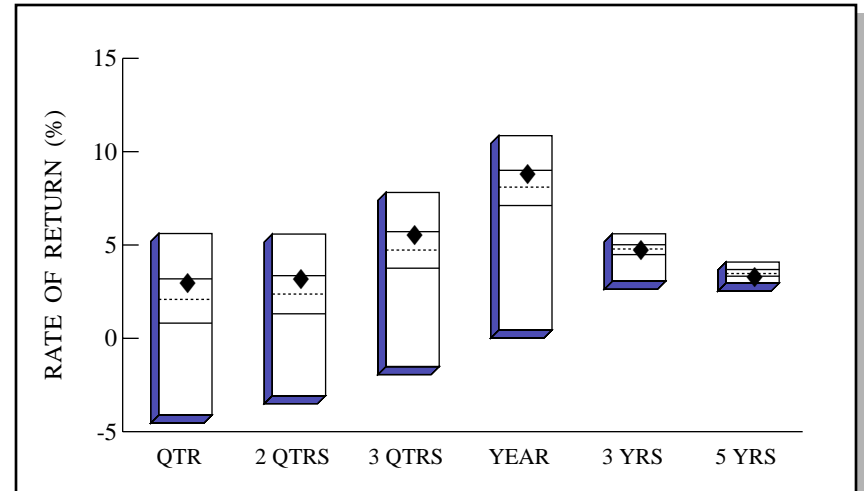
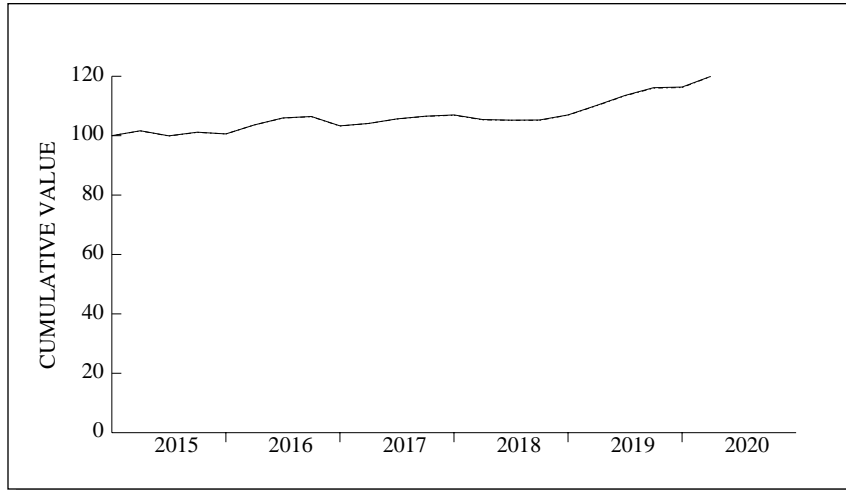


**FIXED INCOME MANAGER SUMMARY**

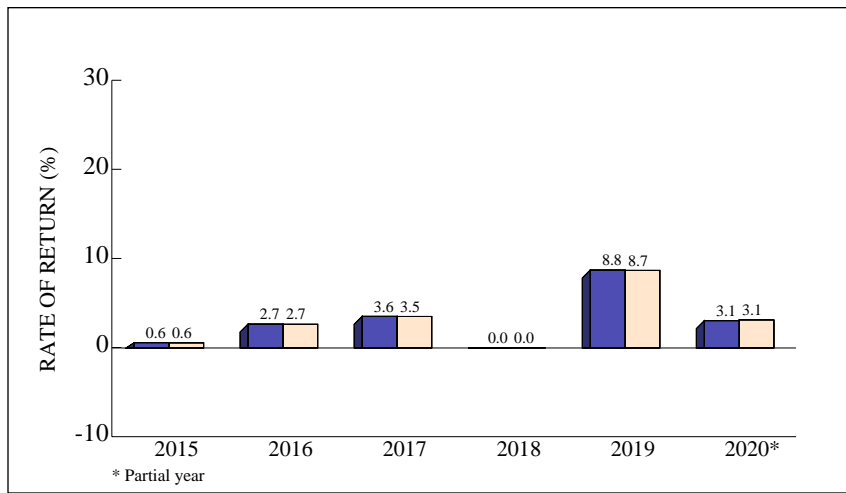


MANAGER	(UNIVERSE)	COMPONENT RETURNS AND RANKINGS					MARKET VALUE
		QTR	YTD	1 YEAR	3 YEARS	5 YEARS	
SSGA BOND MARKET	(Core Fixed Income)	3.1 (30)	3.1 (30)	8.9 (31)	4.8 (49)	3.4 (71)	\$415,403,984
	<i>Bloomberg Barclays Aggregate Index</i>	<i>3.1 ---</i>	<i>3.1 ---</i>	<i>8.9 ---</i>	<i>4.8 ---</i>	<i>3.4 ---</i>	<i>---</i>
<b>TOTAL</b>	<b>(Core Fixed Income)</b>	<b>3.1 (30)</b>	<b>3.1 (30)</b>	<b>8.9 (31)</b>	<b>4.8 (49)</b>	<b>3.4 (71)</b>	<b>\$415,403,984</b>
	<i>Bloomberg Barclays Aggregate Index</i>	<i>3.1 ---</i>	<i>3.1 ---</i>	<i>8.9 ---</i>	<i>4.8 ---</i>	<i>3.4 ---</i>	<i>---</i>

**FIXED INCOME RETURN COMPARISONS**



Core Fixed Income Universe

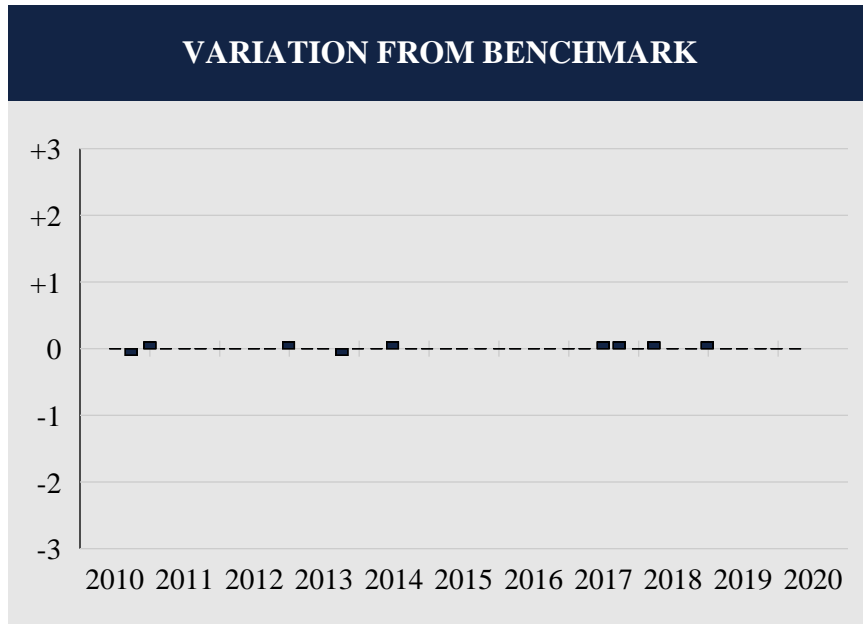


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	3.1	3.3	5.6	8.9	4.8	3.4
(RANK)	(30)	(29)	(30)	(31)	(49)	(71)
5TH %ILE	5.6	5.6	7.8	10.9	5.6	4.1
25TH %ILE	3.2	3.4	5.7	9.0	5.0	3.7
MEDIAN	2.1	2.4	4.7	8.1	4.8	3.5
75TH %ILE	0.8	1.3	3.8	7.1	4.5	3.3
95TH %ILE	-4.1	-3.1	-1.5	0.4	3.1	3.0
<b>Agg</b>	<b>3.1</b>	<b>3.3</b>	<b>5.7</b>	<b>8.9</b>	<b>4.8</b>	<b>3.4</b>

Core Fixed Income Universe

**FIXED INCOME QUARTERLY PERFORMANCE SUMMARY - 10 YEARS**

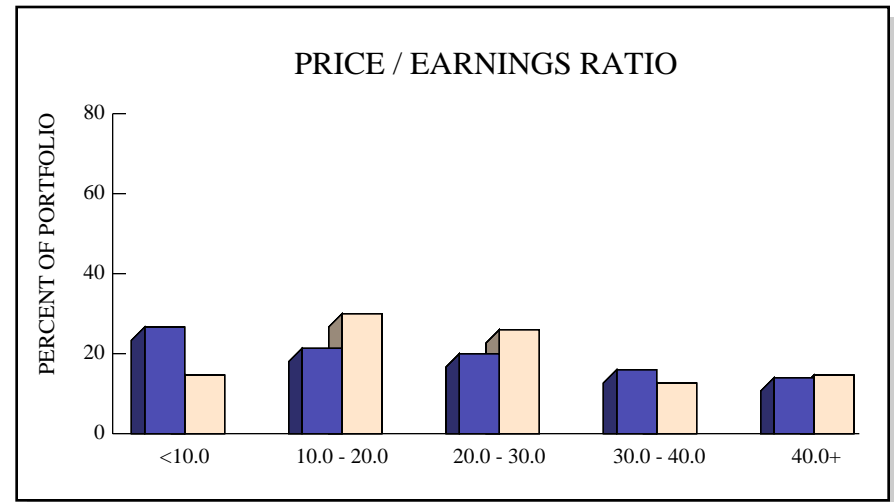
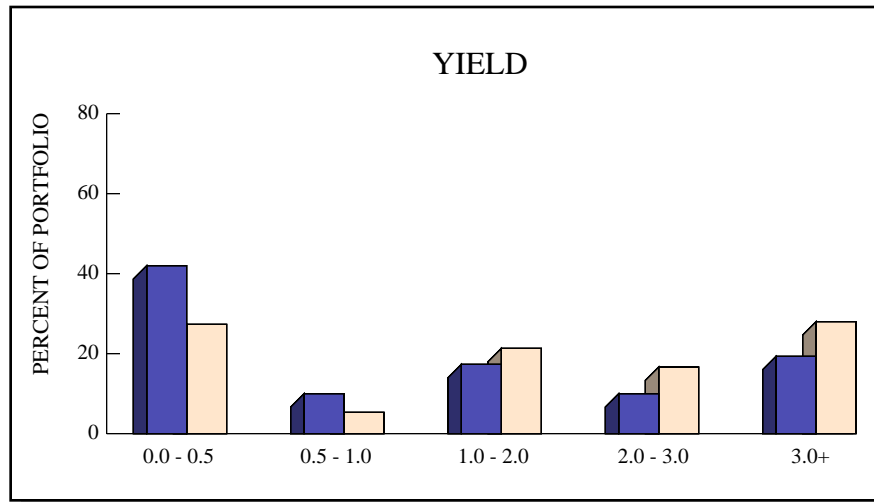
**COMPARATIVE BENCHMARK: BLOOMBERG BARCLAYS AGGREGATE INDEX**



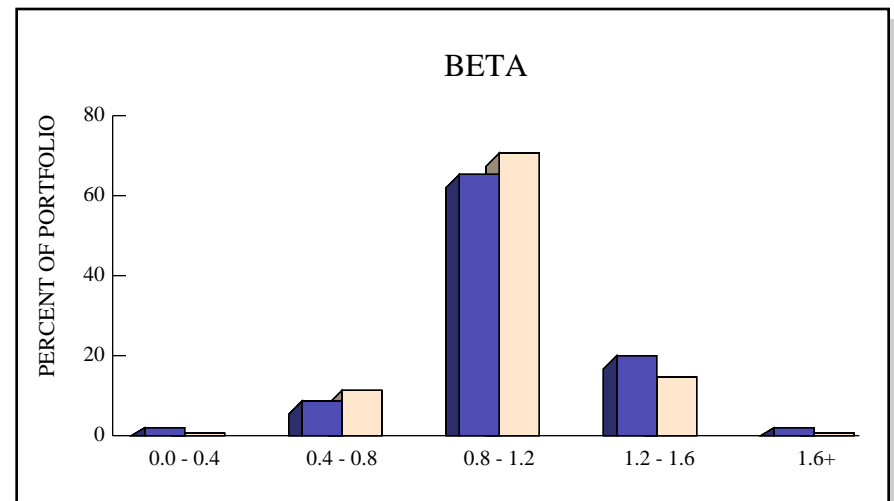
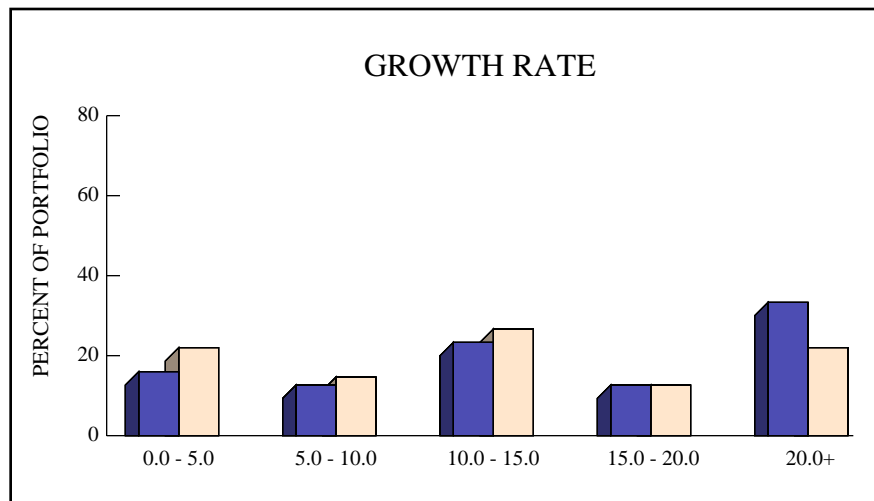
RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
6/10	3.5	3.5	0.0
9/10	2.4	2.5	-0.1
12/10	-1.2	-1.3	0.1
3/11	0.4	0.4	0.0
6/11	2.3	2.3	0.0
9/11	3.8	3.8	0.0
12/11	1.1	1.1	0.0
3/12	0.3	0.3	0.0
6/12	2.1	2.1	0.0
9/12	1.6	1.6	0.0
12/12	0.3	0.2	0.1
3/13	-0.1	-0.1	0.0
6/13	-2.3	-2.3	0.0
9/13	0.5	0.6	-0.1
12/13	-0.1	-0.1	0.0
3/14	1.8	1.8	0.0
6/14	2.1	2.0	0.1
9/14	0.2	0.2	0.0
12/14	1.8	1.8	0.0
3/15	1.6	1.6	0.0
6/15	-1.7	-1.7	0.0
9/15	1.2	1.2	0.0
12/15	-0.6	-0.6	0.0
3/16	3.0	3.0	0.0
6/16	2.2	2.2	0.0
9/16	0.5	0.5	0.0
12/16	-3.0	-3.0	0.0
3/17	0.8	0.8	0.0
6/17	1.5	1.4	0.1
9/17	0.9	0.8	0.1
12/17	0.4	0.4	0.0
3/18	-1.4	-1.5	0.1
6/18	-0.2	-0.2	0.0
9/18	0.0	0.0	0.0
12/18	1.7	1.6	0.1
3/19	2.9	2.9	0.0
6/19	3.1	3.1	0.0
9/19	2.3	2.3	0.0
12/19	0.2	0.2	0.0
3/20	3.1	3.1	0.0

<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>38</b>
<b>Quarters Below the Benchmark</b>	<b>2</b>
<b>Batting Average</b>	<b>.950</b>

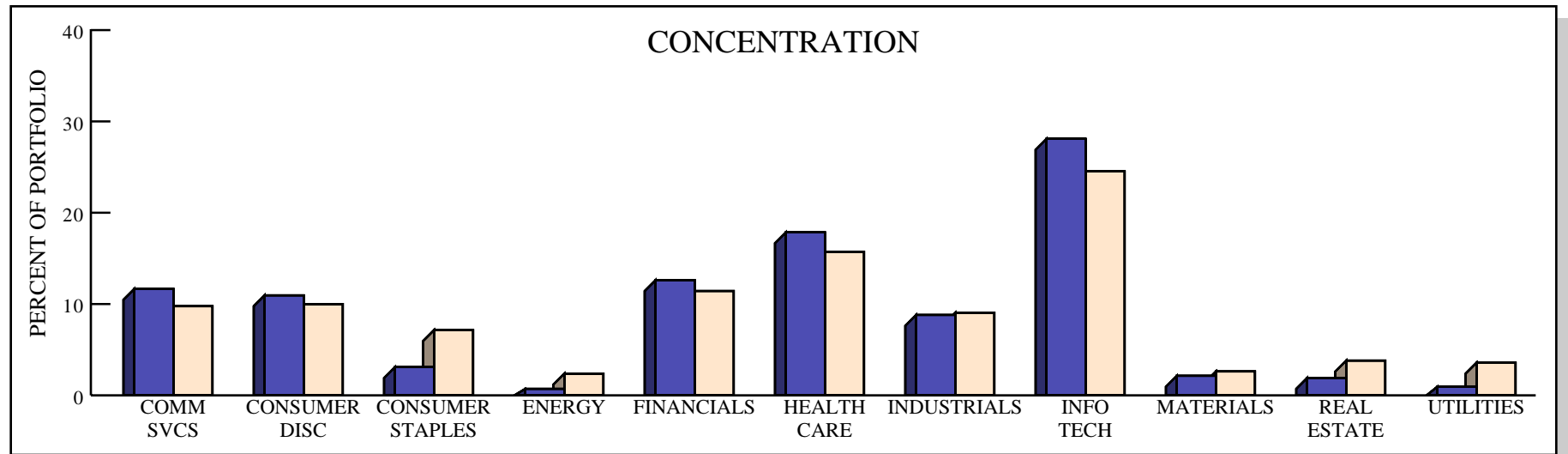
**STOCK CHARACTERISTICS**



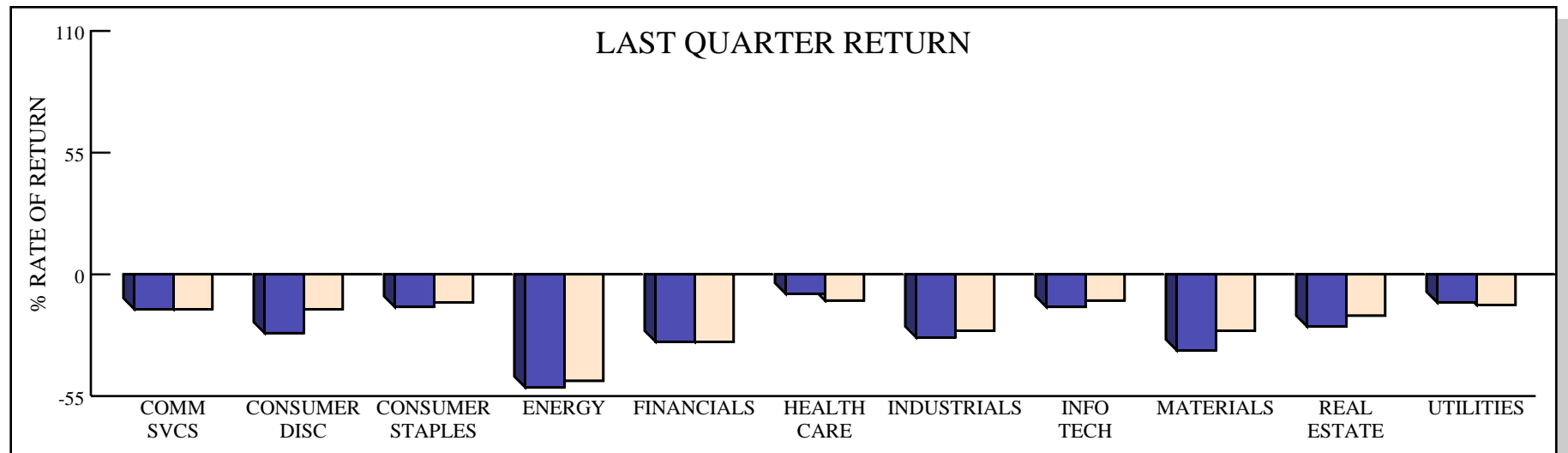
	# HOLDINGS	YIELD	GROWTH	P/E	BETA
PORTFOLIO	2,616	1.7%	16.9%	23.0	1.03
RUSSELL 3000	2,976	2.2%	13.2%	24.9	0.99



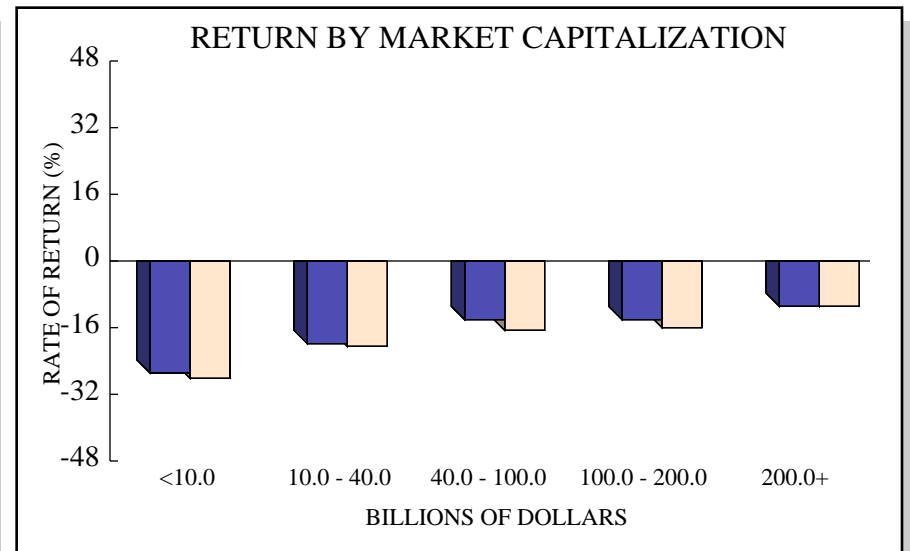
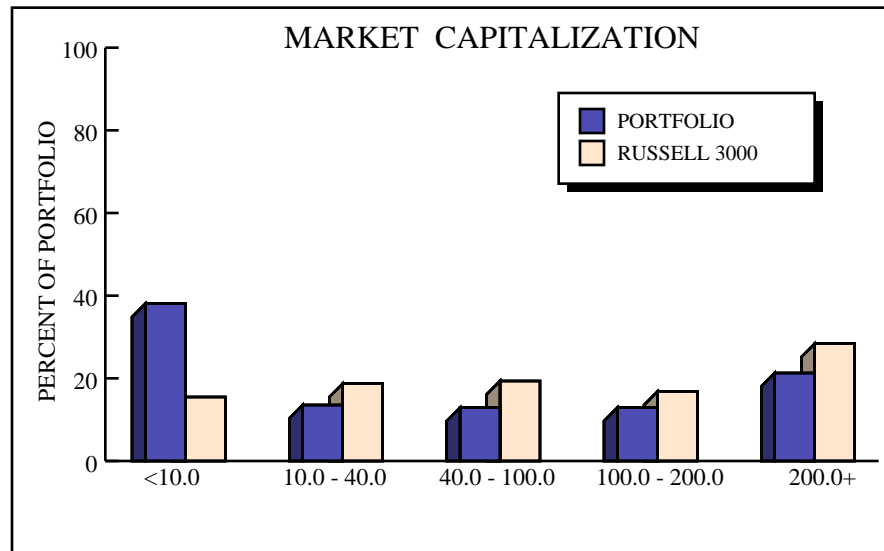
**STOCK INDUSTRY ANALYSIS**



■ PORTFOLIO      ■ RUSSELL 3000



**TOP TEN HOLDINGS**



**TOP TEN EQUITY HOLDINGS**

RANK	NAME	VALUE	% EQUITY	RETURN	INDUSTRY SECTOR	MKT CAP
1	MICROSOFT CORP	\$ 43,141,888	5.02%	0.3%	Information Technology	\$ 1199.6 B
2	ALPHABET INC-CL C	27,442,317	3.19%	-13.0%	Communication Services	396.5 B
3	FACEBOOK INC-CLASS A	24,477,066	2.85%	-18.7%	Communication Services	401.3 B
4	VISA INC-CLASS A SHARES	15,540,346	1.81%	-14.1%	Information Technology	274.9 B
5	ADOBE INC	15,106,852	1.76%	-3.5%	Information Technology	153.3 B
6	AMAZON.COM INC	14,320,693	1.67%	5.5%	Consumer Discretionary	970.6 B
7	MASTERCARD INC - A	13,860,713	1.61%	-19.0%	Information Technology	240.2 B
8	ABBOTT LABORATORIES	13,334,370	1.55%	-8.8%	Health Care	139.2 B
9	ZOETIS INC	12,506,210	1.45%	-11.0%	Health Care	55.9 B
10	SERVICENOW INC	11,555,192	1.34%	1.5%	Information Technology	54.4 B

**Domestic Industry Sector Allocations**  
**(Percent of Invested Equity)**  
**As of March 31, 2020**

	Comm Services	Consumer Discretionary	Consumer Staples	Energy	Financials	Health Care	Industrials	Information Technology	Materials	Real Estate	Utilities
<b>Eagle</b>	<b>31.7</b>	<b>16.7</b>	<b>0.0</b>	<b>0.0</b>	<b>26.9</b>	<b>4.6</b>	<b>6.6</b>	<b>12.3</b>	<b>1.2</b>	<b>0.0</b>	<b>0.0</b>
<b>LSV Large Cap</b>	<b>7.7</b>	<b>8.9</b>	<b>6.3</b>	<b>2.4</b>	<b>14.7</b>	<b>22.1</b>	<b>10.4</b>	<b>22.0</b>	<b>4.4</b>	<b>0.7</b>	<b>0.6</b>
<b>Russell 1000 Value</b>	<b>8.6</b>	<b>5.2</b>	<b>10.6</b>	<b>5.4</b>	<b>21.3</b>	<b>15.5</b>	<b>9.4</b>	<b>6.8</b>	<b>4.2</b>	<b>5.1</b>	<b>7.8</b>
<b>Federated</b>	<b>6.6</b>	<b>13.5</b>	<b>0.9</b>	<b>0.0</b>	<b>6.7</b>	<b>26.0</b>	<b>9.5</b>	<b>30.2</b>	<b>3.8</b>	<b>2.8</b>	<b>0.0</b>
<b>Polen</b>	<b>17.6</b>	<b>9.0</b>	<b>0.0</b>	<b>0.0</b>	<b>2.9</b>	<b>17.0</b>	<b>0.0</b>	<b>53.5</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Russell 1000 Growth</b>	<b>11.6</b>	<b>14.1</b>	<b>4.6</b>	<b>0.1</b>	<b>2.9</b>	<b>15.1</b>	<b>8.0</b>	<b>39.8</b>	<b>1.2</b>	<b>2.5</b>	<b>0.0</b>
<b>AMI</b>	<b>0.0</b>	<b>5.3</b>	<b>14.1</b>	<b>0.0</b>	<b>8.5</b>	<b>25.2</b>	<b>14.1</b>	<b>29.7</b>	<b>3.1</b>	<b>0.0</b>	<b>0.0</b>
<b>Copeland</b>	<b>4.2</b>	<b>9.5</b>	<b>8.2</b>	<b>0.0</b>	<b>14.5</b>	<b>15.2</b>	<b>16.0</b>	<b>13.1</b>	<b>3.6</b>	<b>8.5</b>	<b>7.2</b>
<b>Emerald</b>	<b>4.3</b>	<b>12.5</b>	<b>7.7</b>	<b>0.4</b>	<b>8.3</b>	<b>31.6</b>	<b>14.1</b>	<b>17.2</b>	<b>0.5</b>	<b>3.4</b>	<b>0.0</b>
<b>Russell 2000 Growth</b>	<b>2.3</b>	<b>9.5</b>	<b>3.4</b>	<b>0.2</b>	<b>5.9</b>	<b>33.8</b>	<b>17.9</b>	<b>18.0</b>	<b>2.7</b>	<b>4.4</b>	<b>1.9</b>
<b>LSV Small Cap</b>	<b>2.5</b>	<b>11.1</b>	<b>1.5</b>	<b>2.1</b>	<b>19.4</b>	<b>15.1</b>	<b>20.3</b>	<b>14.6</b>	<b>6.6</b>	<b>5.5</b>	<b>1.2</b>
<b>Smith, Graham &amp; Co</b>	<b>0.0</b>	<b>13.0</b>	<b>2.5</b>	<b>2.2</b>	<b>20.9</b>	<b>17.7</b>	<b>14.2</b>	<b>24.7</b>	<b>2.5</b>	<b>1.0</b>	<b>1.4</b>
<b>Russell 2000 Value</b>	<b>2.2</b>	<b>7.8</b>	<b>3.4</b>	<b>3.5</b>	<b>29.9</b>	<b>6.0</b>	<b>12.9</b>	<b>10.9</b>	<b>4.3</b>	<b>11.5</b>	<b>7.6</b>
<b>S&amp;P 500</b>	<b>10.7</b>	<b>9.8</b>	<b>7.8</b>	<b>2.6</b>	<b>10.9</b>	<b>15.4</b>	<b>8.2</b>	<b>25.5</b>	<b>2.4</b>	<b>3.0</b>	<b>3.6</b>

*Allocations may not total to 100% due to rounding.*

## International Industry Sector Allocations

As of March 31, 2020

	Comm Services	Consumer Discretionary	Consumer Staples	Energy	Financials	Health Care	Industrials	Information Technology	Materials	Real Estate	Utilities
<b>HGK</b>	4.3	21.1	4.5	1.6	14.4	0.0	31.2	13.9	0.0	6.3	2.7
<b>Hardman Johnston</b>	6.1	20.7	3.1	0.0	8.5	14.6	22.6	24.4	0.0	0.0	0.0
<b>S&amp;P Developed Ex US BMI</b>	5.3	10.5	10.8	4.3	16.4	12.5	15.0	9.9	7.2	4.3	3.8

*Allocations may not total to 100% due to rounding. Sector weights for international equity portfolios are provided by each respective manager and may differ slightly from custodian accounting.*



## APPENDIX - MAJOR MARKET INDEX RETURNS

<b>Economic Data</b>	<b>Style</b>	<b>QTR</b>	<b>YTD</b>	<b>1 Year</b>	<b>3 years</b>	<b>5 Years</b>
Consumer Price Index	Economic Data	0.4	0.4	1.5	1.9	1.8
<b>Domestic Equity</b>	<b>Style</b>	<b>QTR</b>	<b>YTD</b>	<b>1 Year</b>	<b>3 years</b>	<b>5 Years</b>
Russell 3000	Broad Equity	-20.9	-20.9	-9.1	4.0	5.8
S&P 500	Large Cap Core	-19.6	-19.6	-7.0	5.1	6.7
Russell 1000	Large Cap	-20.2	-20.2	-8.0	4.6	6.2
Russell 1000 Growth	Large Cap Growth	-14.1	-14.1	0.9	11.3	10.4
Russell 1000 Value	Large Cap Value	-26.7	-26.7	-17.2	-2.2	1.9
Russell Mid Cap	Midcap	-27.1	-27.1	-18.3	-0.8	1.8
Russell Mid Cap Growth	Midcap Growth	-20.0	-20.0	-9.4	6.5	5.6
Russell Mid Cap Value	Midcap Value	-31.7	-31.7	-24.1	-6.0	-0.8
Russell 2000	Small Cap	-30.6	-30.6	-24.0	-4.7	-0.3
Russell 2000 Growth	Small Cap Growth	-25.8	-25.8	-18.6	0.1	1.7
Russell 2000 Value	Small Cap Value	-35.7	-35.7	-29.7	-9.5	-2.4
<b>International Equity</b>	<b>Style</b>	<b>QTR</b>	<b>YTD</b>	<b>1 Year</b>	<b>3 years</b>	<b>5 Years</b>
MSCI All Country World Ex US	Foreign Equity	-23.3	-23.3	-15.1	-1.5	-0.2
MSCI EAFE	Developed Markets Equity	-22.7	-22.7	-13.9	-1.3	-0.1
MSCI EAFE Growth	Developed Markets Growth	-17.4	-17.4	-5.4	3.4	2.9
MSCI EAFE Value	Developed Markets Value	-28.1	-28.1	-22.3	-6.1	-3.3
MSCI Emerging Markets	Emerging Markets Equity	-23.6	-23.6	-17.4	-1.3	0.0
<b>Domestic Fixed Income</b>	<b>Style</b>	<b>QTR</b>	<b>YTD</b>	<b>1 Year</b>	<b>3 years</b>	<b>5 Years</b>
Bloomberg Barclays Aggregate Index	Core Fixed Income	3.1	3.1	8.9	4.8	3.4
Bloomberg Barclays Capital Gov't Bond	Treasuries	8.1	8.1	13.1	5.8	3.6
Bloomberg Barclays Capital Credit Bond	Corporate Bonds	-3.1	-3.1	5.1	4.2	3.3
Intermediate Aggregate	Core Intermediate	2.5	2.5	6.9	3.9	2.8
ML/BoA 1-3 Year Treasury	Short Term Treasuries	2.8	2.8	5.4	2.7	1.8
Bloomberg Barclays Capital High Yield	High Yield Bonds	-12.7	-12.7	-6.9	0.8	2.8
<b>Alternative Assets</b>	<b>Style</b>	<b>QTR</b>	<b>YTD</b>	<b>1 Year</b>	<b>3 years</b>	<b>5 Years</b>
Bloomberg Barclays Global Treasury Ex US	International Treasuries	-3.2	-3.2	0.5	2.5	2.1
NCREIF NFI-ODCE Index	Real Estate	1.0	1.0	4.9	6.8	8.5
HFRI FOF Composite	Hedge Funds	-6.2	-6.2	-3.5	0.6	0.4

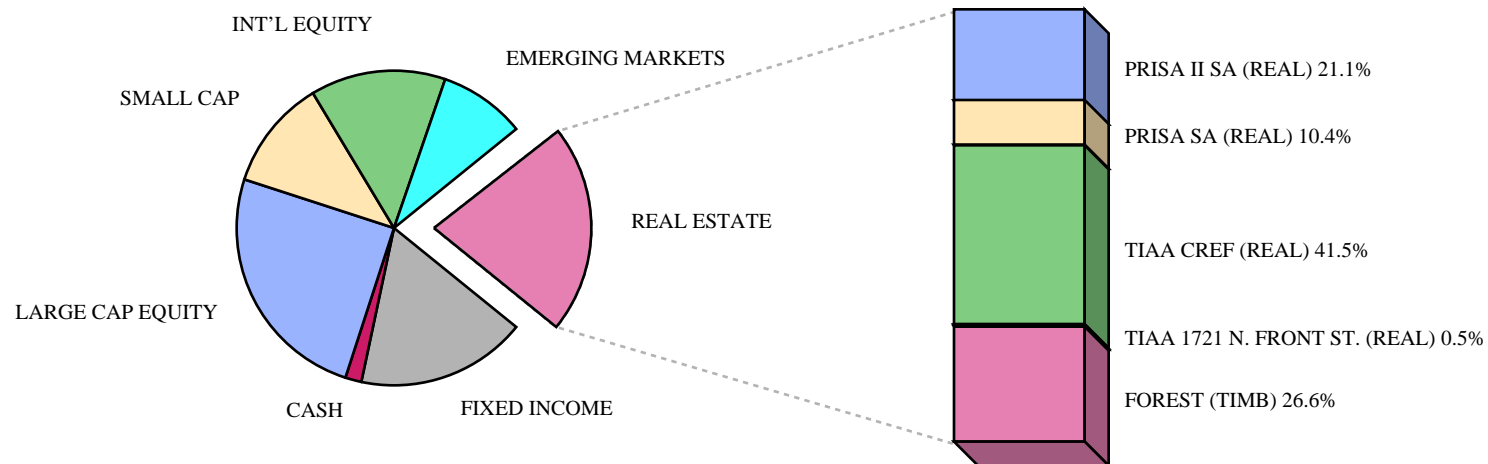
**APPENDIX - DISCLOSURES**

- \* The shadow index is a customized index that matches your portfolio's asset allocation on a monthly basis. This index was calculated using the following asset classes and corresponding benchmarks:

Large Cap Equity	S&P 500
Small Cap Equity	Russell 2000
International Equity	Blended International Index
Emerging Markets Equity	Blended Emerging Markets Index
Real Estate	NCREIF Property Index
Fixed Income	Bloomberg Barclays Aggregate Index
Cash & Equivalent	90 Day T Bill
- \* The Blended International Index utilizes the returns of the S&P Developed BMI through April 30, 2015 and the MSCI EAFE Index thereafter.
- \* The Blended Emerging Markets Index utilizes the returns of the S&P Emerging BMI through April 30, 2015 and the MSCI Emerging Markets Index thereafter.
- \* Dahab Associates utilizes data provided by a custodian and other vendors it believes are reliable. However, it cannot assume responsibility for errors and omissions therefrom.
- \* All returns were calculated on a time-weighted basis, and are gross of fees unless otherwise noted.
- \* All returns for periods greater than one year are annualized.
- \* Dahab Associates uses the modified duration measure to present average duration.
- \* All values are in US dollars.

PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
REAL ESTATE  
PERFORMANCE REVIEW  
MARCH 2020

**REAL ESTATE MANAGER SUMMARY**

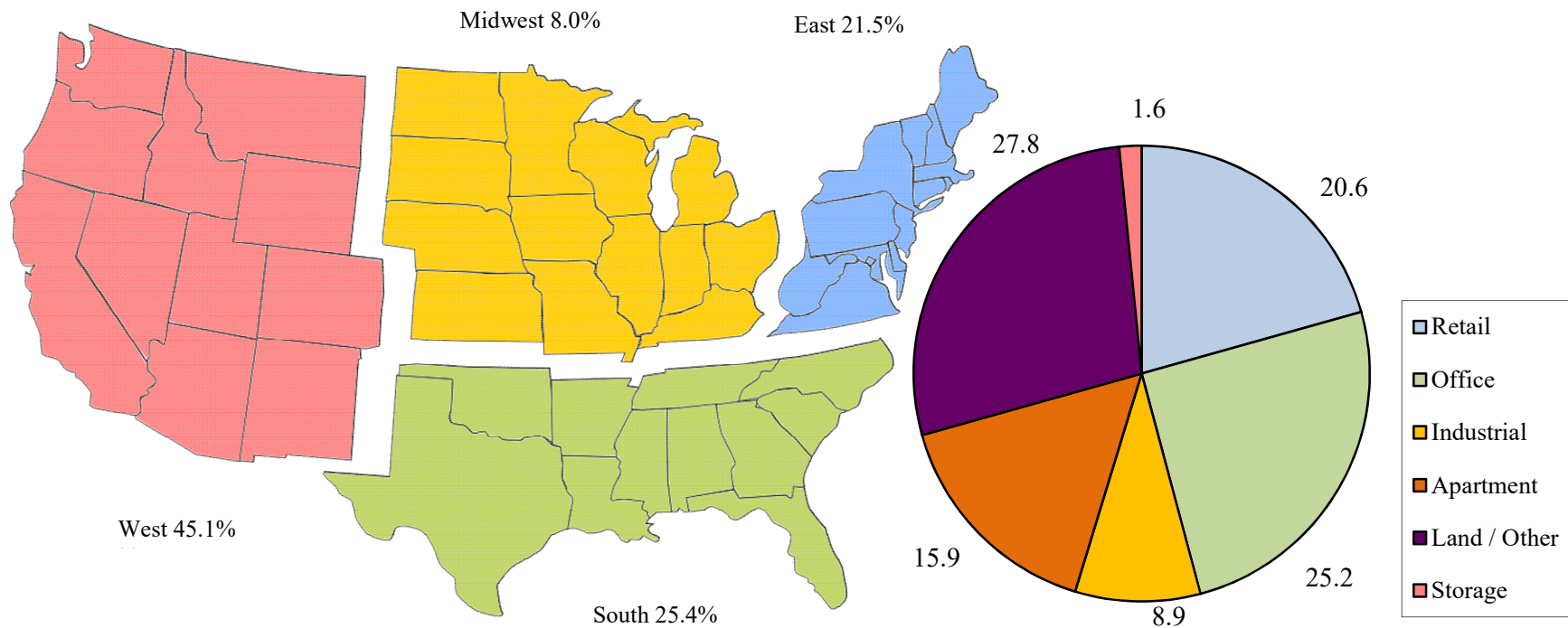


MANAGER	(UNIVERSE)	COMPONENT RETURNS AND RANKINGS					MARKET VALUE
		QTR	YTD	1 YEAR	3 YEARS	5 YEARS	
PRISA II SA		1.3 ---	1.3 ---	6.8 ---	8.4 ---	10.1 ---	\$106,418,646
PRISA SA		1.7 ---	1.7 ---	6.2 ---	7.6 ---	9.0 ---	\$52,416,298
TIAA CREF		1.4 ---	1.4 ---	8.3 ---	8.4 ---	9.0 ---	\$209,194,966
<i>NCREIF NFI-ODCE Index</i>		<i>1.0 ---</i>	<i>1.0 ---</i>	<i>4.9 ---</i>	<i>6.8 ---</i>	<i>8.5 ---</i>	---
TIAA 1721 N. FRONT ST.		0.7 ---	0.7 ---	5.2 ---	3.4 ---	---	\$2,315,169
<i>NCREIF Property Index</i>		<i>0.7 ---</i>	<i>0.7 ---</i>	<i>5.3 ---</i>	<i>6.4 ---</i>	<i>7.6 ---</i>	---
FOREST		0.4 ---	0.4 ---	-4.9 ---	2.4 ---	4.0 ---	\$134,303,095
<i>NCREIF Timber Index</i>		<i>0.1 ---</i>	<i>0.1 ---</i>	<i>1.3 ---</i>	<i>2.5 ---</i>	<i>2.8 ---</i>	---
<b>TOTAL</b>		<b>1.1 ---</b>	<b>1.1 ---</b>	<b>4.0 ---</b>	<b>6.5 ---</b>	<b>7.6 ---</b>	<b>\$504,648,174</b>
<i>NCREIF Property Index</i>		<i>0.7 ---</i>	<i>0.7 ---</i>	<i>5.3 ---</i>	<i>6.4 ---</i>	<i>7.6 ---</i>	---

### PMRS Real Estate Commitment

As of March 31st, the Pennsylvania Municipal Retirement System's aggregate real estate portfolio was valued at \$504,648,174, representing 21.4% of the total System's assets. TIAA distributed \$1,446,377 in January. For reference, the NCREIF Property Index returned 0.7% in the first quarter. Over the trailing year, that index returned 5.3%, and an annualized 7.6% for the last five years. Over the same time frames, the Bloomberg Barclays Aggregate Index returned 3.1%, 8.9%, and an annualized 3.4%, respectively.

### Property Type/Geographical Distribution



## **PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM REAL ESTATE MANAGERS**

### **PRISA SA**

PRISA is an open-end, commingled, broadly diversified, core real estate equity fund invested in completed, income producing and well-leased properties.

#### **Investment Return**

On March 31st, 2020, the Pennsylvania Municipal Retirement System's Prudential PRISA SA portfolio was valued at \$52,416,298, representing an increase of \$732,628 from the December quarter's ending value of \$51,683,670. Last quarter, the Fund posted withdrawals totaling \$125,453, which partially offset the portfolio's net investment return of \$858,081. Since there were no income receipts for the first quarter, the portfolio's net investment return figure was the product of net realized and unrealized capital gains totaling \$858,081.

#### **Property Type/Geographical Distribution**

The office sector made up 35.9% of the PRISA SA portfolio. Industrial and retail properties made up 17.5% and 14.3% respectively. Apartments comprised 24.8% of the portfolio's value, storage was 6.1%, and the remaining 1.4% was in other sectors or vacant land.

Geographically, PRISA's portfolio was mostly situated in the East and West, whose percentages were 38.1% and 36.0%. Another 18.3% of the portfolio was situated in the South, while the remaining 7.6% resided in the Midwest.

#### **Account Performance**

During the first quarter, the Prudential PRISA SA account returned 1.7%, which was 0.7% above the NCREIF NFI-ODCE Index's return of 1.0%. Over the trailing year, the portfolio returned 6.2%, which was 1.3% above the benchmark's 4.9% return. Since December 1990, the Prudential PRISA SA portfolio returned 7.9% per annum, while the NCREIF NFI-ODCE Index returned an annualized 7.5% over the same time frame.

## **PRISA II**

### **Investment Return**

As of March 31st, 2020, the Pennsylvania Municipal Retirement System's Prudential PRISA II SA portfolio was valued at \$106,418,646, which represented an increase of \$1,102,695 from the December quarter's ending value of \$105,315,951. Last quarter, the portfolio recorded a net withdrawal of \$290,750, which offset the fund's net investment return of \$1,393,445. In the absence of income receipts for the quarter, the portfolio's net investment return was the product of \$1,393,445 in realized and unrealized capital gains.

### **Property Type/Geographical Distribution**

PRISA II, like PRISA, situates the largest component of its portfolio in office properties: 36.2% in this case. Retail and apartments also comprised significant portions, with the former at 18.3%, and the latter at 32.6%. Storage made up 4.5%. Investment in land was 4.8%, and industrial properties represented 3.6%.

Geographically, 32.5% of this portfolio was situated in the West, 41.8% resided in the East, while 23.3% was in the South. The remaining 2.3% was located in the Midwest.

### **Account Performance**

In the first quarter, the Prudential PRISA II SA account gained 1.3%, which was 0.3% greater than the NCREIF NFI-ODCE Index's return of 1.0%. Over the trailing twelve-month period, the account returned 6.8%, which was 1.9% greater than the benchmark's 4.9% performance. Since June 2007, the Prudential PRISA II SA portfolio returned 4.9% annualized, while the NCREIF NFI-ODCE Index returned an annualized 5.6% over the same time frame.

## **FOREST INVESTMENT ADVISORS**

The Forest Investment Advisors account is a discretionary account invested in land holdings mostly in the South, with lesser representation in the East and West.

### **Investment Return**

As of March 31st, 2020, the Pennsylvania Municipal Retirement System's Forest Investment Associates Keystone Forest Investments portfolio was valued at \$134,303,095, representing a \$495,977 increase over the December quarter's ending value of \$133,807,118. Over the last three months, the Fund posted no net contributions or withdrawals, making the entire increase in value the result of \$495,977 in net investment returns. Since there were no income receipts during the first quarter, the portfolio's net investment return figure was the product of net realized and unrealized capital gains totaling \$495,977.

### **Property Type/Geographical Distribution**

The Forest fund held 47.3% of its assets in the South, 22.3% in the East, and 30.5% in the West. The Forest Investment Advisors account was solely invested in Timberland.

Forest held investments in Bear Island (Virginia), Fitz-Weller (New York), Carter-Pasture (Texas), Dupont (Georgia), Bennetts Creek (North Carolina), Black River (South Carolina), Coquille (Oregon), Bucktails (Pennsylvania), and North River (Washington).

### **Account Performance**

For the first quarter, the Forest Investment Associates Keystone Forest Investments portfolio gained 0.4%, which was 0.3% greater than the NCREIF Timber Index's return of 0.1%. Over the trailing twelve-month period, the account returned -4.9%, which was 6.2% below the benchmark's 1.3% return. Since March 1999, the Forest Investment Associates Keystone Forest Investments portfolio returned 4.8% on an annualized basis, while the NCREIF Timber Index returned an annualized 6.0% over the same period.



## **TIAA-CREF**

TIAA CREF is a discretionary account with investments in office, retail, industrial, and multi-family properties. The account holds eight properties: The Shoppes at Monarch Lakes is a retail shopping center in Miramar, Florida, and Des Peres Corner, another retail shopping center, is located in Des Peres, Missouri. The SR Ranch Shopping Center and Copley Corporate Center are located in San Diego, California. Industrial properties include Republic Distribution Center in Pasadena, Texas and the 526 Rt. 46 property is located in Teterboro, New Jersey. Stream Uptown is an apartment building in Seattle, Washington. The portfolio's most recent acquisition, the Fairway Center, is located in Connecticut.

TIAA CREF is a non-leveraged investment, whereas portfolios in the NCREIF NFD-ODCE index do utilize leverage.

### **Investment Return**

On March 31st, 2020, the Pennsylvania Municipal Retirement System's TIAA CREF portfolio was valued at \$209,194,966, representing an increase of \$866,881 from the December quarter's ending value of \$208,328,085. Last quarter, the Fund posted withdrawals totaling \$1,446,377, which offset the portfolio's net investment return of \$2,313,258. Since there were no income receipts for the first quarter, the portfolio's net investment return figure was the product of net realized and unrealized capital gains totaling \$2,313,258.

### **Property Type/Geographical Distribution**

As of the quarter end, the TIAA CREF portfolio was situated mostly in the West, which comprised 63.6%. The Midwest represented 16.1%, while the South made up 14.5% and the remaining 5.7% was in the East.

Retail space was the largest sector, making up 36.9%. Offices comprised 32.3%, while 15.6% was in apartments and 15.2% was industrial.

### **Account Performance**

During the first quarter, the TIAA CREF account returned 1.4%, which was 0.4% above the NCREIF NFI-ODCE Index's return of 1.0%. Over the trailing year, the portfolio returned 8.3%, which was 3.4% above the benchmark's 4.9% return. Since June 2008, the TIAA CREF portfolio returned 4.0% per annum, while the NCREIF NFI-ODCE Index returned an annualized 5.4% over the same time frame.

## **TIAA NORTH FRONT STREET**

The office building at 1721 N. Front St. in Harrisburg, PA was purchased in 2016.

### **Investment Return**

As of March 31st, 2020, the Pennsylvania Municipal Retirement System's TIAA CREF 1721 North Front Street portfolio was valued at \$2,315,169, which represented an increase of \$2,757 from the December quarter's ending value of \$2,312,412. Last quarter, the portfolio recorded no net contributions or withdrawals, making the entire increase in value the result of \$2,757 in net investment returns.

### **Account Performance**

For the first quarter, the TIAA CREF 1721 North Front Street account returned 0.7%, which was equal to the NCREIF Property Index's return of 0.7%. Over the trailing twelve-month period, the account returned 5.2%, which was 0.1% less than the benchmark's 5.3% performance. Since June 2016, the portfolio returned 0.7% annualized, while the NCREIF Property Index returned an annualized 6.5% over the same period.

**Real Estate Investor Report  
TIAA CREF (Excluding N. Front Street)**

**Net IRR Since Inception** **6.92%**  
**Market Value** **\$** **209,194,966** **As of**  
**3/31/2020**

<u>Year</u>	<u>Capital Calls</u>	<u>Distributions</u>	<u>Fees</u>
2008	\$ 34,330,250	\$ -	\$ 244,006
2009	\$ -	\$ 1,168,000	\$ 319,220
2010	\$ 50,300,736	\$ -	\$ 422,549
2011	\$ 23,903,720	\$ 406,336	\$ 690,494
2012	\$ -	\$ 3,600,000	\$ 892,330
2013	\$ 15,642,440	\$ 6,240,000	\$ 972,519
2014	\$ 47,594,800	\$ 28,000,000	\$ 1,210,923
2015	\$ -	\$ 24,000,000	\$ 1,493,589
2016	\$ 26,333,676	\$ 6,308,805	\$ 1,604,408
2017	\$ -	\$ 8,062,624	\$ 1,709,860
2018	\$ -	\$ 7,721,531	\$ 1,756,438
2019	\$ -	\$ 7,209,262	\$ 1,813,349
2020	\$ -	\$ 1,446,377	\$ 468,690
<b>Total</b>	<b>\$ 198,105,622</b>	<b>\$ 94,162,935</b>	<b>\$ 13,598,375</b>



# Pennsylvania Municipal Retirement System

## Performance Report (Finalized) March 2020



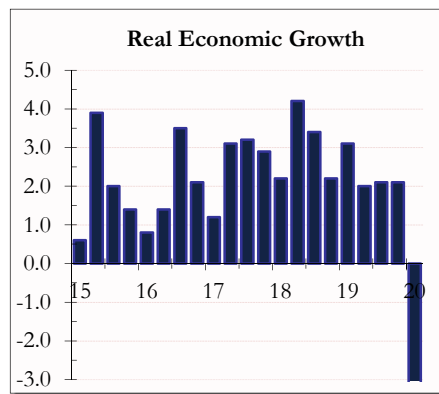
**DAHAB ASSOCIATES**  
New York Massachusetts Pennsylvania Texas Florida

## ECONOMIC ENVIRONMENT

### End of an Era

The COVID-19 pandemic has led to economic and social panic that hasn't been seen in the developed world in modern times. People are facing extraordinary circumstances, not only in financial markets but in everyday life. The 11-year expansion that followed the global financial crisis is finally ending. The current containment measures, supply chain disruptions, and financial stress are combining to create demand and supply shocks throughout the global economy.

It must be noted that the situation is fluid. The underlying facts and assumptions of this situation may need to be revisited as the



full impact of the virus becomes clearer. Predictions at this point are based on educated speculation and preliminary data analysis. As more data is released, we will likely see numbers that would have been unthinkable at the start of the year. However, the initial damage is already apparent. Jobless claims have

exploded, unemployment has increased, and bankruptcy claims have started to rise. Gross domestic product (GDP) decreased by 4.8% in the first quarter of 2020. The mean Wall Street full-year forecast for GDP is -4.0%.

Central bankers and politicians around the globe have responded meaningfully to the sharp projected downturn. In the United States, the Federal Reserve took bold steps, cutting rates for the first time since 2008. The current US federal funds rate now stands at 0-0.25%. The Fed also implemented a bond-buying program (that could be called, unofficially, QE4) to inject liquidity into the

market. Over the last few weeks, the Federal Reserve has been purchasing \$75 billion of Treasury securities and \$50 billion of agency MBS securities daily. At this pace, it will take less than two weeks for the Fed to purchase more securities than it did during the entirety of the 8-month QE2 program. The size of this new program was initially announced as \$700 billion, but just a week later was expanded to purchases "as needed" to support market liquidity. This stance is unusually loose, which shows the Federal Reserve will do whatever is needed to support markets. US Federal Reserve Chairman Jerome Powell stated the institution is "not going to run out of ammunition."

In March, Congress passed the Coronavirus Aid, Relief, and Economic Security (CARES) Act, a \$2.2 trillion package offering economic stabilization funds for businesses, states, municipalities, and families. This package is staggering when compared to the total federal spending in 2019 of \$4.5 trillion.

The European Central Bank announced the Pandemic Emergency Purchase Program (PEPP). The PEPP is a €750 billion bond-buying program, which added needed liquidity to the market and removed maximums on individual member state's debt. Central Bank President Christine Lagard has stated that there are "no limits" to the central bank's commitment to Union member's economies. In addition to the central bank's actions, governments across Europe have announced similar spending packages to those in the United States. These spending programs are supposed to help households and businesses plug their income gap during this period of disruption.

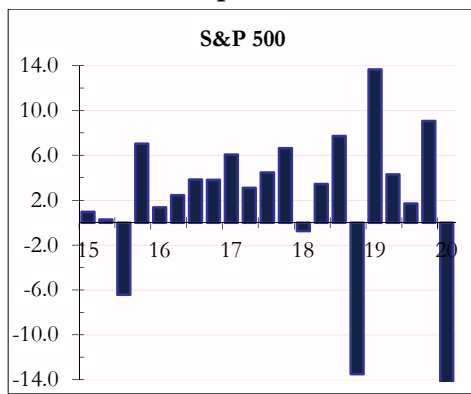
Many emerging markets are also taking monetary and fiscal actions. India, Chile, and Peru have significantly cut rates. South Africa has started a quantitative-easing program and Brazil is considering the same. China has not made many changes. The 20 basis point cut to China's policy rate and the lowering of reserve requirements, were token actions compared to other countries.

Adding to financial market stress, Saudi Arabia initiated an oil price war with Russia over proposed oil production cuts. Saudi Arabia is attempting to punish Russia for its unwillingness to curtail production. The announcement preceded a fall in oil prices, with Brent crude falling by more than 30%. This was the largest drop since the Gulf War. Over the Easter weekend, an agreement has been made to reduce oil output. Oil prices are still down more than 50%.

## DOMESTIC EQUITIES

### Volatility Rises

In the first quarter, US markets suffered severe declines and extreme daily swings in prices on a scale comparable to the crises of 2008 and 2011. The stock market tripped its “circuit breakers” on multiple occasions. This was the first time that the switches were triggered since they were overhauled more than ten years ago. It was only the second time that they have been triggered since 1997.



As the rate of COVID-19 infection accelerated, so did the market’s reaction. US stocks entered into a bear market at one of the quickest paces we have seen. Index levels plunged from an all-time high on February 19th into a bear market only 16 days later. For historical context, the Global Financial Crisis and Dot-Com drawdowns took six months and one year, respectively.

The selling pressure was widespread and indiscriminate. Core domestic equity benchmarks were down between 14%-36%. Small-

caps fell more than their large-cap counterparts. Some of this is attributable to the higher weighting of energy and financials within the small cap benchmark.

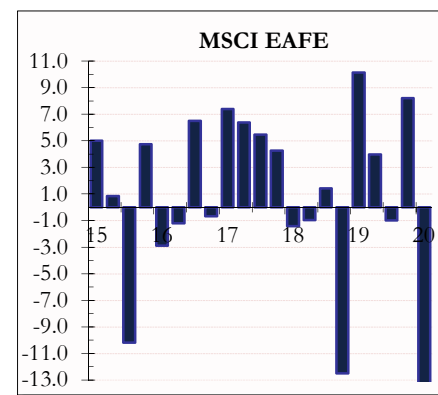
Growth outperformed value across all market capitalizations and in every region of the world. This divergence was due to the value indices substantial weighting towards financials and energy companies. The Russell 3000 Value has 23.4% more allocated to financial sector and 6.6% more allocated to the energy sector compared to the Russell 3000 Growth. These two sectors alone accounted for 93% of value’s return deficit. As of March 31st, the large cap growth equities posted the only positive return (0.8%) over the trailing 12 months of any equity benchmark.

## INTERNATIONAL EQUITIES

### Global Shock

International stocks declined more than US stocks. The MSCI EAFE index returned -22.7%, while the MSCI Emerging Markets index returned -23.6%. A strengthening US dollar acted as a further headwind.

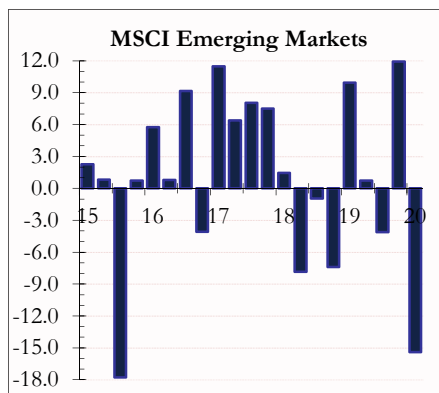
International developed markets, with the MSCI EAFE as a proxy, suffered losses in all 21 countries that comprise the index. Notably, Japanese equities made up the most significant percentage of the index (26.3%) and suffered the least (return of -16.6%). Japan has thus far been on a different virus trajectory than most other developed nations. COVID-19 has thus far had a slower spread and lower mortality rate than in other developed countries.



Three of the top countries by weight in the index sustained losses in excess of the index. The United Kingdom, France, and Germany all lost more than 26% of their value, and comprised nearly 35% of the weight in the index.

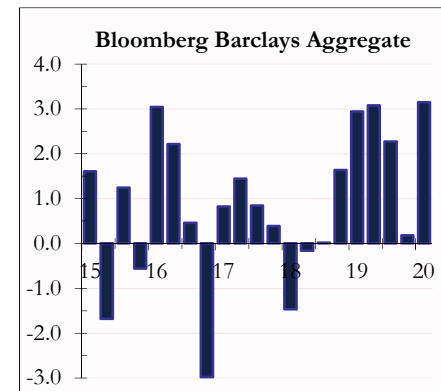
As with developed markets, all 26 emerging-market countries saw losses in the first quarter. Most EM countries were down considerably, with some down more than -30%. China was provided a little ballast as it only lost 10%, and it comprises 30% of the index.

Brazil was the weakest country in the emerging markets index. The country's two largest sectors (financials and energy) lost more than 50%.



High yield and leveraged loans, the lowest quality benchmarks we track, were down -12.7% and -13.0%, respectively. This performance was due to their allocation to finance, energy and financial companies, the three sectors most susceptible from COVID-19 and oil price declines.

Even with the historically high volatility in the market, corporate issuers were opportunistic and issued \$272 billion in bonds in March alone. Many corporations have stated that they are using the opportunity to increase the amount of working capital on their balance sheets. However, some industries are issuing debt to increase the chances of survival in a stressful economic time.



## BOND MARKET

### Quality Wins the Day

There was wide discrepancy in the returns of fixed-income benchmarks in Q1. Issuances with higher quality and longer duration performed best. Spreads widened due to a flight to quality and increased volatility caused by COVID-19 concerns.

Liquidity in the bond market was weak, showing signs of stress. Many fixed-income managers were having a hard time finding buyers in both high- and low-quality issues. However, it should be noted that these liquidity pressures have lessened by central bank bond-buying programs.

## CASH EQUIVALENTS

### Low and Lower

The three-month T-Bill returned 0.5% for the 1st quarter. Future returns for cash equivalents seem dim, with the Fed Funds rate at 0-0.25%. The 3-month LIBOR spiked as commercial paper issuers had challenges rolling their maturities. The implied inflation expectation from the 10-year TIPS breakeven inflation rate was notably lower in the quarter, settling below 1%.

## Economic Statistics

	Current Quarter	Previous Quarter
GDP	-4.8%	2.1%
Unemployment	4.4%	3.5%
CPI All Items Year/Year	1.5%	2.3%
Fed Funds Rate	0.25%	1.75%
Industrial Capacity	75.5%	77.1%
US Dollars per Euro	1.10	1.12%

## Major Index Returns

Index	Quarter	12 Months
Russell 3000	-20.9%	-9.1%
S&P 500	-19.6%	-7.0%
Russell Midcap	-27.1%	-18.3%
Russell 2000	-30.6%	-24.0%
MSCI EAFE	-22.7%	-13.9%
MSCI Emg Markets	-23.6%	-17.4%
NCREIF ODCE	0.0%	3.9%
U.S. Aggregate	3.1%	8.9%
90 Day T-bills	0.3%	1.7%

## Domestic Equity Return Distributions

Quarter	Trailing Year		
	VAL	COR	GRO
LC	-26.7	-20.2	-14.1
MC	-31.7	-27.1	-20.0
SC	-35.7	-30.6	-25.8

## Market Summary

- Coronavirus news dominated headlines
- Global Equity markets suffered
- Growth outpaces Value
- Credit spreads widened
- The Federal Reserve cut rates to 0.0-0.25%



## **INVESTMENT RETURN**

On March 31st, 2020, the Pennsylvania Municipal Retirement System was valued at \$2,358,476,552, a decrease of \$442,337,784 from the December ending value of \$2,800,814,336. Last quarter, the account recorded total net withdrawals of \$12,093,905 in addition to \$430,243,879 in net investment losses. The fund's net investment loss was a result of income receipts totaling \$4,129,058 and realized and unrealized capital losses totaling \$434,372,937.

## **RELATIVE PERFORMANCE**

### **Total Fund**

During the first quarter, the total portfolio lost 15.4%, which was 0.6% less than the Shadow Index's return of -14.8% and ranked in the 83rd percentile of the Public Fund universe. Over the trailing year, the portfolio returned -6.7%, which was equal to the benchmark's -6.7% performance, and ranked in the 81st percentile. Since December 1985, the account returned 8.3% per annum. For comparison, the Shadow Index returned an annualized 8.6% over the same time frame.

### **Large Cap Equity**

The large cap equity segment lost 20.5% last quarter, 0.9% below the S&P 500 Index's return of -19.6% and ranked in the 48th percentile of the Large Cap universe. Over the trailing twelve months, the large cap equity portfolio returned -6.8%, 0.2% greater than the benchmark's -7.0% performance, and ranked in the 37th percentile. Since December 1985, this component returned 10.3% on an annualized basis. For comparison, the S&P 500 returned an annualized 10.1% during the same period.

### **Small Cap Equity**

The small cap equity portfolio returned -32.2% in the first quarter, 1.6% less than the Russell 2000 Index's return of -30.6% and ranked in the 57th percentile of the Small Cap universe. Over the trailing twelve-month period, the small cap equity portfolio returned -24.9%; that return was 0.9% less than the benchmark's -24.0% return, and ranked in the 57th percentile.

### **International Equity**

The international equity portfolio lost 23.4% in the first quarter, 0.7% below the Blended International Index's return of -22.7% and ranked in the 46th percentile of the International Equity universe. Over the trailing year, this segment returned -12.3%, 1.6% above the benchmark's -13.9% performance, and ranked in the 30th percentile.

### **Emerging Markets Equity**

The emerging markets equity segment returned -23.9% during the first quarter, 0.3% less than the Blended Emerging Markets Index's return of -23.6% and ranked in the 45th percentile of the Emerging Markets universe. Over the trailing twelve-month period, this segment returned -18.0%; that return was 0.6% less than the benchmark's -17.4% return, and ranked in the 53rd percentile.

### **Real Estate**

During the first quarter, the real estate portion of the portfolio gained 1.1%, which was 0.4% above the NCREIF Property Index's return of 0.7%. Over the trailing twelve-month period, this component returned 4.0%, which was 1.3% less than the benchmark's 5.3% performance. Since December 1985, this component returned 6.9% per annum, while the NCREIF Property Index returned an annualized 7.8% over the same period.

## Fixed Income

The fixed income portion of the portfolio returned 3.1% in the first quarter, equal to the Bloomberg Barclays Aggregate Index's return of 3.1% and ranked in the 30th percentile of the Core Fixed Income universe. Over the trailing twelve-month period, this segment returned 8.9%, equal to the benchmark's 8.9% return, ranking in the 31st percentile. Since December 1985, this component returned 6.5% per annum. For comparison, the Bloomberg Barclays Aggregate Index returned an annualized 6.4% during the same time frame.

## ASSET ALLOCATION

On March 31, 2020, the allocation of assets was as follows\*:

<b>TOTAL PORTFOLIO</b>	<b>100.0%</b>	<b>\$2,358,476,552</b>
Domestic Large Cap	25.0%	\$588,496,650
Domestic Small Cap	11.5%	\$271,263,111
<b>Total Domestic Equity</b>	<b>36.5%</b>	<b>\$859,759,761</b>
International Developed Markets	13.8%	\$326,463,112
International Emerging Markets	8.9%	\$210,526,987
<b>Total International Equity</b>	<b>22.8%</b>	<b>\$536,990,099</b>
<b>Total Equity</b>	<b>59.2%</b>	<b>\$1,396,749,860</b>
<b>Real Estate</b>	<b>21.4%</b>	<b>\$504,648,174</b>
<b>Fixed Income</b>	<b>17.6%</b>	<b>\$415,403,984</b>
<b>Cash and Equivalents</b>	<b>1.8%</b>	<b>\$41,674,534</b>

\* Numbers may not add to 100% due to rounding.

## EXECUTIVE SUMMARY - GROSS OF FEES

## PERFORMANCE SUMMARY

	Qtr / YTD	1 Year	3 Year	5 Year	10 Year	Since 12/85
<b>Total Portfolio</b>	-15.4	-6.7	3.4	4.2	7.0	8.3
<i>PUBLIC FUND RANK</i>	(83)	(81)	(32)	(23)	(20)	----
Shadow Index	-14.8	-6.7	2.4	3.6	6.7	8.6
<b>Domestic Equity</b>	-24.6	-13.2	3.0	4.6	9.5	----
<i>DOMESTIC EQUITY RANK</i>	(49)	(44)	(41)	(40)	(46)	----
Russell 3000	-20.9	-9.1	4.0	5.8	10.1	9.9
<b>Large Cap Equity</b>	-20.5	-6.8	7.3	7.7	11.4	10.3
<i>LARGE CAP RANK</i>	(48)	(37)	(28)	(27)	(29)	----
S&P 500	-19.6	-7.0	5.1	6.7	10.5	10.1
<b>Small Cap Equity</b>	-32.2	-24.9	-4.9	-0.8	7.3	----
<i>SMALL CAP RANK</i>	(57)	(57)	(51)	(61)	(60)	----
Russell 2000	-30.6	-24.0	-4.7	-0.3	6.9	8.2
<b>International Equity</b>	-23.4	-12.3	1.0	1.9	4.7	----
<i>INTERNATIONAL EQUITY RANK</i>	(46)	(30)	(27)	(27)	(35)	----
Int'l Index	-22.7	-13.9	-1.3	0.0	3.3	----
S&P BMI Ex US	-23.7	-15.1	-1.8	0.0	3.3	----
MSCI World Ex US	-23.9	-15.3	-1.9	-0.4	2.9	6.5
MSCI EAFE	-22.7	-13.9	-1.3	-0.1	3.2	6.9
<b>Emerging Markets Equity</b>	-23.9	-18.0	-1.7	-0.4	0.5	----
<i>EMERGING MARKETS RANK</i>	(45)	(53)	(43)	(48)	(84)	----
EM Index	-23.6	-17.4	-1.3	0.0	1.0	----
S&P BMI EMGM	-24.6	-18.2	-1.6	0.1	1.1	----
MSCI Emg Mkts	-23.6	-17.4	-1.3	0.0	1.0	----
<b>Real Estate</b>	1.1	4.0	6.5	7.6	8.9	6.9
NCREIF NPI	0.7	5.3	6.4	7.6	10.2	7.8
Aggregate Index	3.1	8.9	4.8	3.4	3.9	6.4
<b>Fixed Income</b>	3.1	8.9	4.8	3.4	3.9	6.5
<i>CORE FIXED INCOME RANK</i>	(30)	(31)	(49)	(71)	(84)	----
Aggregate Index	3.1	8.9	4.8	3.4	3.9	6.4

## ASSET ALLOCATION

Large Cap Equity	25.0%	\$ 588,496,650
Small Cap	11.5%	271,263,111
Int'l Equity	13.8%	326,463,112
Emerging Markets	8.9%	210,526,987
Real Estate	21.4%	504,648,174
Fixed Income	17.6%	415,403,984
Cash	1.8%	41,674,534
<b>Total Portfolio</b>	<b>100.0%</b>	<b>2,358,476,552</b>

## INVESTMENT RETURN

Market Value 12/2019	\$ 2,800,814,336
Contribs / Withdrawals	- 12,093,905
Income	4,129,058
Capital Gains / Losses	-434,372,937
Market Value 3/2020	\$ 2,358,476,552

## EXECUTIVE SUMMARY - NET OF FEES

## PERFORMANCE SUMMARY

	Qtr / YTD	1 Year	3 Year	5 Year	10 Year
<b>Total Portfolio - Net</b>	-15.5	-7.2	2.9	3.7	6.5
Shadow Index	-14.8	-6.7	2.4	3.6	6.7
<b>Domestic Equity - Net</b>	-24.7	-13.7	2.5	4.1	9.0
Russell 3000	-20.9	-9.1	4.0	5.8	10.1
<b>Large Cap Equity - Net</b>	-20.6	-7.2	6.8	7.1	10.9
S&P 500	-19.6	-7.0	5.1	6.7	10.5
<b>Small Cap Equity - Net</b>	-32.3	-25.4	-5.4	-1.3	6.8
Russell 2000	-30.6	-24.0	-4.7	-0.3	6.9
<b>International Equity - Net</b>	-23.5	-12.7	0.5	1.4	4.2
Int'l Index	-22.7	-13.9	-1.3	0.0	3.3
S&P BMI Ex US	-23.7	-15.1	-1.8	0.0	3.3
MSCI World Ex US	-23.9	-15.3	-1.9	-0.4	2.9
MSCI EAFE	-22.7	-13.9	-1.3	-0.1	3.2
<b>Emerging Markets Equity - Net</b>	-23.9	-18.0	-1.8	-0.5	0.5
EM Index	-23.6	-17.4	-1.3	0.0	1.0
S&P BMI EMGM	-24.6	-18.2	-1.6	0.1	1.1
MSCI Emg Mkts	-23.6	-17.4	-1.3	0.0	1.0
<b>Real Estate - Net</b>	0.9	3.0	5.6	6.7	7.9
NCREIF NPI	0.7	5.3	6.4	7.6	10.2
Aggregate Index	3.1	8.9	4.8	3.4	3.9
<b>Fixed Income - Net</b>	3.1	8.8	4.8	3.3	3.9
Aggregate Index	3.1	8.9	4.8	3.4	3.9

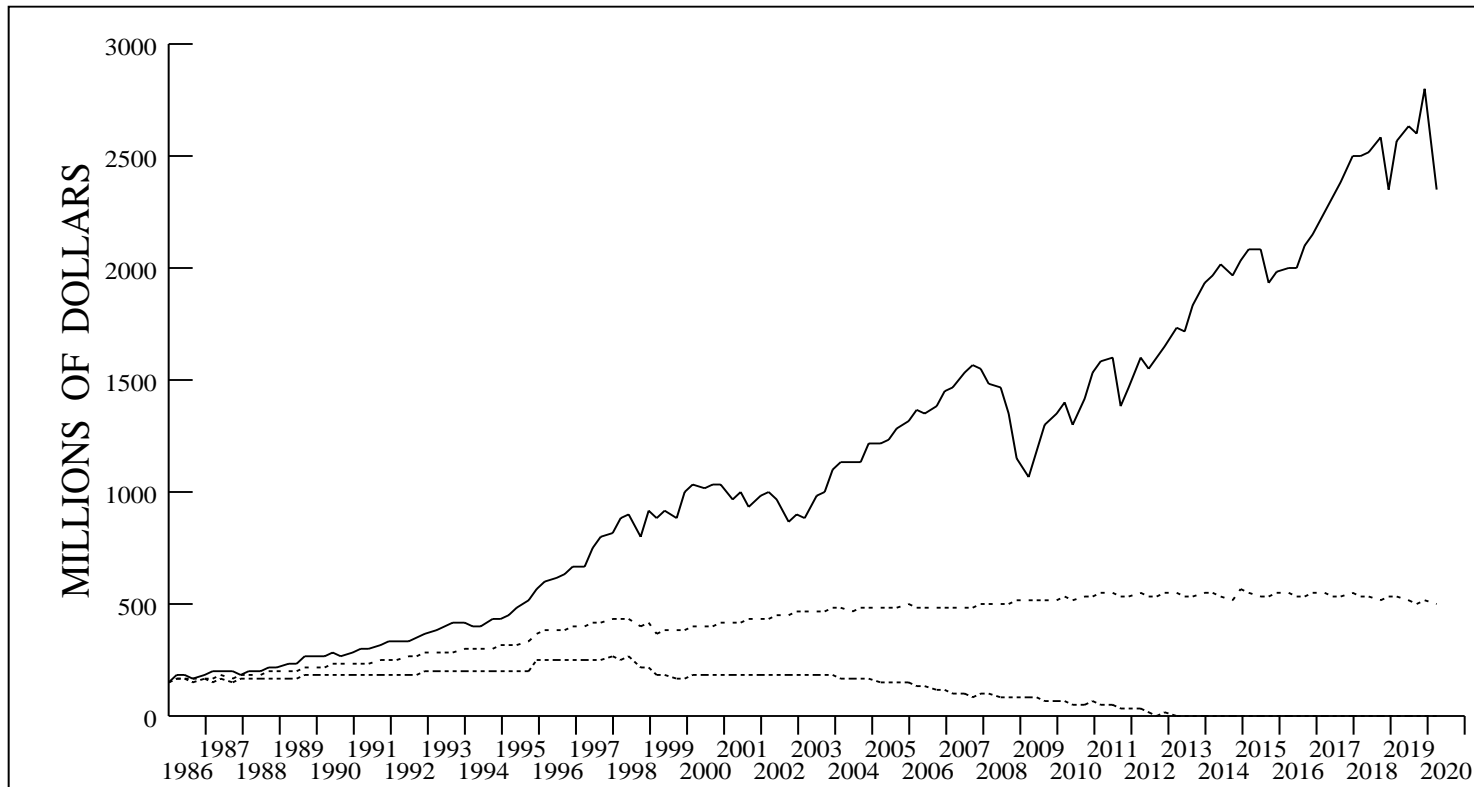
## ASSET ALLOCATION

Large Cap Equity	25.0%	\$ 588,496,650
Small Cap	11.5%	271,263,111
Int'l Equity	13.8%	326,463,112
Emerging Markets	8.9%	210,526,987
Real Estate	21.4%	504,648,174
Fixed Income	17.6%	415,403,984
Cash	1.8%	41,674,534
<b>Total Portfolio</b>	<b>100.0%</b>	<b>2,358,476,552</b>

## INVESTMENT RETURN

Market Value 12/2019	\$ 2,800,814,336
Contribs / Withdrawals	- 12,093,905
Income	4,129,058
Capital Gains / Losses	-434,372,937
Market Value 3/2020	\$ 2,358,476,552

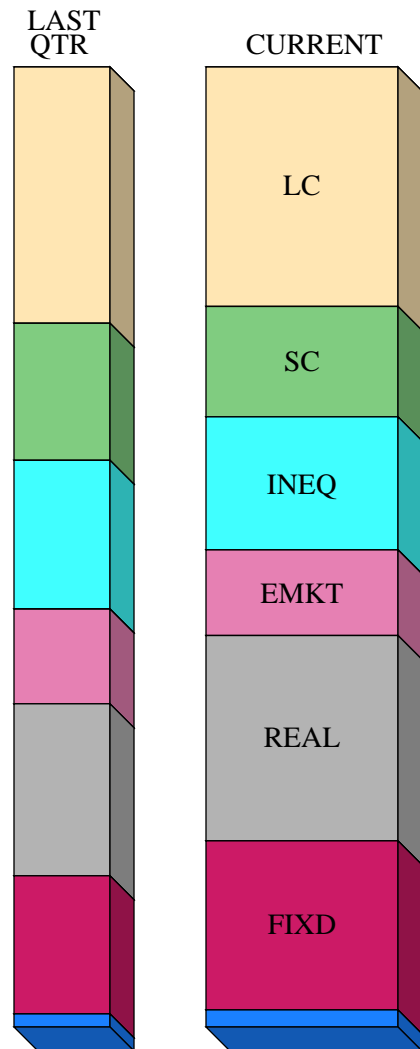
**INVESTMENT GROWTH**



— ACTUAL RETURN  
 - - - 5.25%  
 . . . 0.0%

VALUE ASSUMING  
 5.25% RETURN \$ 511,978,746

	LAST QUARTER	PERIOD 12/85 - 3/20
BEGINNING VALUE	\$ 2,800,814,336	\$ 162,395,431
NET CONTRIBUTIONS	- 12,093,905	-389,511,455
<u>INVESTMENT RETURN</u>	<u>-430,243,879</u>	<u>2,585,592,576</u>
ENDING VALUE	\$ 2,358,476,552	\$ 2,358,476,552
INCOME	4,129,058	571,866,116
<u>CAPITAL GAINS (LOSSES)</u>	<u>-434,372,937</u>	<u>2,013,726,460</u>
INVESTMENT RETURN	-430,243,879	2,585,592,576



	<u>VALUE</u>	<u>PERCENT</u>	<u>TARGET</u>	<u>DIFFERENCE</u> <u>+ / -</u>
<span style="color: orange;">■</span> LARGE CAP EQUITY <span style="color: green;">■</span> SMALL CAP EQUITY <span style="color: cyan;">■</span> INTERNATIONAL EQUITY <span style="color: pink;">■</span> EMERGING MARKETS EQUITY <span style="color: grey;">■</span> REAL ESTATE <span style="color: red;">■</span> FIXED INCOME <span style="color: blue;">■</span> CASH & EQUIVALENT	\$ 588,496,650	25.0%	25.0%	0.0%
	271,263,111	11.5%	15.0%	-3.5%
	326,463,112	13.8%	15.0%	-1.2%
	210,526,987	8.9%	10.0%	-1.1%
	504,648,174	21.4%	20.0%	1.4%
	415,403,984	17.6%	15.0%	2.6%
	41,674,534	1.8%	0.0%	1.8%
<b>TOTAL FUND</b>	<b>\$ 2,358,476,552</b>	<b>100.0%</b>		

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
ALLOCATIONS & TARGETS AS OF MARCH 2020**

<b>Manager</b>	<b>Target</b>	<b>Market Value</b>	<b>%</b>	<b>+ / -</b>	<b>Market Value Ex-cash</b>	<b>%</b>	<b>+ / -</b>
<b>Total Portfolio</b>	<b>-</b>	<b>\$2,358,476,552</b>	<b>100%</b>		<b>\$2,358,476,552</b>	<b>100%</b>	
<b>Large Cap</b>	<b>25</b>	<b>605,112,702</b>	<b>25.7</b>	<b>0.7</b>	<b>588,496,650</b>	<b>25.0</b>	<b>0.0</b>
Eagle		124,409,687	5.3		123,966,198	5.3	
Federated		92,989,446	3.9		88,261,495	3.7	
LSV Large Cap		121,382,935	5.1		120,353,459	5.1	
Polen		217,553,364	9.2		207,138,228	8.8	
SSgA S&P 500		48,777,270	2.1		48,777,270	2.1	
<b>Small Cap</b>	<b>15</b>	<b>276,413,233</b>	<b>11.7</b>	<b>-3.3</b>	<b>271,263,111</b>	<b>11.5</b>	<b>-3.5</b>
AMI		28,343,080	1.2		27,722,865	1.2	
Copeland		35,137,059	1.5		33,603,413	1.4	
Emerald		52,750,893	2.2		50,581,660	2.1	
LSV Small Cap		46,342,787	2.0		45,757,340	1.9	
Smith, Graham & Co		49,898,253	2.1		49,656,672	2.1	
SSgA Russell 2000		63,941,161	2.7		63,941,161	2.7	
<b>International Equity</b>	<b>15</b>	<b>337,259,775</b>	<b>14.3</b>	<b>-0.7</b>	<b>326,463,112</b>	<b>13.8</b>	<b>-1.2</b>
GlobeFlex		4,229	0.0		4,229	0.0	
HGK		102,728,434	4.4		98,363,733	4.2	
Jarislowsky Fraser		519,575	0.0		296,629	0.0	
Johnston		99,950,310	4.2		93,741,294	4.0	
Mercator		17,732	0.0		17,732	0.0	
SSgA International		134,036,562	5.7		134,036,562	5.7	
WHV		2,933	0.0		2,933	0.0	
<b>Emerging Markets</b>	<b>10</b>	<b>210,526,987</b>	<b>8.9</b>	<b>-1.1</b>	<b>210,526,987</b>	<b>8.9</b>	<b>-1.1</b>
SSgA Emerging Mkts		210,526,987	8.9		210,526,987	8.9	
<b>Real Assets</b>	<b>20</b>	<b>504,648,174</b>	<b>21.4</b>	<b>1.4</b>	<b>504,648,174</b>	<b>21.4</b>	<b>1.4</b>
Forest		134,303,095	5.7		134,303,095	5.7	
PRISA I		52,416,298	2.2		52,416,298	2.2	
PRISA II		106,418,646	4.5		106,418,646	4.5	
TIAA N. Front St.		2,315,169	0.1		2,315,169	0.1	
TIAA CREF		209,194,966	8.9		209,194,966	8.9	
<b>Fixed Income</b>	<b>15</b>	<b>415,403,984</b>	<b>17.6</b>	<b>2.6</b>	<b>415,403,984</b>	<b>17.6</b>	<b>2.6</b>
SSgA BC Aggregate		415,403,984	17.6		415,403,984	17.6	
<b>Cash &amp; Equivalents</b>	<b>0</b>	<b>9,111,697</b>	<b>0.4</b>	<b>0.4</b>	<b>41,674,534</b>	<b>1.8</b>	<b>1.8</b>
BNY Cash		3,619,101	0.2		3,619,101	0.2	
STIP Cash		5,492,596	0.2		5,492,596	0.2	
Manager Cash		n/a	-		32,562,837	1.4	

**MANAGER QUARTERLY FEE SUMMARY**

ALL FEES ARE ESTIMATED / ACCRUED

<b>PORTFOLIO</b>	<b>TOTAL RETURN (GROSS OF FEES)</b>	<b>FEE</b>	<b>% FEE</b>
<b>AMI</b>	-24.3%	\$74,397	0.20%
<b>COPELAND</b>	-26.5%	\$99,507	0.21%
<b>EAGLE</b>	-23.7%	\$277,710	0.17%
<b>EMERALD</b>	-24.7%	\$85,170	0.12%
<b>FEDERATED</b>	-15.2%	\$195,058	0.18%
<b>FOREST</b>	0.4%	\$248,634	0.19%
<b>HARDMAN JOHNSTON</b>	-21.3%	\$178,376	0.14%
<b>HGK</b>	-24.2%	\$197,320	0.15%
<b>LSV LARGE CAP</b>	-30.5%	\$139,932	0.08%
<b>LSV SMALL CAP</b>	-40.7%	\$90,511	0.12%
<b>POLEN</b>	-13.0%	\$250,173	0.10%
<b>PRISA SA</b>	1.7%	\$125,453	0.24%
<b>PRISA II</b>	1.3%	\$290,750	0.28%
<b>SMITH, GRAHAM &amp; CO</b>	-37.1%	\$115,467	0.15%
<b>SSgA</b>	-13.3%	\$117,036	0.01%
<b>CONSERVATIVE S&amp;P 500</b>	-19.6%	\$4,876	0.01%
<b>RUSSELL 2000</b>	-30.6%	\$9,076	0.01%
<b>DEVELOPED INTERNATIONAL</b>	-23.1%	\$23,038	0.01%
<b>EMERGING MARKETS</b>	-23.9%	\$48,179	0.02%
<b>BOND MARKET INDEX</b>	3.1%	\$31,866	0.01%
<b>TIAA CREF</b>	1.4%	\$468,690	0.22%
<b>TIAA N. FRONT STREET</b>	0.0%	\$12,500	0.54%



## MANAGER PERFORMANCE SUMMARY - GROSS OF FEES

Portfolio	(Universe)	QTR	CYTD	1 Year	3 Years	5 Years	10 Years	Inception	
Composite	(Public Fund)	-15.4 (83)	-15.4 (83)	-6.7 (81)	3.4 (32)	4.2 (23)	7.0 (20)	8.3 ----	12/85
<i>Shadow Index</i>		<i>-14.8 ----</i>	<i>-14.8 ----</i>	<i>-6.7 ----</i>	<i>2.4 ----</i>	<i>3.6 ----</i>	<i>6.7 ----</i>	<i>8.6 ----</i>	<i>12/85</i>
SSgA	(Balanced)	-13.3 (40)	-13.3 (40)	-6.4 (58)	1.0 (76)	1.6 (82)	3.3 (94)	5.8 ----	03/97
<i>Shadow Index</i>		<i>-13.3 ----</i>	<i>-13.3 ----</i>	<i>-6.3 ----</i>	<i>1.2 ----</i>	<i>1.7 ----</i>	<i>3.5 ----</i>	<i>6.5 ----</i>	<i>03/97</i>
Federated	(LC Growth)	-15.2 (62)	-15.2 (62)	-1.1 (52)	11.1 (46)	---- ----	---- ----	8.5 (68)	06/15
<i>Russell 1000G</i>		<i>-14.1 ----</i>	<i>-14.1 ----</i>	<i>0.9 ----</i>	<i>11.3 ----</i>	<i>10.4 ----</i>	<i>13.0 ----</i>	<i>10.9 ----</i>	<i>06/15</i>
Polen	(LC Growth)	-13.0 (35)	-13.0 (35)	3.3 (12)	15.5 (12)	13.9 (4)	---- ----	15.5 (8)	09/10
<i>Russell 1000G</i>		<i>-14.1 ----</i>	<i>-14.1 ----</i>	<i>0.9 ----</i>	<i>11.3 ----</i>	<i>10.4 ----</i>	<i>13.0 ----</i>	<i>13.7 ----</i>	<i>09/10</i>
Eagle	(LC Value)	-23.7 (29)	-23.7 (29)	-9.8 (17)	4.3 (7)	---- ----	---- ----	8.7 (5)	03/16
<i>Russell 1000V</i>		<i>-26.7 ----</i>	<i>-26.7 ----</i>	<i>-17.2 ----</i>	<i>-2.2 ----</i>	<i>1.9 ----</i>	<i>7.7 ----</i>	<i>2.8 ----</i>	<i>03/16</i>
<i>Russell 1000</i>		<i>-20.2 ----</i>	<i>-20.2 ----</i>	<i>-8.0 ----</i>	<i>4.6 ----</i>	<i>6.2 ----</i>	<i>10.4 ----</i>	<i>7.7 ----</i>	<i>03/16</i>
LSV Large Cap	(LC Value)	-30.5 (82)	-30.5 (82)	-21.4 (79)	-3.9 (73)	0.2 (79)	7.6 (61)	6.3 ----	03/04
<i>Russell 1000V</i>		<i>-26.7 ----</i>	<i>-26.7 ----</i>	<i>-17.2 ----</i>	<i>-2.2 ----</i>	<i>1.9 ----</i>	<i>7.7 ----</i>	<i>5.9 ----</i>	<i>03/04</i>
AMI	(SC Growth)	-24.3 (57)	-24.3 (57)	-25.9 (93)	---- ----	---- ----	---- ----	-9.2 (92)	09/17
<i>Russell 2000G</i>		<i>-25.8 ----</i>	<i>-25.8 ----</i>	<i>-18.6 ----</i>	<i>0.1 ----</i>	<i>1.7 ----</i>	<i>8.9 ----</i>	<i>-4.0 ----</i>	<i>09/17</i>
Copeland	(SC Growth)	-26.5 (74)	-26.5 (74)	-16.1 (55)	---- ----	---- ----	---- ----	-1.7 (66)	09/17
<i>Russell 2000G</i>		<i>-25.8 ----</i>	<i>-25.8 ----</i>	<i>-18.6 ----</i>	<i>0.1 ----</i>	<i>1.7 ----</i>	<i>8.9 ----</i>	<i>-4.0 ----</i>	<i>09/17</i>
Emerald	(SC Growth)	-24.7 (60)	-24.7 (60)	-18.2 (64)	2.9 (60)	3.8 (58)	11.9 (22)	9.8 ----	09/98
<i>Russell 2000G</i>		<i>-25.8 ----</i>	<i>-25.8 ----</i>	<i>-18.6 ----</i>	<i>0.1 ----</i>	<i>1.7 ----</i>	<i>8.9 ----</i>	<i>6.5 ----</i>	<i>09/98</i>
LSV Small Cap	(SC Value)	-40.7 (90)	-40.7 (90)	-34.4 (89)	-12.3 (90)	---- ----	---- ----	-11.5 (91)	12/16
<i>Russell 2000V</i>		<i>-35.7 ----</i>	<i>-35.7 ----</i>	<i>-29.7 ----</i>	<i>-9.5 ----</i>	<i>-2.4 ----</i>	<i>4.8 ----</i>	<i>-8.9 ----</i>	<i>12/16</i>
Smith, Graham & Co	(SC Value)	-37.1 (70)	-37.1 (70)	-25.2 (33)	-10.3 (73)	---- ----	---- ----	-9.0 (69)	12/16
<i>Russell 2000V</i>		<i>-35.7 ----</i>	<i>-35.7 ----</i>	<i>-29.7 ----</i>	<i>-9.5 ----</i>	<i>-2.4 ----</i>	<i>4.8 ----</i>	<i>-8.9 ----</i>	<i>12/16</i>
HGK	(Intl Eq)	-24.2 (53)	-24.2 (53)	-12.7 (33)	0.7 (29)	2.2 (24)	---- ----	6.5 (9)	03/12
<i>S&amp;P BMI Ex US</i>		<i>-23.7 ----</i>	<i>-23.7 ----</i>	<i>-15.1 ----</i>	<i>-1.8 ----</i>	<i>0.0 ----</i>	<i>3.3 ----</i>	<i>3.2 ----</i>	<i>03/12</i>
Hardman Johnston	(Intl Eq)	-21.3 (28)	-21.3 (28)	-8.5 (17)	4.4 (9)	4.2 (9)	---- ----	6.7 (9)	03/12
<i>S&amp;P BMI Ex US</i>		<i>-23.7 ----</i>	<i>-23.7 ----</i>	<i>-15.1 ----</i>	<i>-1.8 ----</i>	<i>0.0 ----</i>	<i>3.3 ----</i>	<i>3.2 ----</i>	<i>03/12</i>
PRISA II SA		1.3 ----	1.3 ----	6.8 ----	8.4 ----	10.1 ----	14.2 ----	4.9 ----	06/07
<i>NCREIF ODCE</i>		<i>1.0 ----</i>	<i>1.0 ----</i>	<i>4.9 ----</i>	<i>6.8 ----</i>	<i>8.5 ----</i>	<i>11.4 ----</i>	<i>5.6 ----</i>	<i>06/07</i>
PRISA SA		1.7 ----	1.7 ----	6.2 ----	7.6 ----	9.0 ----	12.3 ----	7.9 ----	12/90
<i>NCREIF ODCE</i>		<i>1.0 ----</i>	<i>1.0 ----</i>	<i>4.9 ----</i>	<i>6.8 ----</i>	<i>8.5 ----</i>	<i>11.4 ----</i>	<i>7.5 ----</i>	<i>12/90</i>
TIAA CREF		1.4 ----	1.4 ----	8.3 ----	8.4 ----	9.0 ----	8.8 ----	4.0 ----	06/08
<i>NCREIF ODCE</i>		<i>1.0 ----</i>	<i>1.0 ----</i>	<i>4.9 ----</i>	<i>6.8 ----</i>	<i>8.5 ----</i>	<i>11.4 ----</i>	<i>5.4 ----</i>	<i>06/08</i>
TIAA 1721 N. Front St.		0.7 ----	0.7 ----	5.2 ----	3.4 ----	---- ----	---- ----	0.7 ----	06/16
<i>NCREIF NPI</i>		<i>0.7 ----</i>	<i>0.7 ----</i>	<i>5.3 ----</i>	<i>6.4 ----</i>	<i>7.6 ----</i>	<i>10.2 ----</i>	<i>6.5 ----</i>	<i>06/16</i>
Forest		0.4 ----	0.4 ----	-4.9 ----	2.4 ----	4.0 ----	4.4 ----	4.8 ----	03/99
<i>NCREIF Timber</i>		<i>0.1 ----</i>	<i>0.1 ----</i>	<i>1.3 ----</i>	<i>2.5 ----</i>	<i>2.8 ----</i>	<i>4.5 ----</i>	<i>6.0 ----</i>	<i>03/99</i>

## MANAGER PERFORMANCE SUMMARY - NET OF FEES

Portfolio	QTR	CYTD	1 Year	3 Years	5 Years	10 Years	Inception	
Composite	-15.5	-15.5	-7.2	2.9	3.7	6.5	----	12/85
<i>Shadow Index</i>	<i>-14.8</i>	<i>-14.8</i>	<i>-6.7</i>	<i>2.4</i>	<i>3.6</i>	<i>6.7</i>	<i>8.6</i>	<i>12/85</i>
SSgA	-13.3	-13.3	-6.5	1.0	1.6	3.3	5.8	03/97
<i>Shadow Index</i>	<i>-13.3</i>	<i>-13.3</i>	<i>-6.3</i>	<i>1.2</i>	<i>1.7</i>	<i>3.5</i>	<i>6.5</i>	<i>03/97</i>
Federated	-15.4	-15.4	-1.8	10.2	----	----	7.7	06/15
<i>Russell 1000G</i>	<i>-14.1</i>	<i>-14.1</i>	<i>0.9</i>	<i>11.3</i>	<i>10.4</i>	<i>13.0</i>	<i>10.9</i>	<i>06/15</i>
Polen	-13.1	-13.1	2.9	15.1	13.4	----	15.0	09/10
<i>Russell 1000G</i>	<i>-14.1</i>	<i>-14.1</i>	<i>0.9</i>	<i>11.3</i>	<i>10.4</i>	<i>13.0</i>	<i>13.7</i>	<i>09/10</i>
Eagle	-23.9	-23.9	-10.5	3.5	----	----	7.9	03/16
<i>Russell 1000V</i>	<i>-26.7</i>	<i>-26.7</i>	<i>-17.2</i>	<i>-2.2</i>	<i>1.9</i>	<i>7.7</i>	<i>2.8</i>	<i>03/16</i>
<i>Russell 1000</i>	<i>-20.2</i>	<i>-20.2</i>	<i>-8.0</i>	<i>4.6</i>	<i>6.2</i>	<i>10.4</i>	<i>7.7</i>	<i>03/16</i>
LSV Large Cap	-30.6	-30.6	-21.7	-4.2	-0.2	7.2	5.9	03/04
<i>Russell 1000V</i>	<i>-26.7</i>	<i>-26.7</i>	<i>-17.2</i>	<i>-2.2</i>	<i>1.9</i>	<i>7.7</i>	<i>5.9</i>	<i>03/04</i>
AMI	-24.5	-24.5	-26.5	----	----	----	-9.9	09/17
<i>Russell 2000G</i>	<i>-25.8</i>	<i>-25.8</i>	<i>-18.6</i>	<i>0.1</i>	<i>1.7</i>	<i>8.9</i>	<i>-4.0</i>	<i>09/17</i>
Copeland	-26.7	-26.7	-16.8	----	----	----	-2.6	09/17
<i>Russell 2000G</i>	<i>-25.8</i>	<i>-25.8</i>	<i>-18.6</i>	<i>0.1</i>	<i>1.7</i>	<i>8.9</i>	<i>-4.0</i>	<i>09/17</i>
Emerald	-24.8	-24.8	-18.6	2.4	3.3	11.4	9.3	09/98
<i>Russell 2000G</i>	<i>-25.8</i>	<i>-25.8</i>	<i>-18.6</i>	<i>0.1</i>	<i>1.7</i>	<i>8.9</i>	<i>6.5</i>	<i>09/98</i>
LSV Small Cap	-40.8	-40.8	-34.9	-12.8	----	----	-12.0	12/16
<i>Russell 2000V</i>	<i>-35.7</i>	<i>-35.7</i>	<i>-29.7</i>	<i>-9.5</i>	<i>-2.4</i>	<i>4.8</i>	<i>-8.9</i>	<i>12/16</i>
Smith, Graham & Co	-37.3	-37.3	-25.8	-10.9	----	----	-9.6	12/16
<i>Russell 2000V</i>	<i>-35.7</i>	<i>-35.7</i>	<i>-29.7</i>	<i>-9.5</i>	<i>-2.4</i>	<i>4.8</i>	<i>-8.9</i>	<i>12/16</i>
HGK	-24.3	-24.3	-13.3	0.0	1.5	----	5.8	03/12
<i>S&amp;P BMI Ex US</i>	<i>-23.7</i>	<i>-23.7</i>	<i>-15.1</i>	<i>-1.8</i>	<i>0.0</i>	<i>3.3</i>	<i>3.2</i>	<i>03/12</i>
Hardman Johnston	-21.4	-21.4	-9.1	3.8	3.6	----	6.0	03/12
<i>S&amp;P BMI Ex US</i>	<i>-23.7</i>	<i>-23.7</i>	<i>-15.1</i>	<i>-1.8</i>	<i>0.0</i>	<i>3.3</i>	<i>3.2</i>	<i>03/12</i>
PRISA II SA	1.0	1.0	5.7	7.2	9.0	13.0	3.8	06/07
<i>NCREIF ODCE</i>	<i>1.0</i>	<i>1.0</i>	<i>4.9</i>	<i>6.8</i>	<i>8.5</i>	<i>11.4</i>	<i>5.6</i>	<i>06/07</i>
PRISA SA	1.4	1.4	5.2	6.5	8.0	11.3	----	12/90
<i>NCREIF ODCE</i>	<i>1.0</i>	<i>1.0</i>	<i>4.9</i>	<i>6.8</i>	<i>8.5</i>	<i>11.4</i>	<i>7.5</i>	<i>12/90</i>
TIAA CREF	1.1	1.1	7.3	7.5	8.0	7.8	3.1	06/08
<i>NCREIF ODCE</i>	<i>1.0</i>	<i>1.0</i>	<i>4.9</i>	<i>6.8</i>	<i>8.5</i>	<i>11.4</i>	<i>5.4</i>	<i>06/08</i>
TIAA 1721 N. Front St.	0.1	0.1	3.1	1.2	----	----	-1.7	06/16
<i>NCREIF NPI</i>	<i>0.7</i>	<i>0.7</i>	<i>5.3</i>	<i>6.4</i>	<i>7.6</i>	<i>10.2</i>	<i>6.5</i>	<i>06/16</i>
Forest	0.2	0.2	-5.6	1.6	3.2	3.6	4.3	03/99
<i>NCREIF Timber</i>	<i>0.1</i>	<i>0.1</i>	<i>1.3</i>	<i>2.5</i>	<i>2.8</i>	<i>4.5</i>	<i>6.0</i>	<i>03/99</i>

## MANAGER VALUE ADDED

Portfolio	Benchmark	1 Quarter	1 Year	3 Years	5 Years
SSgA	Shadow Index	0.0	-0.1	-0.2	-0.1
Federated	Russell 1000G	-1.1	-2.0	-0.2	N/A
Polen	Russell 1000G	1.1	2.4	4.2	3.5
Eagle	Russell 1000V	3.0	7.4	6.5	N/A
LSV Large Cap	Russell 1000V	-3.8	-4.2	-1.7	-1.7
AMI	Russell 2000G	1.5	-7.3	N/A	N/A
Copeland	Russell 2000G	-0.7	2.5	N/A	N/A
Emerald	Russell 2000G	1.1	0.4	2.8	2.1
LSV Small Cap	Russell 2000V	-5.0	-4.7	-2.8	N/A
Smith, Graham & Co	Russell 2000V	-1.4	4.5	-0.8	N/A
HGK	S&P BMI Ex US	-0.5	2.4	2.5	2.2
Hardman Johnston	S&P BMI Ex US	2.4	6.6	6.2	4.2
PRISA II SA	NCREIF ODCE	0.3	1.9	1.6	1.6
PRISA SA	NCREIF ODCE	0.7	1.3	0.8	0.5
TIAA CREF	NCREIF ODCE	0.4	3.4	1.6	0.5
TIAA 1721 N. Front St.	NCREIF NPI	0.0	-0.1	-3.0	N/A
Forest	NCREIF Timber	0.3	-6.2	-0.1	1.2
<b>Total Portfolio</b>	<b>Shadow Index</b>	<b>-0.6</b>	<b>0.0  </b>	<b>1.0</b>	<b>0.6</b>

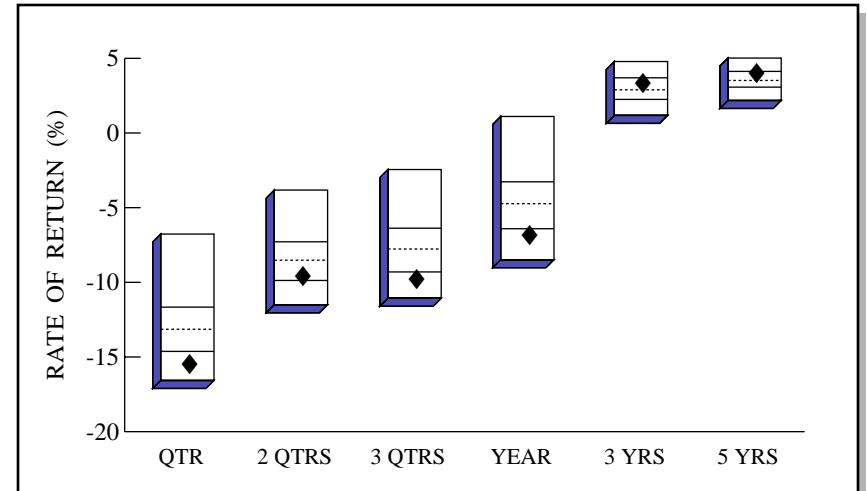
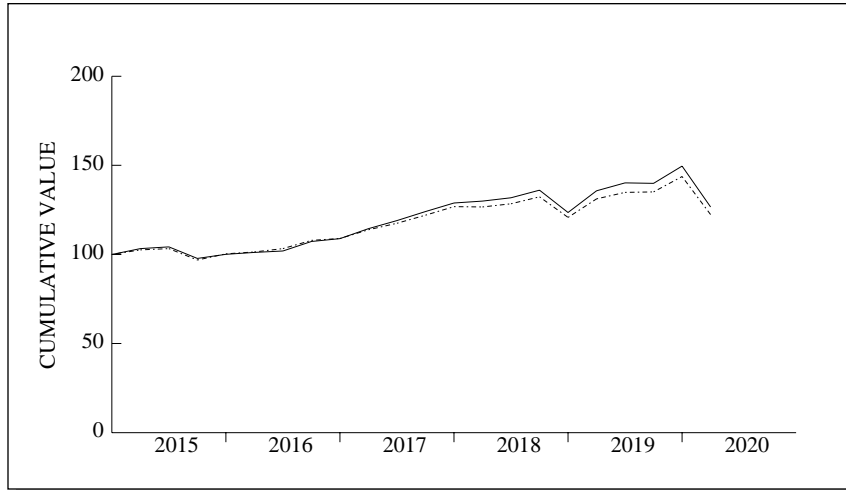
## INVESTMENT RETURN SUMMARY - ONE QUARTER

Name	Quarter Total Return	Market Value December 31st, 2019	Net Cashflow	Net Investment Return	Market Value March 31st, 2020
SSgA S&P 500 (LCC)	-19.6	60,655,056	0	-11,877,786	48,777,270
Federated (LCG)	-15.2	109,912,186	-200,874	-16,721,866	92,989,446
Polen (LCG)	-13.0	250,171,677	-242,426	-32,375,887	217,553,364
Eagle (LCV)	-23.7	163,486,666	-303,202	-38,773,777	124,409,687
LSV Large Cap (LCV)	-30.5	174,824,518	-158,911	-53,282,672	121,382,935
SSgA Russell 2000 (SMDC)	-30.6	92,132,296	0	-28,191,135	63,941,161
AMI (SCG)	-24.3	37,513,048	-71,802	-9,098,166	28,343,080
Copeland (SCG)	-26.5	47,878,090	-58,946	-12,682,085	35,137,059
Emerald (SCG)	-24.7	70,152,540	-88,130	-17,313,517	52,750,893
LSV Small Cap (SCV)	-40.7	78,265,826	-111,240	-31,811,799	46,342,787
Smith, Graham & Co (SCV)	-37.1	79,486,947	-133,159	-29,455,535	49,898,253
GlobeFlex (INEQ)	---	4,291	0	-62	4,229
HGK (INEQ)	-24.2	135,684,705	-221,570	-32,734,701	102,728,434
Hardman Johnston (INEQ)	-21.3	127,212,909	-194,630	-27,067,969	99,950,310
Mercator (INEQ)	---	18,141	0	-409	17,732
WHV (INEQ)	---	3,721	-715	-73	2,933
Jarislowsky Fraser (INEG)	---	522,816	0	-3,241	519,575
SSgA World Ex-US (INEQ)	-23.1	174,294,490	0	-40,257,928	134,036,562
SSgA Emerging Markets (EMKT)	-23.9	276,636,099	0	-66,109,112	210,526,987
PRISA II SA (REAL)	1.3	105,315,951	-290,750	1,393,445	106,418,646
PRISA SA (REAL)	1.7	51,683,670	-125,453	858,081	52,416,298
TIAA CREF (REAL)	1.4	208,328,085	-1,446,377	2,313,258	209,194,966
TIAA 1721 N. Front St. (REAL)	0.7	2,312,412	0	2,757	2,315,169
Forest (TIMB)	0.4	133,807,118	0	495,977	134,303,095
SSgA Bond Market (CFI)	3.1	403,053,072	0	12,350,912	415,403,984
BNY Cash (CASH)	---	2,459,919	1,143,052	16,130	3,619,101
Treasury STIP (CASH)	---	14,998,087	-9,588,772	83,281	5,492,596
<b>Total Portfolio</b>	<b>-15.4</b>	<b>2,800,814,336</b>	<b>-12,093,905</b>	<b>-430,243,879</b>	<b>2,358,476,552</b>

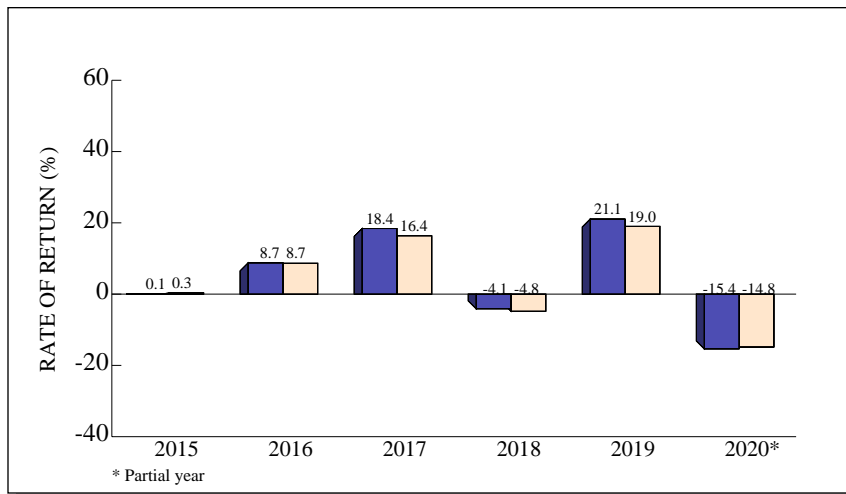
## MANAGER RISK STATISTICS SUMMARY - FIVE-YEAR HISTORY

Name	Alpha	Batting Average	Sharpe Ratio	Information Ratio	Up Capture	Down Capture
SSgA <i>Shadow Index</i>	-0.09	0.650	0.10	-0.39	98.8	100.0
SSgA S&P 500 <i>S&amp;P 500</i>	0.00	0.900	0.46	-0.31	99.8	99.8
Polen <i>Russell 1000G</i>	4.45	0.700	0.98	0.77	105.1	73.4
LSV Large Cap <i>Russell 1000V</i>	-1.64	0.500	0.05	-0.32	98.4	109.9
SSgA Russell 2000 <i>Russell 2000</i>	0.08	0.950	0.05	1.39	100.3	99.8
Emerald <i>Russell 2000G</i>	2.22	0.650	0.24	0.46	112.7	99.5
HGK <i>S&amp;P BMI Ex US</i>	2.44	0.600	0.16	0.54	116.2	95.7
Hardman Johnston <i>S&amp;P BMI Ex US</i>	4.53	0.700	0.27	0.90	136.7	96.4
SSgA World Ex-US <i>MSCI World Ex US</i>	0.02	0.550	-0.01	0.03	99.3	99.0
SSgA Emerging Markets <i>EM Index</i>	-0.41	0.400	0.01	-0.80	99.2	101.8
PRISA II SA <i>NCREIF ODCE</i>	0.59	0.800	4.72	1.87	119.6	----
PRISA SA <i>NCREIF ODCE</i>	1.08	0.550	4.88	0.65	106.0	----
TIAA CREF <i>NCREIF ODCE</i>	5.80	0.650	4.16	0.27	106.4	----
Forest <i>NCREIF Timber</i>	4.64	0.450	0.66	0.28	113.3	----
SSgA Bond Market <i>Aggregate Index</i>	0.01	1.000	0.69	0.06	99.9	99.6

**TOTAL RETURN COMPARISONS**



Public Fund Universe



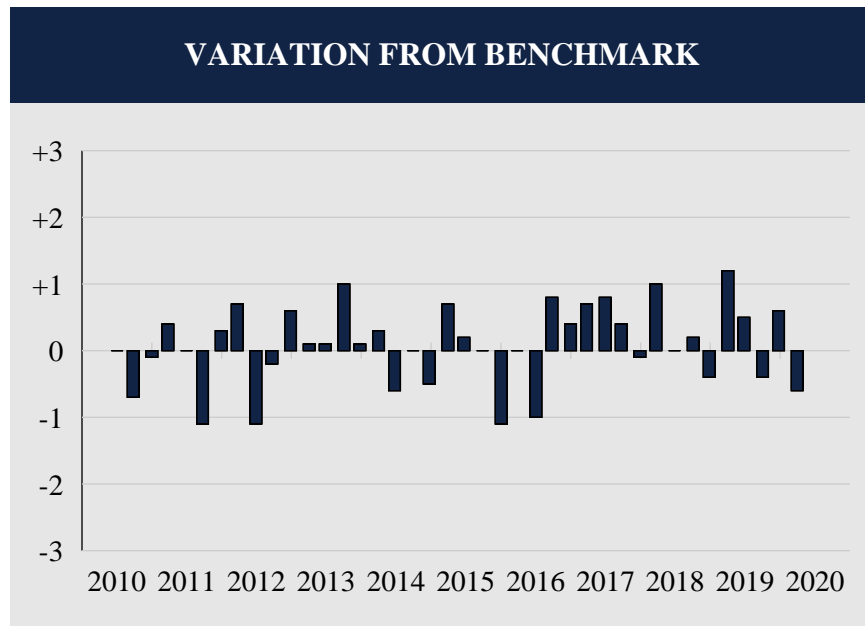
\* Partial year

	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-15.4	-9.5	-9.7	-6.7	3.4	4.2
(RANK)	(83)	(69)	(81)	(81)	(32)	(23)
5TH %ILE	-6.8	-3.8	-2.5	1.1	4.8	5.0
25TH %ILE	-11.7	-7.3	-6.4	-3.3	3.7	4.1
MEDIAN	-13.1	-8.5	-7.8	-4.7	2.9	3.5
75TH %ILE	-14.6	-9.9	-9.3	-6.4	2.3	3.1
95TH %ILE	-16.6	-11.5	-11.1	-8.5	1.2	2.2
<i>Shadow Idx</i>	<i>-14.8</i>	<i>-9.4</i>	<i>-9.2</i>	<i>-6.7</i>	<i>2.4</i>	<i>3.6</i>

Public Fund Universe

**TOTAL PORTFOLIO QUARTERLY PERFORMANCE SUMMARY - 10 YEARS**

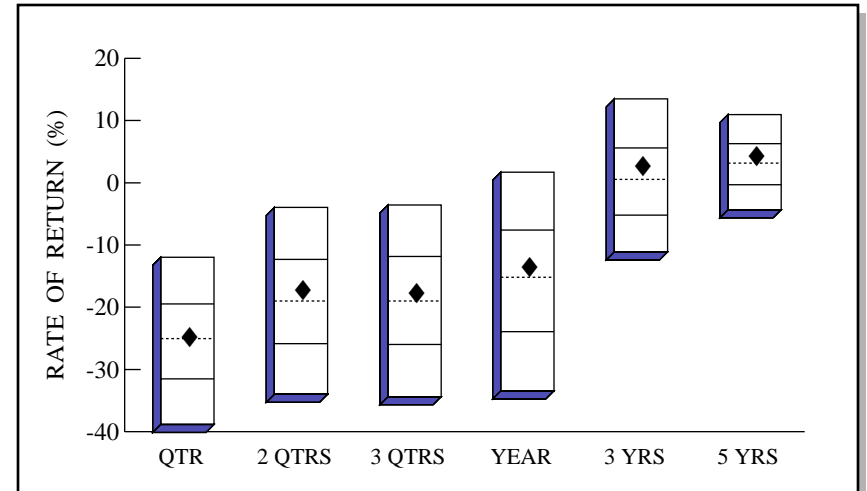
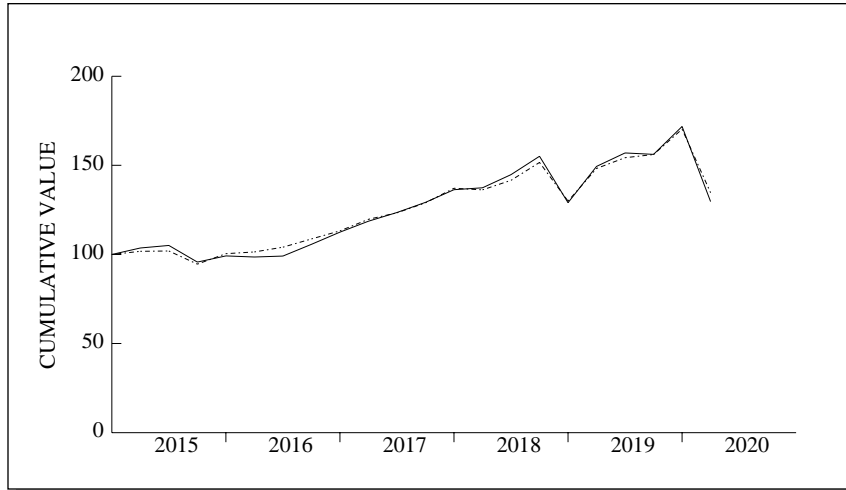
**COMPARATIVE BENCHMARK: SHADOW INDEX**



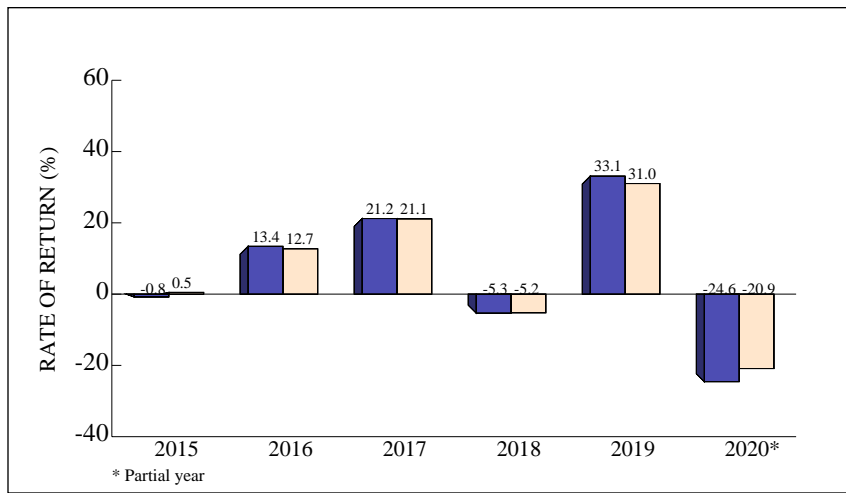
RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
6/10	-6.0	-6.0	0.0
9/10	9.1	9.8	-0.7
12/10	7.3	7.4	-0.1
3/11	4.3	3.9	0.4
6/11	0.6	0.6	0.0
9/11	-12.1	-11.0	-1.1
12/11	6.6	6.3	0.3
3/12	9.2	8.5	0.7
6/12	-3.3	-2.2	-1.1
9/12	4.5	4.7	-0.2
12/12	2.5	1.9	0.6
3/13	5.5	5.4	0.1
6/13	0.4	0.3	0.1
9/13	6.6	5.6	1.0
12/13	5.8	5.7	0.1
3/14	1.8	1.5	0.3
6/14	3.3	3.9	-0.6
9/14	-1.5	-1.5	0.0
12/14	2.0	2.5	-0.5
3/15	3.3	2.6	0.7
6/15	0.9	0.7	0.2
9/15	-6.2	-6.2	0.0
12/15	2.4	3.5	-1.1
3/16	1.1	1.1	0.0
6/16	0.8	1.8	-1.0
9/16	5.2	4.4	0.8
12/16	1.5	1.1	0.4
3/17	5.1	4.4	0.7
6/17	4.0	3.2	0.8
9/17	4.2	3.8	0.4
12/17	3.9	4.0	-0.1
3/18	0.8	-0.2	1.0
6/18	1.4	1.4	0.0
9/18	3.3	3.1	0.2
12/18	-9.2	-8.8	-0.4
3/19	9.8	8.6	1.2
6/19	3.3	2.8	0.5
9/19	-0.2	0.2	-0.4
12/19	7.0	6.4	0.6
3/20	-15.4	-14.8	-0.6

<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>27</b>
<b>Quarters Below the Benchmark</b>	<b>13</b>
<b>Batting Average</b>	<b>.675</b>

**DOMESTIC EQUITY RETURN COMPARISONS**



Domestic Equity Universe



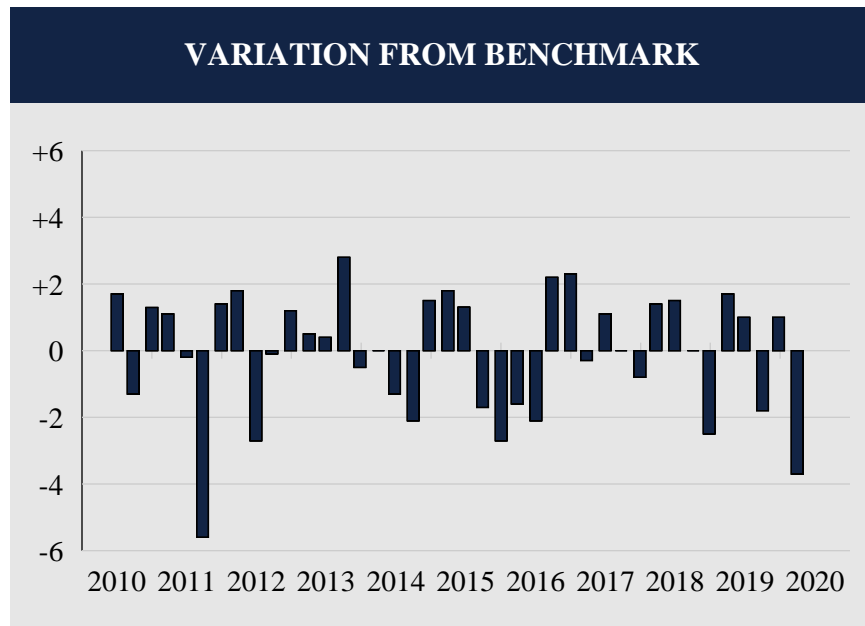
	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED----- 3 YRS	5 YRS
RETURN	-24.6	-17.0	-17.4	-13.2	3.0	4.6
(RANK)	(49)	(43)	(46)	(44)	(41)	(40)
5TH %ILE	-12.0	-4.0	-3.6	1.7	13.5	10.9
25TH %ILE	-19.5	-12.3	-11.8	-7.6	5.6	6.3
MEDIAN	-25.1	-19.0	-19.0	-15.2	0.6	3.2
75TH %ILE	-31.5	-25.9	-26.0	-23.9	-5.2	-0.3
95TH %ILE	-38.8	-34.0	-34.4	-33.4	-11.1	-4.4
<b>Russ 3000</b>	<b>-20.9</b>	<b>-13.7</b>	<b>-12.7</b>	<b>-9.1</b>	<b>4.0</b>	<b>5.8</b>

Domestic Equity Universe



**DOMESTIC EQUITY QUARTERLY PERFORMANCE SUMMARY - 10 YEARS**

**COMPARATIVE BENCHMARK: RUSSELL 3000**



RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
6/10	-9.6	-11.3	1.7
9/10	10.2	11.5	-1.3
12/10	12.9	11.6	1.3
3/11	7.5	6.4	1.1
6/11	-0.2	0.0	-0.2
9/11	-20.9	-15.3	-5.6
12/11	13.5	12.1	1.4
3/12	14.7	12.9	1.8
6/12	-5.8	-3.1	-2.7
9/12	6.1	6.2	-0.1
12/12	1.5	0.3	1.2
3/13	11.6	11.1	0.5
6/13	3.1	2.7	0.4
9/13	9.2	6.4	2.8
12/13	9.6	10.1	-0.5
3/14	2.0	2.0	0.0
6/14	3.6	4.9	-1.3
9/14	-2.1	0.0	-2.1
12/14	6.7	5.2	1.5
3/15	3.6	1.8	1.8
6/15	1.4	0.1	1.3
9/15	-8.9	-7.2	-1.7
12/15	3.6	6.3	-2.7
3/16	-0.6	1.0	-1.6
6/16	0.5	2.6	-2.1
9/16	6.6	4.4	2.2
12/16	6.5	4.2	2.3
3/17	5.4	5.7	-0.3
6/17	4.1	3.0	1.1
9/17	4.6	4.6	0.0
12/17	5.5	6.3	-0.8
3/18	0.8	-0.6	1.4
6/18	5.4	3.9	1.5
9/18	7.1	7.1	0.0
12/18	-16.8	-14.3	-2.5
3/19	15.7	14.0	1.7
6/19	5.1	4.1	1.0
9/19	-0.6	1.2	-1.8
12/19	10.1	9.1	1.0
3/20	-24.6	-20.9	-3.7

<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>23</b>
<b>Quarters Below the Benchmark</b>	<b>17</b>
<b>Batting Average</b>	<b>.575</b>

## LARGE CAP EQUITY MANAGERS

PMRB's aggregate large cap portfolio (excluding cash) returned -20.5%, which was 90 basis points below the S&P 500 return of -19.6%. Two of the four active large cap managers outperformed their benchmarks: one on the growth side (Polen) and one on the value side (Eagle).

**SSgA S&P 500  
(Core)**

SSgA's S&P 500 fund continued to closely track the S&P 500 index over the short and long term. At quarter-end, this fund was valued at \$48,777,270.

**Federated  
(Growth)**

While the extra emphasis on Health Care stocks was advantageous, the relatively lower allocation to Information Technology had the opposite effect, since both sectors performed better than most others. Selection also produced mixed effects—three sectors, including Health Care outperformed their bogies, but the remaining invested sectors fell short.

**Polen  
(Growth)**

The concentration in Information Technology and Health Care helped the portfolio to slightly curb losses last quarter, as those sectors fared better than most. The portfolio's avoidance of the Industrials sector was also beneficial, since that sector had significant representation in the index and saw steep declines during the quarter. The portfolio also found positive returns in the Financials sector.

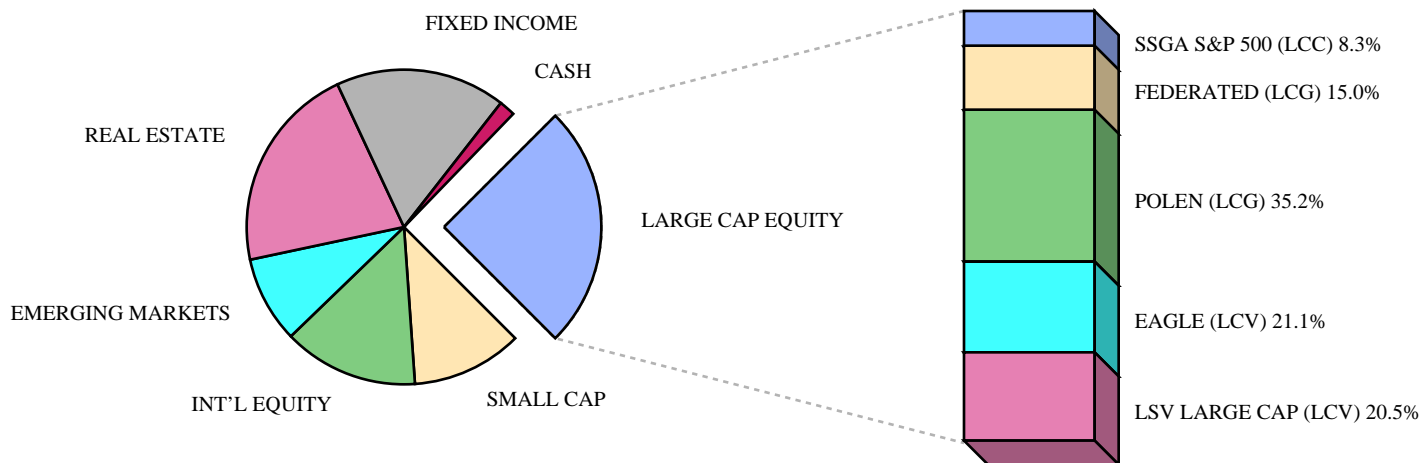
**Eagle  
(Value)**

Better selection in the Communication Services, Consumer Discretionary, and Information Technology sectors, which represented over 60% of the portfolio, combined helped the portfolio to moderate losses and come out ahead of the benchmark.

**LSV Large Cap  
(Value)**

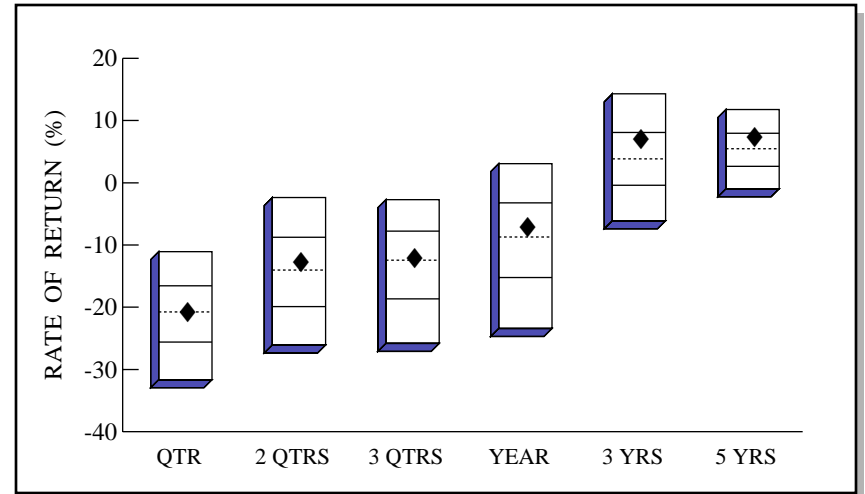
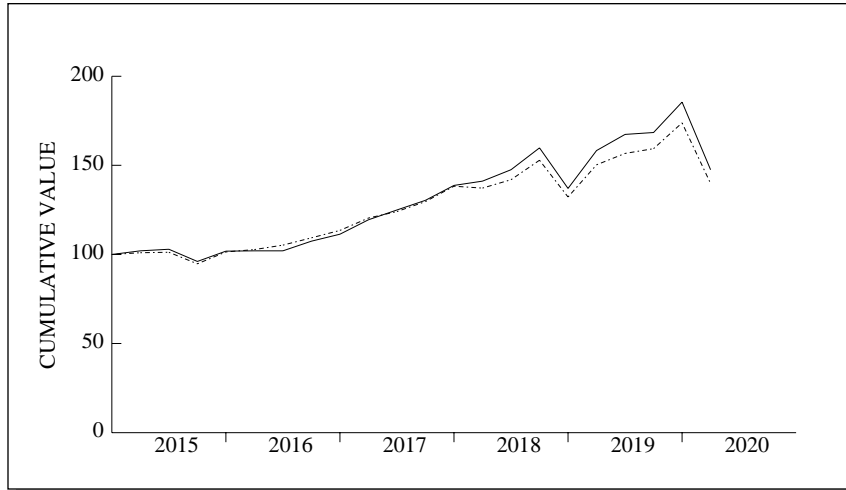
Despite positive allocation effects resulting from greater weight in the Health Care and Information Technology sectors, the portfolio retreated further than the Russell 1000 Value index during the first quarter. Stock selection in almost every sector produced sub-par returns. The portfolio's general bias toward lower market capitalization put it at a disadvantage, as lower cap stocks declined at a faster rate.

**LARGE CAP EQUITY MANAGER SUMMARY**

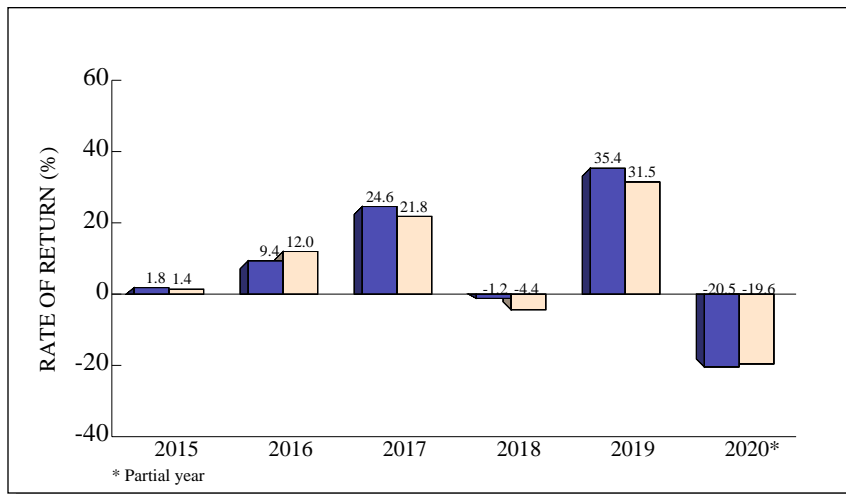


COMPONENT RETURNS AND RANKINGS							
MANAGER	(UNIVERSE)	QTR	YTD	1 YEAR	3 YEARS	5 YEARS	MARKET VALUE
SSGA S&P 500	(Large Cap Core)	-19.6 (40)	-19.6 (40)	-7.0 (32)	5.1 (34)	6.7 (23)	\$48,777,270
<i>S&amp;P 500</i>		<i>-19.6 ---</i>	<i>-19.6 ---</i>	<i>-7.0 ---</i>	<i>5.1 ---</i>	<i>6.7 ---</i>	<i>---</i>
FEDERATED	(Large Cap Growth)	-15.5 (64)	-15.5 (64)	-1.0 (52)	11.6 (41)	----	\$88,261,495
POLEN	(Large Cap Growth)	-13.2 (40)	-13.2 (40)	3.4 (11)	16.2 (8)	14.4 (3)	\$207,138,228
<i>Russell 1000 Growth</i>		<i>-14.1 ---</i>	<i>-14.1 ---</i>	<i>0.9 ---</i>	<i>11.3 ---</i>	<i>10.4 ---</i>	<i>---</i>
EAGLE	(Large Cap Value)	-24.0 (31)	-24.0 (31)	-9.7 (16)	4.4 (7)	----	\$123,966,198
LSV LARGE CAP	(Large Cap Value)	-30.7 (83)	-30.7 (83)	-21.4 (79)	-3.9 (74)	0.2 (79)	\$120,353,459
<i>Russell 1000 Value</i>		<i>-26.7 ---</i>	<i>-26.7 ---</i>	<i>-17.2 ---</i>	<i>-2.2 ---</i>	<i>1.9 ---</i>	<i>---</i>
<b>TOTAL</b>	<b>(Large Cap)</b>	<b>-20.5 (48)</b>	<b>-20.5 (48)</b>	<b>-6.8 (37)</b>	<b>7.3 (28)</b>	<b>7.7 (27)</b>	<b>\$588,496,650</b>
<i>S&amp;P 500</i>		<i>-19.6 ---</i>	<i>-19.6 ---</i>	<i>-7.0 ---</i>	<i>5.1 ---</i>	<i>6.7 ---</i>	<i>---</i>

**LARGE CAP EQUITY RETURN COMPARISONS**



Large Cap Universe

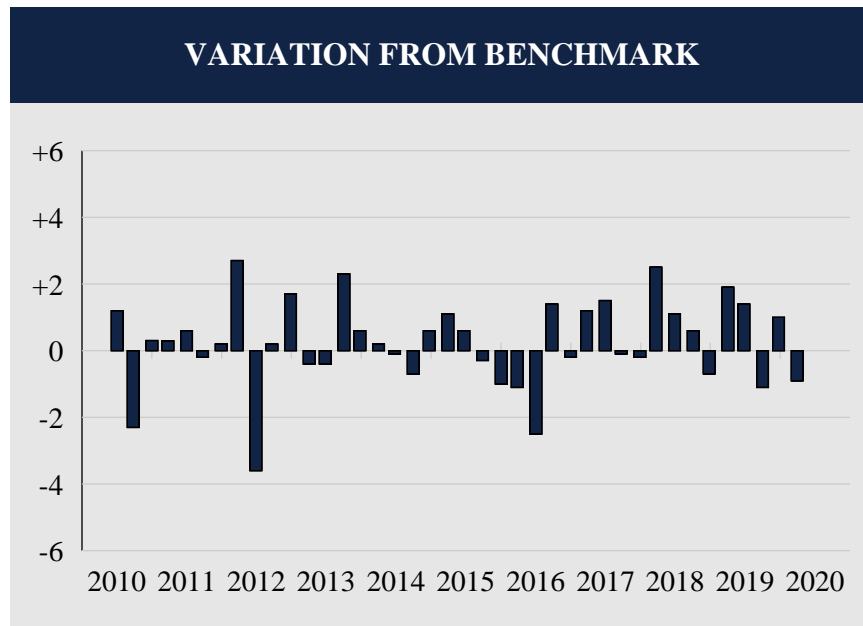


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-20.5	-12.4	-11.8	-6.8	7.3	7.7
(RANK)	(48)	(41)	(46)	(37)	(28)	(27)
5TH %ILE	-11.1	-2.4	-2.7	3.1	14.3	11.8
25TH %ILE	-16.5	-8.8	-7.8	-3.2	8.1	7.9
MEDIAN	-20.8	-14.0	-12.5	-8.7	3.8	5.5
75TH %ILE	-25.6	-19.9	-18.6	-15.3	-0.4	2.6
95TH %ILE	-31.7	-26.1	-25.8	-23.4	-6.1	-1.0
<b>S&amp;P 500</b>	<b>-19.6</b>	<b>-12.3</b>	<b>-10.8</b>	<b>-7.0</b>	<b>5.1</b>	<b>6.7</b>

Large Cap Universe

**LARGE CAP EQUITY QUARTERLY PERFORMANCE SUMMARY - 10 YEARS**

**COMPARATIVE BENCHMARK: S&P 500**



<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>23</b>
<b>Quarters Below the Benchmark</b>	<b>17</b>
<b>Batting Average</b>	<b>.575</b>

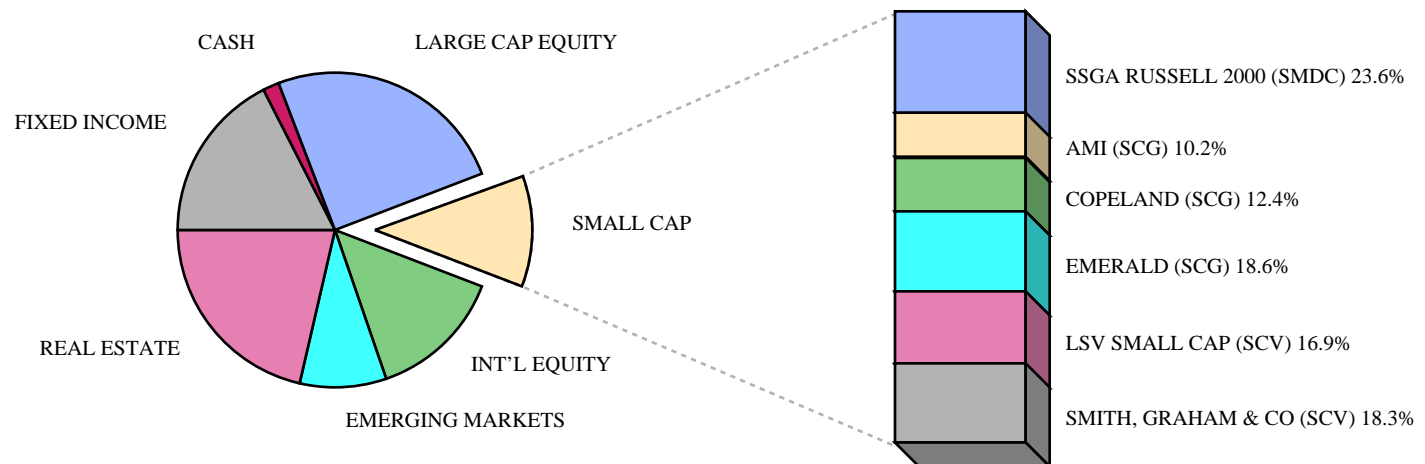
<b>RATES OF RETURN</b>			
<b>Date</b>	<b>Portfolio</b>	<b>Benchmark</b>	<b>Difference</b>
6/10	-10.2	-11.4	1.2
9/10	9.0	11.3	-2.3
12/10	11.1	10.8	0.3
3/11	6.2	5.9	0.3
6/11	0.7	0.1	0.6
9/11	-14.1	-13.9	-0.2
12/11	12.0	11.8	0.2
3/12	15.3	12.6	2.7
6/12	-6.4	-2.8	-3.6
9/12	6.5	6.3	0.2
12/12	1.3	-0.4	1.7
3/13	10.2	10.6	-0.4
6/13	2.5	2.9	-0.4
9/13	7.5	5.2	2.3
12/13	11.1	10.5	0.6
3/14	2.0	1.8	0.2
6/14	5.1	5.2	-0.1
9/14	0.4	1.1	-0.7
12/14	5.5	4.9	0.6
3/15	2.0	0.9	1.1
6/15	0.9	0.3	0.6
9/15	-6.7	-6.4	-0.3
12/15	6.0	7.0	-1.0
3/16	0.2	1.3	-1.1
6/16	0.0	2.5	-2.5
9/16	5.3	3.9	1.4
12/16	3.6	3.8	-0.2
3/17	7.3	6.1	1.2
6/17	4.6	3.1	1.5
9/17	4.4	4.5	-0.1
12/17	6.4	6.6	-0.2
3/18	1.7	-0.8	2.5
6/18	4.5	3.4	1.1
9/18	8.3	7.7	0.6
12/18	-14.2	-13.5	-0.7
3/19	15.5	13.6	1.9
6/19	5.7	4.3	1.4
9/19	0.6	1.7	-1.1
12/19	10.1	9.1	1.0
3/20	-20.5	-19.6	-0.9

## SMALL CAP EQUITY MANAGERS

Last quarter, the Russell 2000 Growth Index returned -25.8% versus -35.7% for the Russell 2000 Value Index. The portfolio's small cap component (excluding cash) lost 32.2%, 1.6% below the Russell 2000 index return of -30.6%. Of the five active small cap managers, only AMI and Emerald came out ahead of their benchmarks.

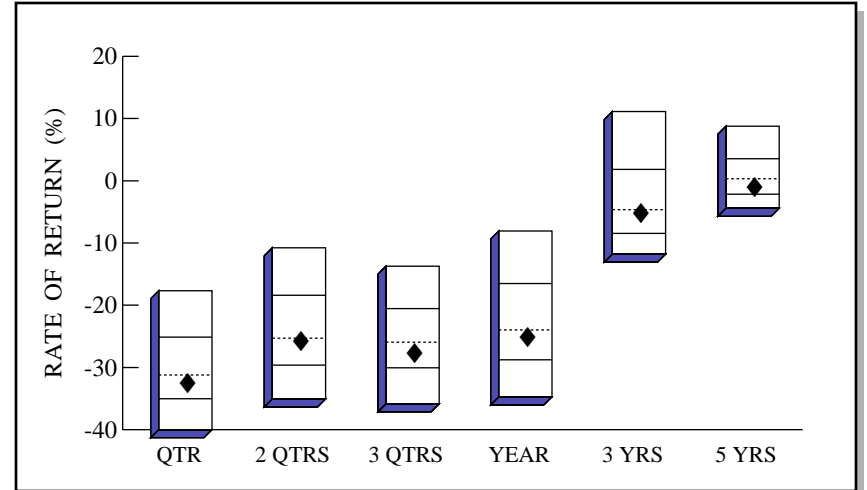
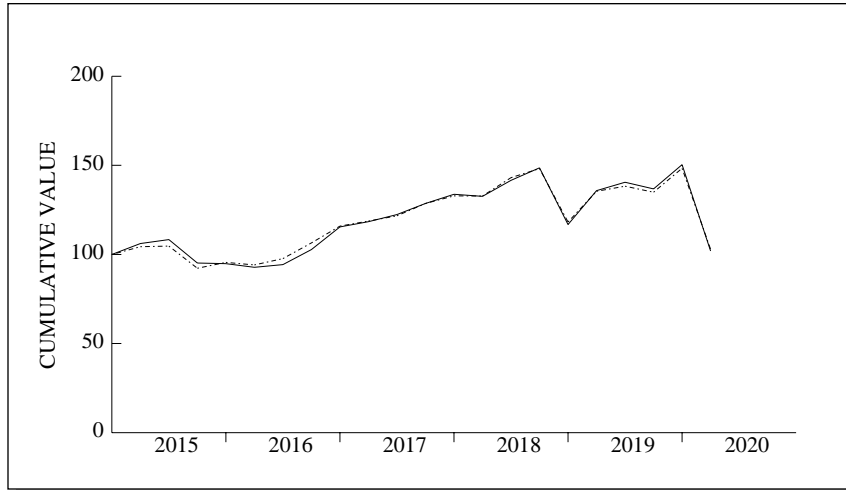
<b>SSgA (Core)</b>	The SSgA small cap component performed in line with the Russell 2000 index. At quarter end, this investment was valued at \$63,941,161.
<b>AMI (Growth)</b>	The additional weight in the Consumer Staples and Information Technology sectors helped the portfolio stay ahead of the benchmark, since these two sectors were among the better performers; however this effect was partially eclipsed by the underweight to Health Care, which was the top performing sector. The portfolio also added value through better selection in the Consumer Staples, Health Care, and Materials sectors.
<b>Copeland (Growth)</b>	Selection effects were mixed, with some sectors such as Communication Services, Consumer Discretionary, Industrials, and Real Estate beating their index counterparts. Conversely, the Consumer Staples, Financials, and Health Care sectors underperformed. The effect of a lower allocation to the Health Care sector, which made up about a third of the index was to put the portfolio at a disadvantage, since that sector was a top performer for the quarter.
<b>Emerald (Growth)</b>	Most invested sectors beat their index counterparts last quarter, and those that underperformed, which included Health Care, Information Technology, and Materials, did so by small margins. The cumulative effect of better selection gave the portfolio its lead over the index.
<b>LSV Small Cap (Value)</b>	Mixed allocation effects and decidedly negative selection effects resulted in the portfolio's underperformance against the benchmark. The increased concentration in the Health Care sector was helpful, since that sector performed better than most, but the effect was partially eclipsed by reduced exposure to Utilities, which offered an amount of safety similar to that of the Health Care sector. Unfavorable selection in all but two sectors (Communication Services and Consumer Staples—both representing minor allocations) exacerbated the rapid contraction experienced in the small cap value market.
<b>Smith, Graham &amp; Co (Value)</b>	Selection effects were mixed last quarter; half of the invested sectors beat their marks. The portfolio's edge over the index came from increased positions in the Health Care and Information Technology sectors, which had better resiliency than most other sectors over the quarter.

**SMALL CAP EQUITY MANAGER SUMMARY**

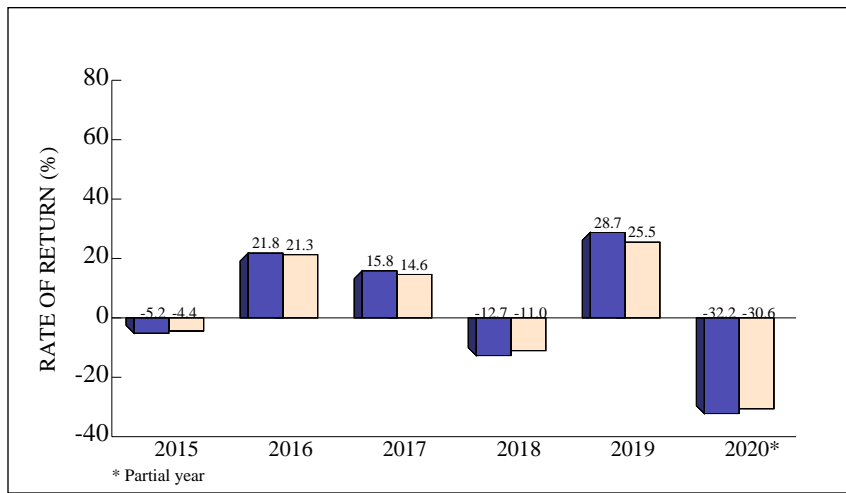


COMPONENT RETURNS AND RANKINGS							
MANAGER	(UNIVERSE)	QTR	YTD	1 YEAR	3 YEARS	5 YEARS	MARKET VALUE
SSGA RUSSELL 2000	(Small Cap)	-30.6 (49)	-30.6 (49)	-24.0 (50)	-4.6 (50)	-0.2 (56)	\$63,941,161
<i>Russell 2000</i>		<i>-30.6 ---</i>	<i>-30.6 ---</i>	<i>-24.0 ---</i>	<i>-4.7 ---</i>	<i>-0.3 ---</i>	<i>---</i>
AMI	(Small Cap Growth)	-25.4 (62)	-25.4 (62)	-27.1 (95)	---	---	\$27,722,865
COPELAND	(Small Cap Growth)	-27.2 (77)	-27.2 (77)	-16.5 (58)	---	---	\$33,603,413
EMERALD	(Small Cap Growth)	-25.3 (62)	-25.3 (62)	-18.7 (66)	2.9 (59)	3.8 (58)	\$50,581,660
<i>Russell 2000 Growth</i>		<i>-25.8 ---</i>	<i>-25.8 ---</i>	<i>-18.6 ---</i>	<i>0.1 ---</i>	<i>1.7 ---</i>	<i>---</i>
LSV SMALL CAP	(Small Cap Value)	-41.1 (93)	-41.1 (93)	-34.9 (90)	-12.5 (91)	---	\$45,757,340
SMITH, GRAHAM & CO	(Small Cap Value)	-37.3 (71)	-37.3 (71)	-25.3 (33)	-10.3 (73)	---	\$49,656,672
<i>Russell 2000 Value</i>		<i>-35.7 ---</i>	<i>-35.7 ---</i>	<i>-29.7 ---</i>	<i>-9.5 ---</i>	<i>-2.4 ---</i>	<i>---</i>
<b>TOTAL</b>	<b>(Small Cap)</b>	<b>-32.2 (57)</b>	<b>-32.2 (57)</b>	<b>-24.9 (57)</b>	<b>-4.9 (51)</b>	<b>-0.8 (61)</b>	<b>\$271,263,111</b>
<i>Russell 2000</i>		<i>-30.6 ---</i>	<i>-30.6 ---</i>	<i>-24.0 ---</i>	<i>-4.7 ---</i>	<i>-0.3 ---</i>	<i>---</i>

**SMALL CAP EQUITY RETURN COMPARISONS**



Small Cap Universe



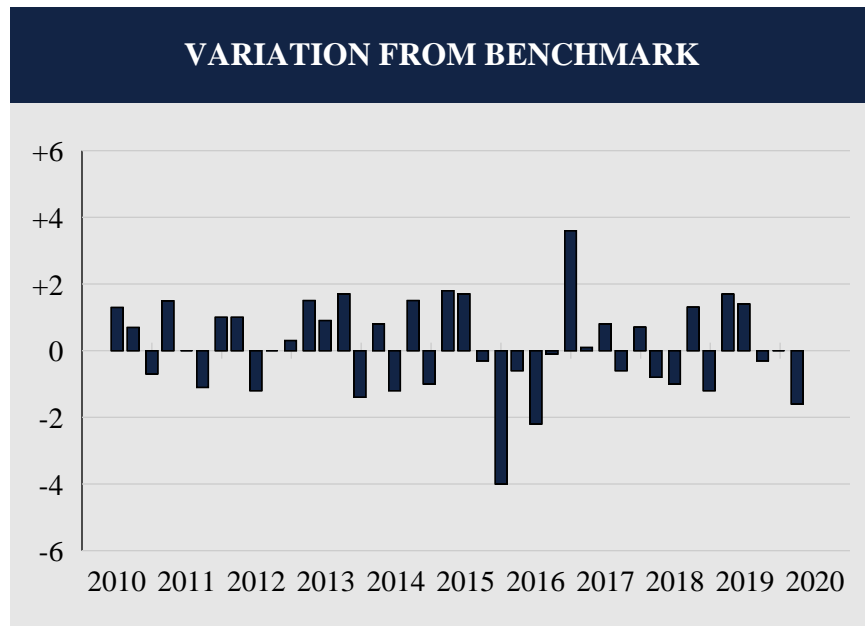
	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-32.2	-25.5	-27.4	-24.9	-4.9	-0.8
(RANK)	(57)	(51)	(58)	(57)	(51)	(61)
5TH %ILE	-17.7	-10.8	-13.7	-8.1	11.1	8.8
25TH %ILE	-25.2	-18.4	-20.5	-16.5	1.8	3.5
MEDIAN	-31.2	-25.3	-25.9	-24.0	-4.7	0.4
75TH %ILE	-35.0	-29.6	-30.1	-28.8	-8.5	-2.2
95TH %ILE	-40.0	-35.1	-35.8	-34.7	-11.8	-4.5
<b>Russ 2000</b>	<b>-30.6</b>	<b>-23.7</b>	<b>-25.6</b>	<b>-24.0</b>	<b>-4.7</b>	<b>-0.3</b>

Small Cap Universe



**SMALL CAP EQUITY QUARTERLY PERFORMANCE SUMMARY - 10 YEARS**

**COMPARATIVE BENCHMARK: RUSSELL 2000**



RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
6/10	-8.6	-9.9	1.3
9/10	12.0	11.3	0.7
12/10	15.6	16.3	-0.7
3/11	9.4	7.9	1.5
6/11	-1.6	-1.6	0.0
9/11	-23.0	-21.9	-1.1
12/11	16.5	15.5	1.0
3/12	13.4	12.4	1.0
6/12	-4.7	-3.5	-1.2
9/12	5.2	5.2	0.0
12/12	2.1	1.8	0.3
3/13	13.9	12.4	1.5
6/13	4.0	3.1	0.9
9/13	11.9	10.2	1.7
12/13	7.3	8.7	-1.4
3/14	1.9	1.1	0.8
6/14	0.8	2.0	-1.2
9/14	-5.9	-7.4	1.5
12/14	8.7	9.7	-1.0
3/15	6.1	4.3	1.8
6/15	2.1	0.4	1.7
9/15	-12.2	-11.9	-0.3
12/15	-0.4	3.6	-4.0
3/16	-2.1	-1.5	-0.6
6/16	1.6	3.8	-2.2
9/16	8.9	9.0	-0.1
12/16	12.4	8.8	3.6
3/17	2.6	2.5	0.1
6/17	3.3	2.5	0.8
9/17	5.1	5.7	-0.6
12/17	4.0	3.3	0.7
3/18	-0.9	-0.1	-0.8
6/18	6.8	7.8	-1.0
9/18	4.9	3.6	1.3
12/18	-21.4	-20.2	-1.2
3/19	16.3	14.6	1.7
6/19	3.5	2.1	1.4
9/19	-2.7	-2.4	-0.3
12/19	9.9	9.9	0.0
3/20	-32.2	-30.6	-1.6

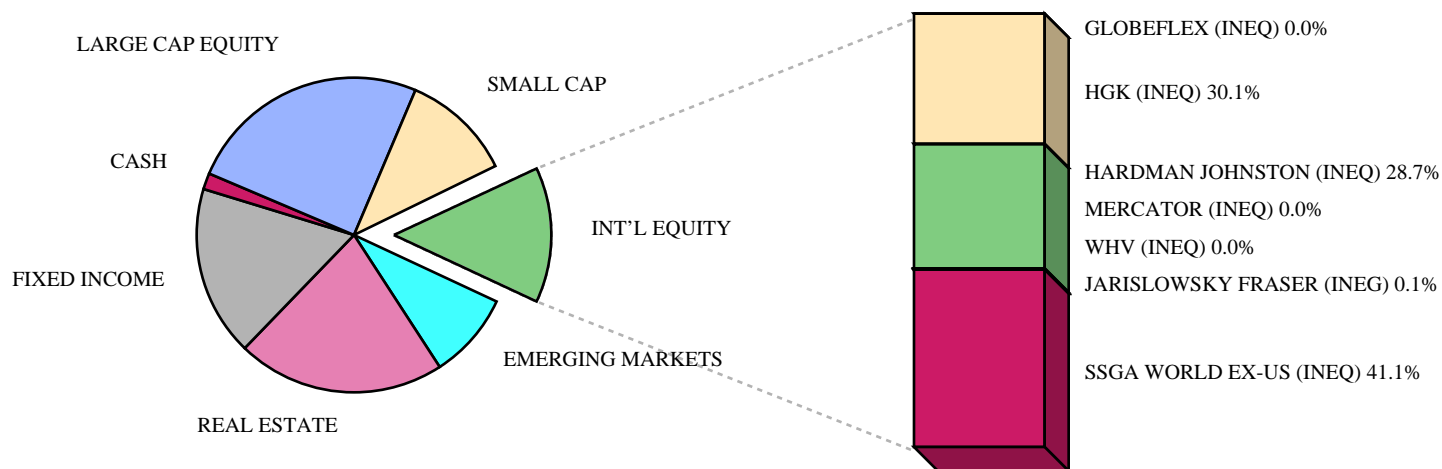
<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>23</b>
<b>Quarters Below the Benchmark</b>	<b>17</b>
<b>Batting Average</b>	<b>.575</b>

## **INTERNATIONAL & EMERGING MARKETS EQUITY MANAGERS**

PMRB's aggregate developed international portfolio (excluding cash) returned -23.4% over the quarter, 0.7% below the MSCI EAFE Index return of -22.7%. The S&P BMI Developed Markets Ex US returned -23.7% vs -23.9% for the MSCI World Ex US. The Emerging Markets portfolio, driven by its only manager, SSgA, lost 23.9%, while the MSCI Emerging Markets Index returned -23.6%.

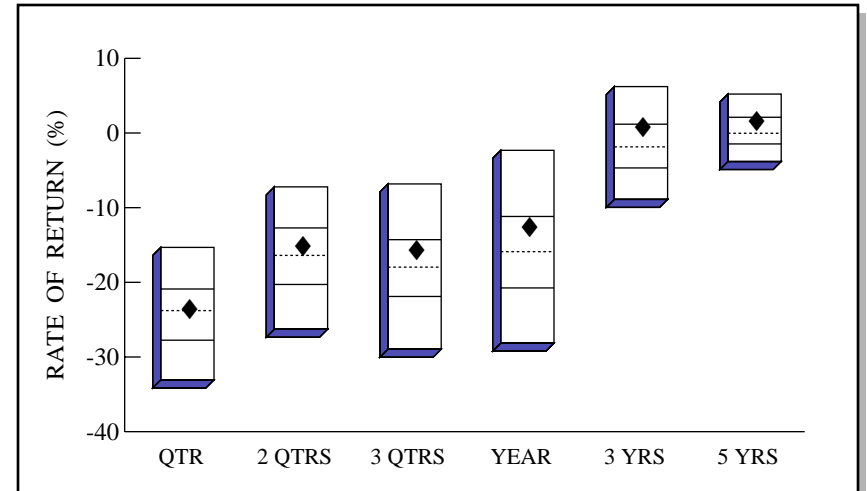
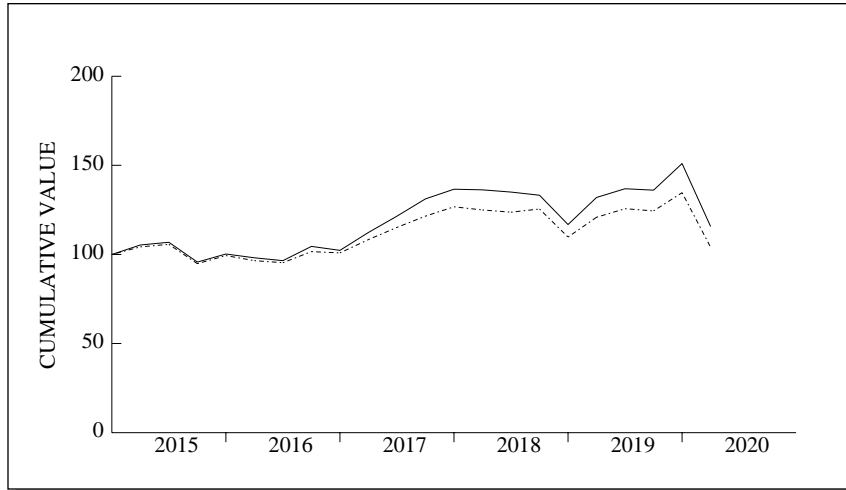
<b>SSgA Developed</b>	The SSgA developed markets component returned -23.1% during the quarter. Over the trailing year, this component was down 14.4%. This investment was valued at \$134,036,562 at quarter end.
<b>Hardman Johnston</b>	The Hardman Johnston international equity component lost 21.9% over the quarter. Over the last four quarters, the component lost 9.1%, while the S&P BMI Developed Ex US returned -23.7% and -15.1% over the quarter and trailing year.
<b>HGK</b>	HGK's equity component returned -25.2% last quarter. Over the trailing year, the HGK international equity component lost 13.5%.
<b>SSgA Emerging</b>	The SSgA emerging markets fund lost 23.9% during the quarter. Over the trailing five years, annualized, this component returned -0.4%. At quarter end, this fund was valued at \$210,526,987.

### INTERNATIONAL EQUITY MANAGER SUMMARY

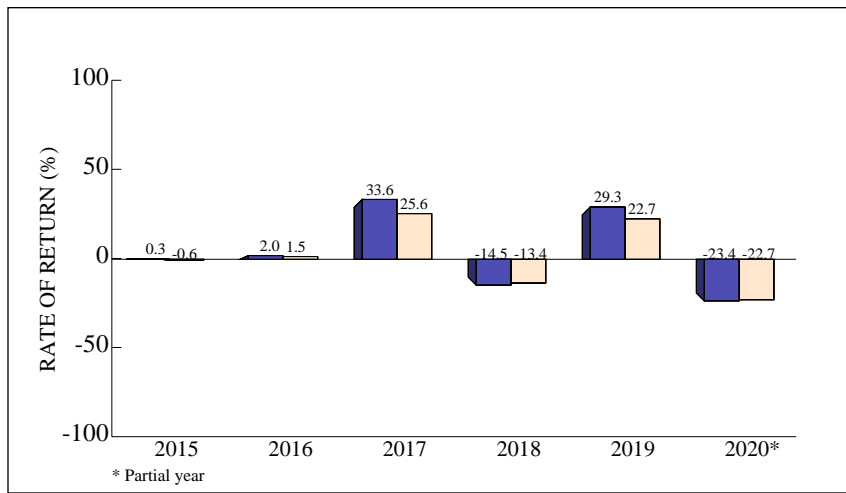


		COMPONENT RETURNS AND RANKINGS					
MANAGER	(UNIVERSE)	QTR	YTD	1 YEAR	3 YEARS	5 YEARS	MARKET VALUE
GLOBEFLEX	(International Equity)	----	----	----	----	----	\$4,229
HGK	(International Equity)	-25.2 (60)	-25.2 (60)	-13.5 (37)	0.6 (29)	2.3 (24)	\$98,363,733
HARDMAN JOHNSTON	(International Equity)	-21.9 (33)	-21.9 (33)	-9.1 (19)	4.1 (10)	4.1 (11)	\$93,741,294
MERCATOR	(International Equity)	-----	----	----	----	----	\$17,732
WHV	(International Equity)	----	----	----	----	----	\$2,933
<i>S&amp;P BMI Developed Ex US Index</i>		<i>-23.7 ---</i>	<i>-23.7 ---</i>	<i>-15.1 ---</i>	<i>-1.8 ---</i>	<i>0.0 ---</i>	<i>---</i>
JARISLOWSKY FRASER	(International Equity)	----	----	----	----	----	\$296,629
<i>MSCI EAFE</i>		<i>-22.7 ---</i>	<i>-22.7 ---</i>	<i>-13.9 ---</i>	<i>-1.3 ---</i>	<i>-0.1 ---</i>	<i>---</i>
SSGA WORLD EX-US	(International Equity)	-23.1 (45)	-23.1 (45)	-14.4 (42)	-1.7 (48)	-0.4 (54)	\$134,036,562
<i>MSCI World Ex US</i>		<i>-23.9 ---</i>	<i>-23.9 ---</i>	<i>-15.3 ---</i>	<i>-1.9 ---</i>	<i>-0.4 ---</i>	<i>---</i>
<b>TOTAL</b>	<b>(International Equity)</b>	<b>-23.4 (46)</b>	<b>-23.4 (46)</b>	<b>-12.3 (30)</b>	<b>1.0 (27)</b>	<b>1.9 (27)</b>	<b>\$326,463,112</b>
<i>Blended International Index</i>		<i>-22.7 ---</i>	<i>-22.7 ---</i>	<i>-13.9 ---</i>	<i>-1.3 ---</i>	<i>0.0 ---</i>	<i>---</i>

### INTERNATIONAL EQUITY RETURN COMPARISONS



International Equity Universe

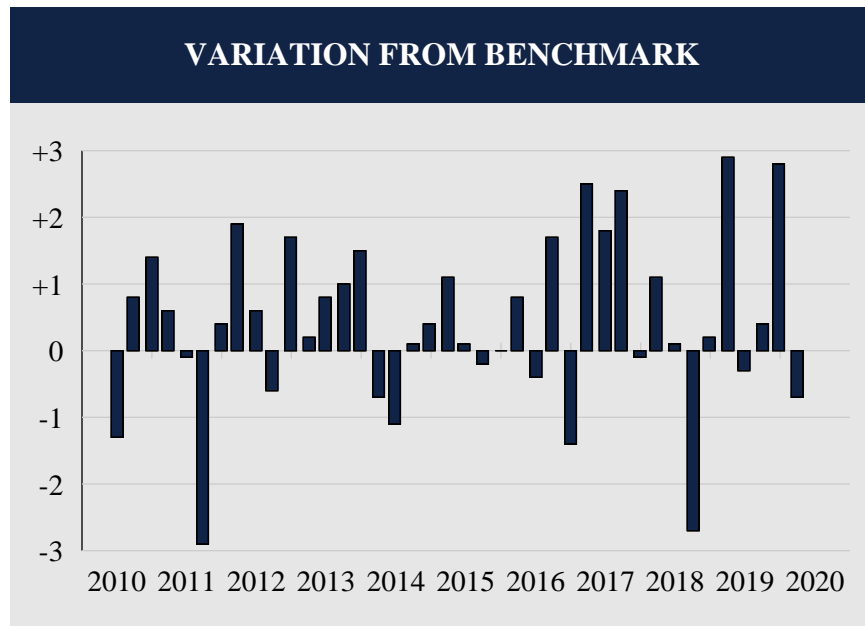


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-23.4	-14.9	-15.5	-12.3	1.0	1.9
(RANK)	(46)	(40)	(32)	(30)	(27)	(27)
5TH %ILE	-15.3	-7.2	-6.8	-2.3	6.2	5.2
25TH %ILE	-20.9	-12.7	-14.3	-11.2	1.2	2.1
MEDIAN	-23.8	-16.4	-18.0	-15.9	-1.9	0.0
75TH %ILE	-27.8	-20.3	-21.9	-20.7	-4.7	-1.5
95TH %ILE	-33.1	-26.3	-29.0	-28.1	-8.9	-3.8
<b>Intl Index</b>	<b>-22.7</b>	<b>-16.4</b>	<b>-17.2</b>	<b>-13.9</b>	<b>-1.3</b>	<b>0.0</b>

International Equity Universe

## INTERNATIONAL EQUITY QUARTERLY PERFORMANCE SUMMARY - 10 YEARS

**COMPARATIVE BENCHMARK: BLENDED INTERNATIONAL INDEX**

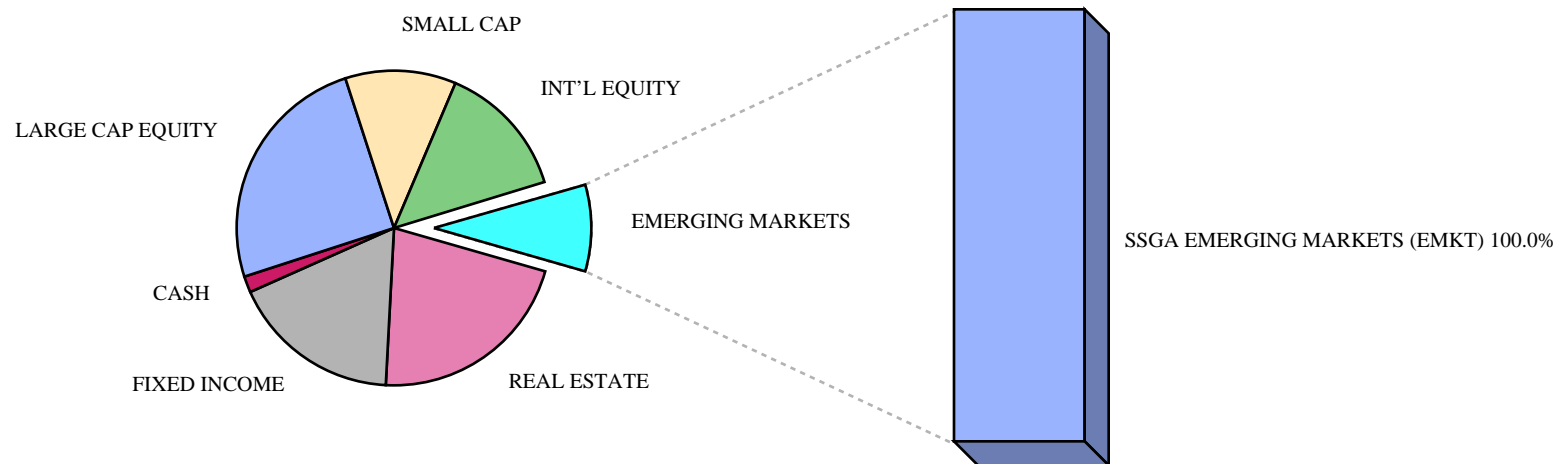


### RATES OF RETURN

Date	Portfolio	Benchmark	Difference
6/10	-14.0	-12.7	-1.3
9/10	17.3	16.5	0.8
12/10	9.5	8.1	1.4
3/11	4.6	4.0	0.6
6/11	0.5	0.6	-0.1
9/11	-22.2	-19.3	-2.9
12/11	3.7	3.3	0.4
3/12	14.2	12.3	1.9
6/12	-6.6	-7.2	0.6
9/12	7.1	7.7	-0.6
12/12	7.5	5.8	1.7
3/13	5.1	4.9	0.2
6/13	-1.0	-1.8	0.8
9/13	12.9	11.9	1.0
12/13	6.9	5.4	1.5
3/14	0.5	1.2	-0.7
6/14	3.7	4.8	-1.1
9/14	-5.8	-5.9	0.1
12/14	-3.3	-3.7	0.4
3/15	5.3	4.2	1.1
6/15	1.4	1.3	0.1
9/15	-10.4	-10.2	-0.2
12/15	4.7	4.7	0.0
3/16	-2.1	-2.9	0.8
6/16	-1.6	-1.2	-0.4
9/16	8.2	6.5	1.7
12/16	-2.1	-0.7	-1.4
3/17	9.9	7.4	2.5
6/17	8.2	6.4	1.8
9/17	7.9	5.5	2.4
12/17	4.2	4.3	-0.1
3/18	-0.3	-1.4	1.1
6/18	-0.9	-1.0	0.1
9/18	-1.3	1.4	-2.7
12/18	-12.3	-12.5	0.2
3/19	13.0	10.1	2.9
6/19	3.7	4.0	-0.3
9/19	-0.6	-1.0	0.4
12/19	11.0	8.2	2.8
3/20	-23.4	-22.7	-0.7

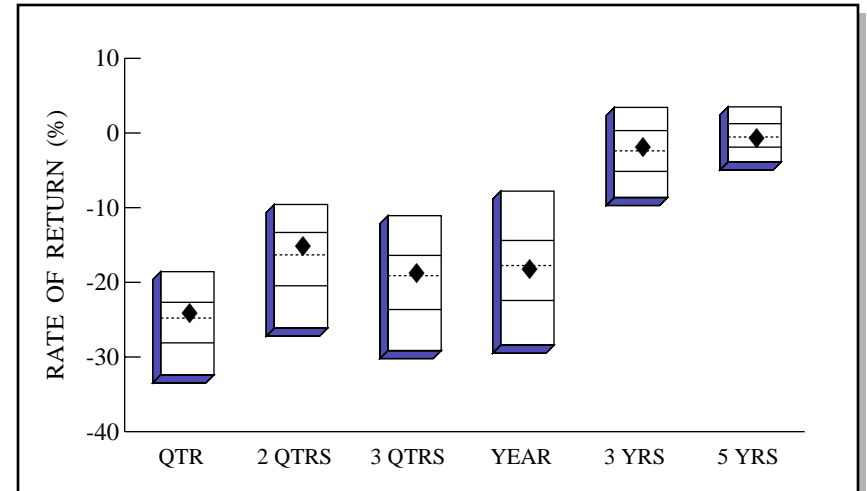
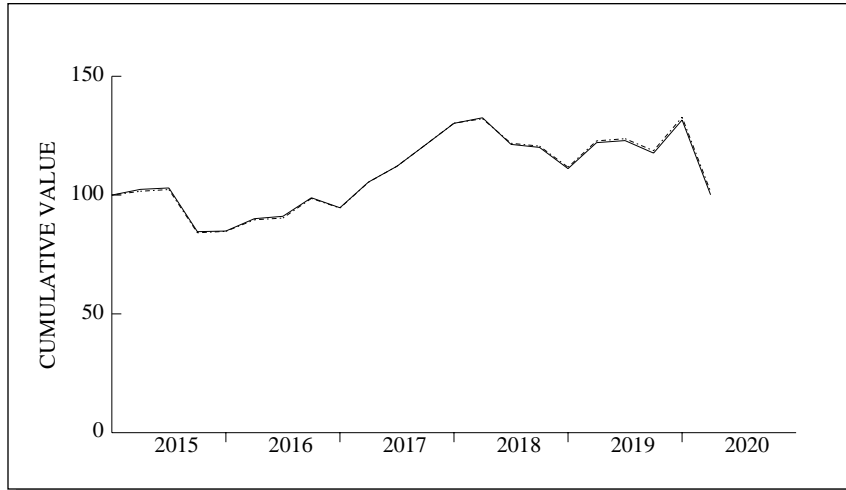
<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>27</b>
<b>Quarters Below the Benchmark</b>	<b>13</b>
<b>Batting Average</b>	<b>.675</b>

**EMERGING MARKETS EQUITY MANAGER SUMMARY**

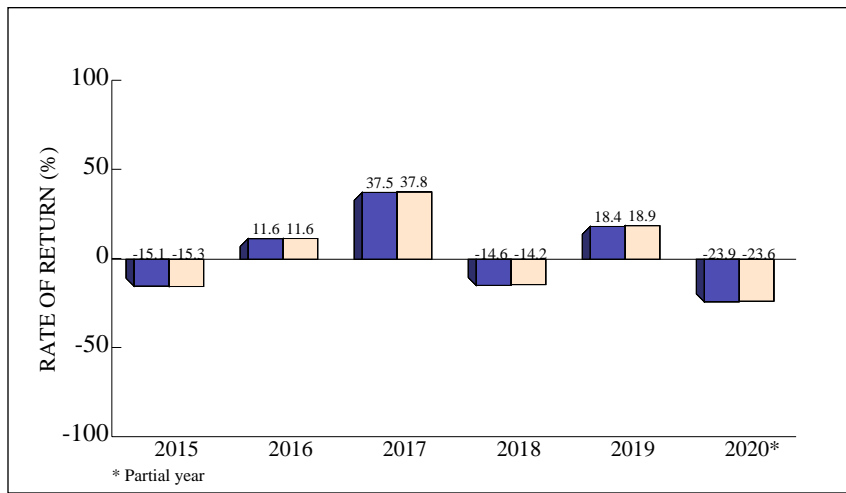
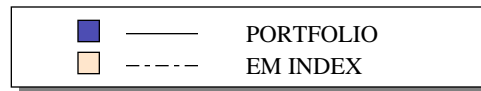


MANAGER	(UNIVERSE)	COMPONENT RETURNS AND RANKINGS					MARKET VALUE
		QTR	YTD	1 YEAR	3 YEARS	5 YEARS	
SSGA EMERGING MARKETS	(Emerging Markets)	-23.9 (45)	-23.9 (45)	-18.0 (53)	-1.7 (43)	-0.4 (48)	\$210,526,987
<i>Blended Emerging Markets Index</i>		<i>-23.6 ---</i>	<i>-23.6 ---</i>	<i>-17.4 ---</i>	<i>-1.3 ---</i>	<i>0.0 ---</i>	<i>---</i>
<b>TOTAL</b>	<b>(Emerging Markets)</b>	<b>-23.9 (45)</b>	<b>-23.9 (45)</b>	<b>-18.0 (53)</b>	<b>-1.7 (43)</b>	<b>-0.4 (48)</b>	<b>\$210,526,987</b>
<i>Blended Emerging Markets Index</i>		<i>-23.6 ---</i>	<i>-23.6 ---</i>	<i>-17.4 ---</i>	<i>-1.3 ---</i>	<i>0.0 ---</i>	<i>---</i>

### EMERGING MARKETS EQUITY RETURN COMPARISONS



Emerging Markets Universe

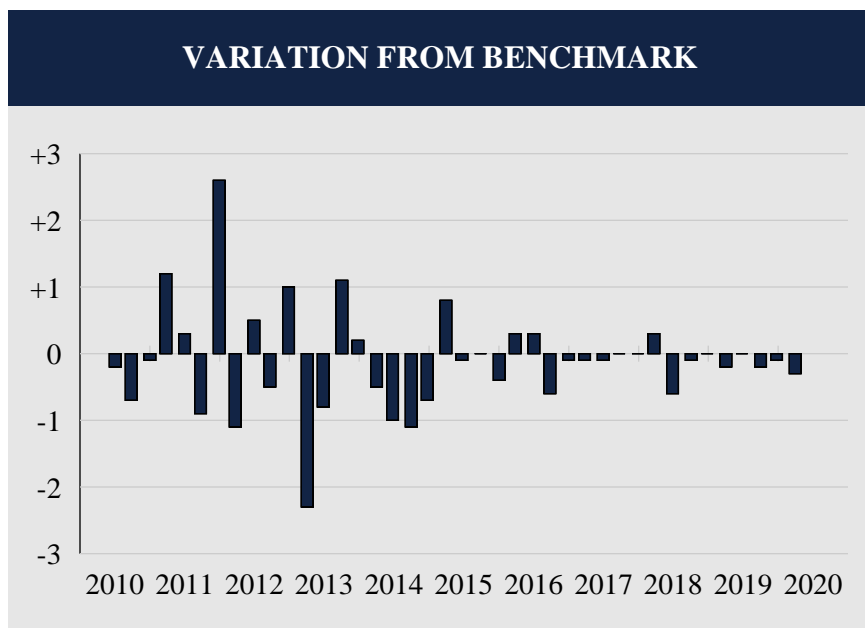


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-23.9	-14.9	-18.5	-18.0	-1.7	-0.4
(RANK)	(45)	(40)	(46)	(53)	(43)	(48)
5TH %ILE	-18.6	-9.6	-11.1	-7.8	3.4	3.5
25TH %ILE	-22.7	-13.3	-16.4	-14.4	0.3	1.2
MEDIAN	-24.8	-16.3	-19.1	-17.8	-2.4	-0.5
75TH %ILE	-28.1	-20.5	-23.6	-22.4	-5.2	-1.9
95TH %ILE	-32.4	-26.2	-29.1	-28.4	-8.6	-3.9
<b>EM Index</b>	<b>-23.6</b>	<b>-14.5</b>	<b>-18.0</b>	<b>-17.4</b>	<b>-1.3</b>	<b>0.0</b>

Emerging Markets Universe

## EMERGING MARKETS EQUITY QUARTERLY PERFORMANCE SUMMARY - 10 YEARS

**COMPARATIVE BENCHMARK: BLENDED EMERGING MARKETS INDEX**



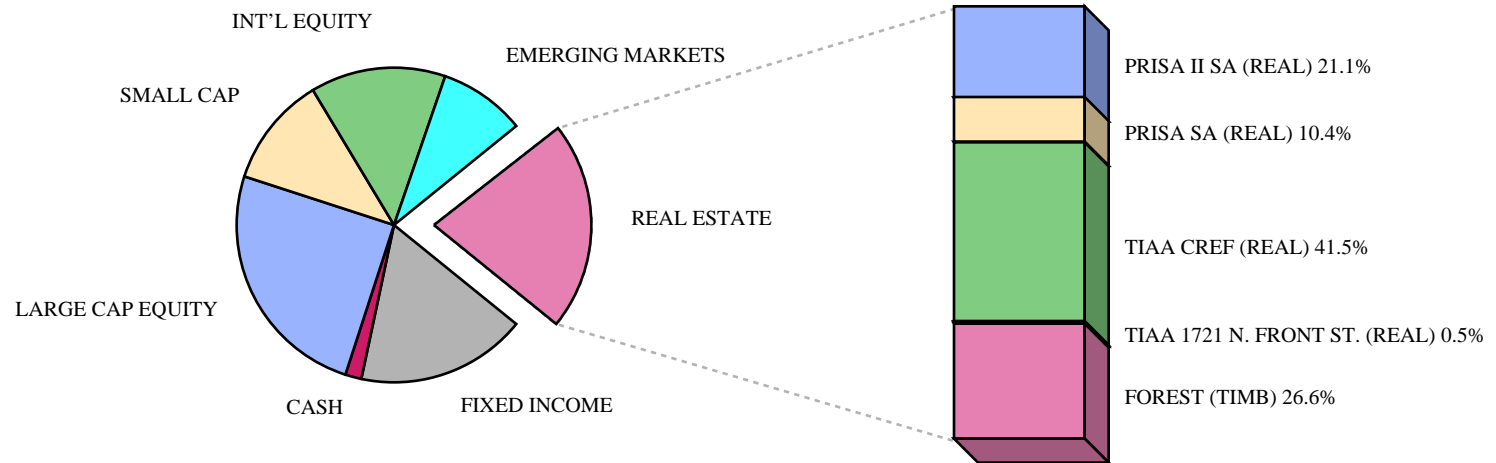
<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>16</b>
<b>Quarters Below the Benchmark</b>	<b>24</b>
<b>Batting Average</b>	<b>.400</b>

### RATES OF RETURN

Date	Portfolio	Benchmark	Difference
6/10	-8.4	-8.2	-0.2
9/10	17.9	18.6	-0.7
12/10	7.2	7.3	-0.1
3/11	1.9	0.7	1.2
6/11	-1.2	-1.5	0.3
9/11	-23.4	-22.5	-0.9
12/11	5.7	3.1	2.6
3/12	13.8	14.9	-1.1
6/12	-8.4	-8.9	0.5
9/12	7.0	7.5	-0.5
12/12	6.6	5.6	1.0
3/13	-2.6	-0.3	-2.3
6/13	-8.1	-7.3	-0.8
9/13	5.8	4.7	1.1
12/13	2.2	2.0	0.2
3/14	-0.7	-0.2	-0.5
6/14	6.6	7.6	-1.0
9/14	-3.6	-2.5	-1.1
12/14	-4.7	-4.0	-0.7
3/15	2.4	1.6	0.8
6/15	0.6	0.7	-0.1
9/15	-17.8	-17.8	0.0
12/15	0.3	0.7	-0.4
3/16	6.1	5.8	0.3
6/16	1.1	0.8	0.3
9/16	8.6	9.2	-0.6
12/16	-4.2	-4.1	-0.1
3/17	11.4	11.5	-0.1
6/17	6.3	6.4	-0.1
9/17	8.0	8.0	0.0
12/17	7.5	7.5	0.0
3/18	1.8	1.5	0.3
6/18	-8.5	-7.9	-0.6
9/18	-1.0	-0.9	-0.1
12/18	-7.4	-7.4	0.0
3/19	9.8	10.0	-0.2
6/19	0.7	0.7	0.0
9/19	-4.3	-4.1	-0.2
12/19	11.8	11.9	-0.1
3/20	-23.9	-23.6	-0.3



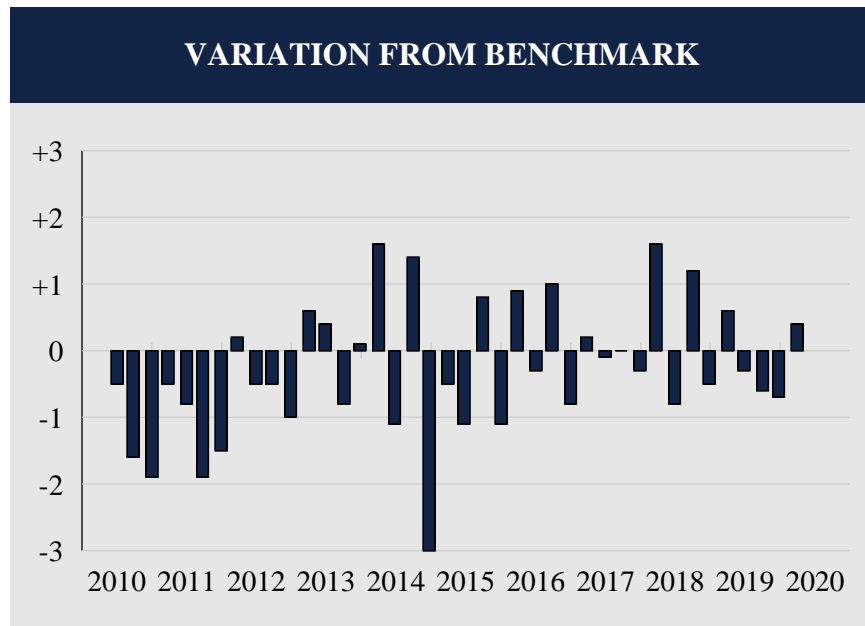
**REAL ESTATE MANAGER SUMMARY**



MANAGER	(UNIVERSE)	COMPONENT RETURNS AND RANKINGS					MARKET VALUE
		QTR	YTD	1 YEAR	3 YEARS	5 YEARS	
PRISA II SA		1.3 ---	1.3 ---	6.8 ---	8.4 ---	10.1 ---	\$106,418,646
PRISA SA		1.7 ---	1.7 ---	6.2 ---	7.6 ---	9.0 ---	\$52,416,298
TIAA CREF		1.4 ---	1.4 ---	8.3 ---	8.4 ---	9.0 ---	\$209,194,966
<i>NCREIF NFI-ODCE Index</i>		<i>1.0 ---</i>	<i>1.0 ---</i>	<i>4.9 ---</i>	<i>6.8 ---</i>	<i>8.5 ---</i>	---
TIAA 1721 N. FRONT ST.		0.7 ---	0.7 ---	5.2 ---	3.4 ---	---	\$2,315,169
<i>NCREIF Property Index</i>		<i>0.7 ---</i>	<i>0.7 ---</i>	<i>5.3 ---</i>	<i>6.4 ---</i>	<i>7.6 ---</i>	---
FOREST		0.4 ---	0.4 ---	-4.9 ---	2.4 ---	4.0 ---	\$134,303,095
<i>NCREIF Timber Index</i>		<i>0.1 ---</i>	<i>0.1 ---</i>	<i>1.3 ---</i>	<i>2.5 ---</i>	<i>2.8 ---</i>	---
<b>TOTAL</b>		<b>1.1 ---</b>	<b>1.1 ---</b>	<b>4.0 ---</b>	<b>6.5 ---</b>	<b>7.6 ---</b>	<b>\$504,648,174</b>
<i>NCREIF Property Index</i>		<i>0.7 ---</i>	<i>0.7 ---</i>	<i>5.3 ---</i>	<i>6.4 ---</i>	<i>7.6 ---</i>	---

**REAL ESTATE QUARTERLY PERFORMANCE SUMMARY - 10 YEARS**

**COMPARATIVE BENCHMARK: NCREIF PROPERTY INDEX**



<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>15</b>
<b>Quarters Below the Benchmark</b>	<b>25</b>
<b>Batting Average</b>	<b>.375</b>

<b>RATES OF RETURN</b>			
<b>Date</b>	<b>Portfolio</b>	<b>Benchmark</b>	<b>Difference</b>
6/10	2.8	3.3	-0.5
9/10	2.3	3.9	-1.6
12/10	2.7	4.6	-1.9
3/11	2.9	3.4	-0.5
6/11	3.1	3.9	-0.8
9/11	1.4	3.3	-1.9
12/11	1.5	3.0	-1.5
3/12	2.8	2.6	0.2
6/12	2.2	2.7	-0.5
9/12	1.8	2.3	-0.5
12/12	1.5	2.5	-1.0
3/13	3.2	2.6	0.6
6/13	3.3	2.9	0.4
9/13	1.8	2.6	-0.8
12/13	2.6	2.5	0.1
3/14	4.3	2.7	1.6
6/14	1.8	2.9	-1.1
9/14	4.0	2.6	1.4
12/14	0.0	3.0	-3.0
3/15	3.1	3.6	-0.5
6/15	2.0	3.1	-1.1
9/15	3.9	3.1	0.8
12/15	1.8	2.9	-1.1
3/16	3.1	2.2	0.9
6/16	1.7	2.0	-0.3
9/16	2.8	1.8	1.0
12/16	0.9	1.7	-0.8
3/17	1.7	1.5	0.2
6/17	1.7	1.8	-0.1
9/17	1.7	1.7	0.0
12/17	1.5	1.8	-0.3
3/18	3.3	1.7	1.6
6/18	1.0	1.8	-0.8
9/18	2.9	1.7	1.2
12/18	0.9	1.4	-0.5
3/19	2.4	1.8	0.6
6/19	1.2	1.5	-0.3
9/19	0.8	1.4	-0.6
12/19	0.8	1.5	-0.7
3/20	1.1	0.7	0.4

## **FIXED INCOME MANAGER**

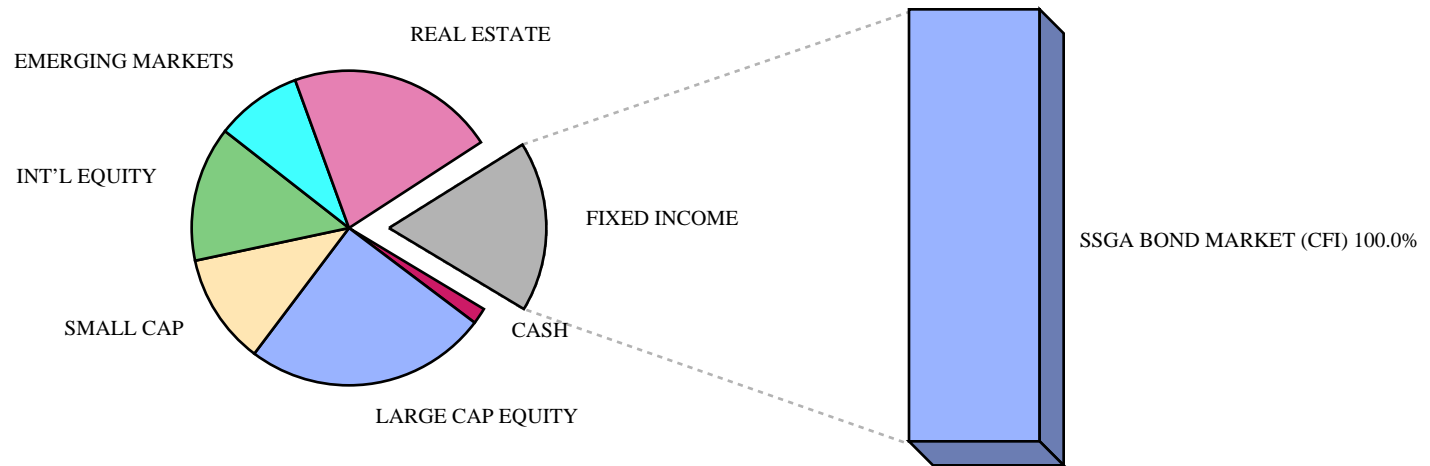
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The Bloomberg Barclays US Aggregate Index returned 3.1% last quarter, while the Bloomberg Barclays Gov/Credit index was up 3.4%. For the trailing year they were up 8.9% and 9.8%, respectively.

**SSgA  
(Broad Market)**

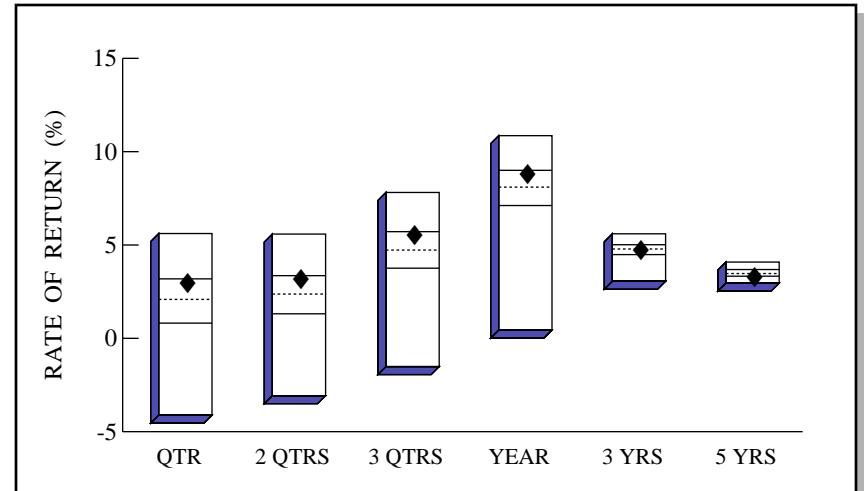
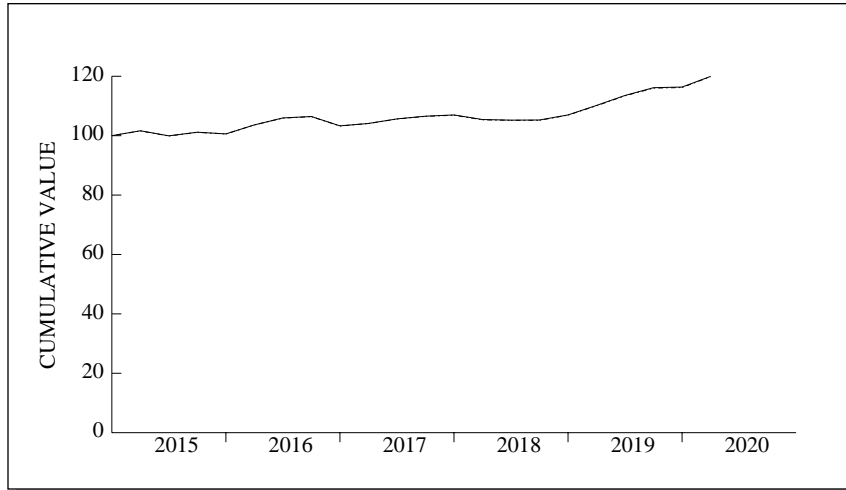
The SSgA fixed income component returned 3.1% last quarter. Over the trailing five years, the fund rose 3.4% per annum, in line with the Bloomberg Barclays Aggregate Index. At year end, this investment was valued at \$415,403,984.

**FIXED INCOME MANAGER SUMMARY**

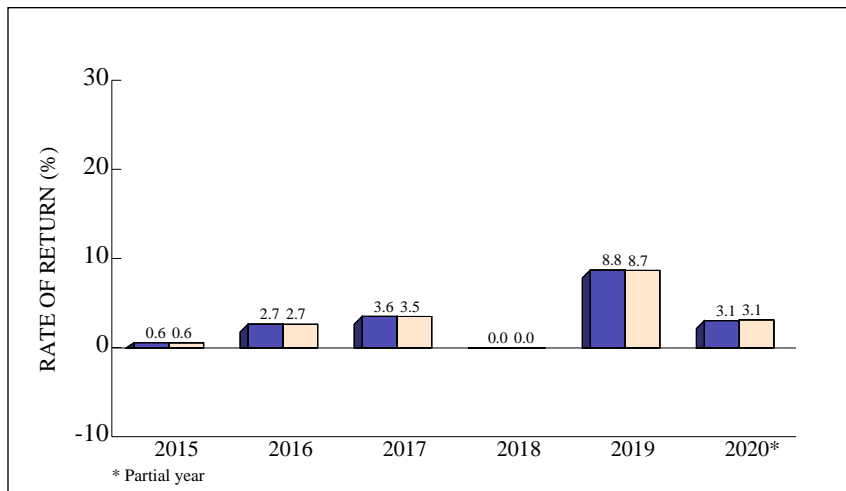


MANAGER	(UNIVERSE)	COMPONENT RETURNS AND RANKINGS					MARKET VALUE
		QTR	YTD	1 YEAR	3 YEARS	5 YEARS	
SSGA BOND MARKET	(Core Fixed Income)	3.1 (30)	3.1 (30)	8.9 (31)	4.8 (49)	3.4 (71)	\$415,403,984
	<i>Bloomberg Barclays Aggregate Index</i>	<i>3.1 ---</i>	<i>3.1 ---</i>	<i>8.9 ---</i>	<i>4.8 ---</i>	<i>3.4 ---</i>	<i>---</i>
<b>TOTAL</b>	<b>(Core Fixed Income)</b>	<b>3.1 (30)</b>	<b>3.1 (30)</b>	<b>8.9 (31)</b>	<b>4.8 (49)</b>	<b>3.4 (71)</b>	<b>\$415,403,984</b>
	<i>Bloomberg Barclays Aggregate Index</i>	<i>3.1 ---</i>	<i>3.1 ---</i>	<i>8.9 ---</i>	<i>4.8 ---</i>	<i>3.4 ---</i>	<i>---</i>

**FIXED INCOME RETURN COMPARISONS**



Core Fixed Income Universe



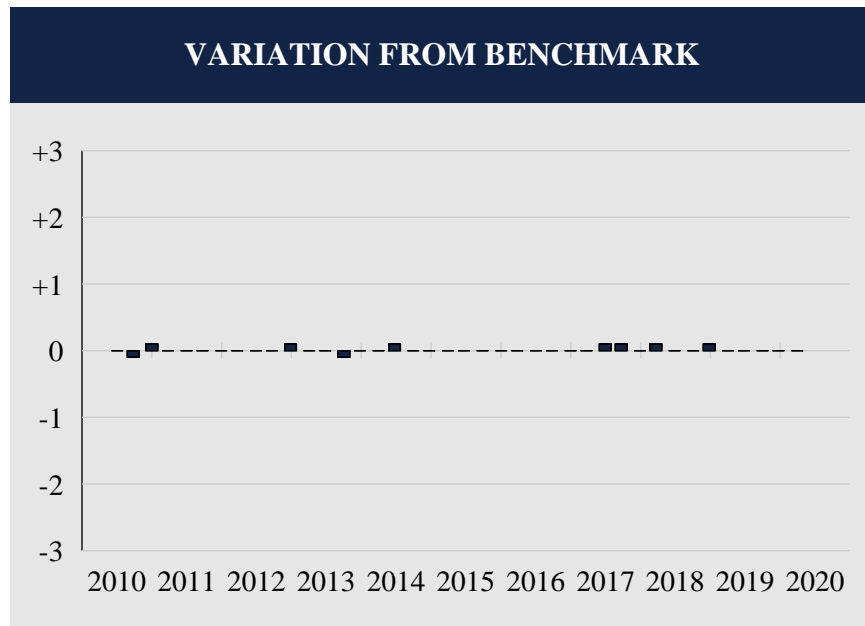
\* Partial year

	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	3.1	3.3	5.6	8.9	4.8	3.4
(RANK)	(30)	(29)	(30)	(31)	(49)	(71)
5TH %ILE	5.6	5.6	7.8	10.9	5.6	4.1
25TH %ILE	3.2	3.4	5.7	9.0	5.0	3.7
MEDIAN	2.1	2.4	4.7	8.1	4.8	3.5
75TH %ILE	0.8	1.3	3.8	7.1	4.5	3.3
95TH %ILE	-4.1	-3.1	-1.5	0.4	3.1	3.0
<b>Agg</b>	<b>3.1</b>	<b>3.3</b>	<b>5.7</b>	<b>8.9</b>	<b>4.8</b>	<b>3.4</b>

Core Fixed Income Universe

**FIXED INCOME QUARTERLY PERFORMANCE SUMMARY - 10 YEARS**

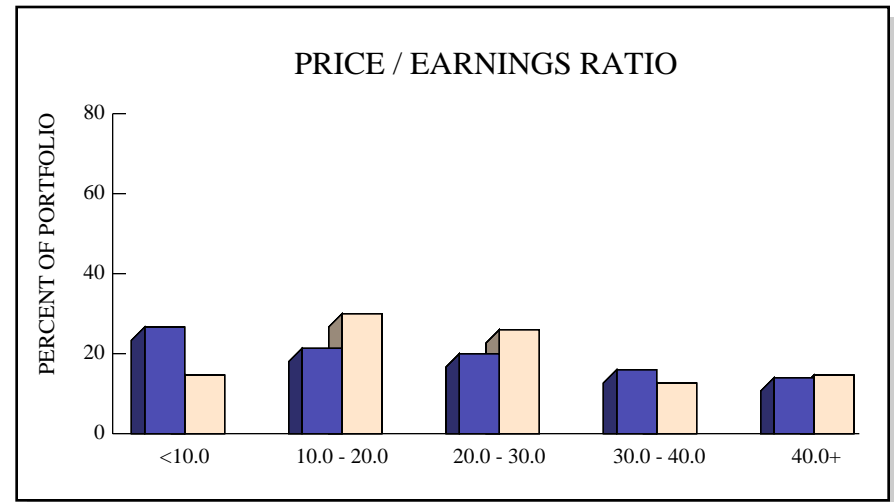
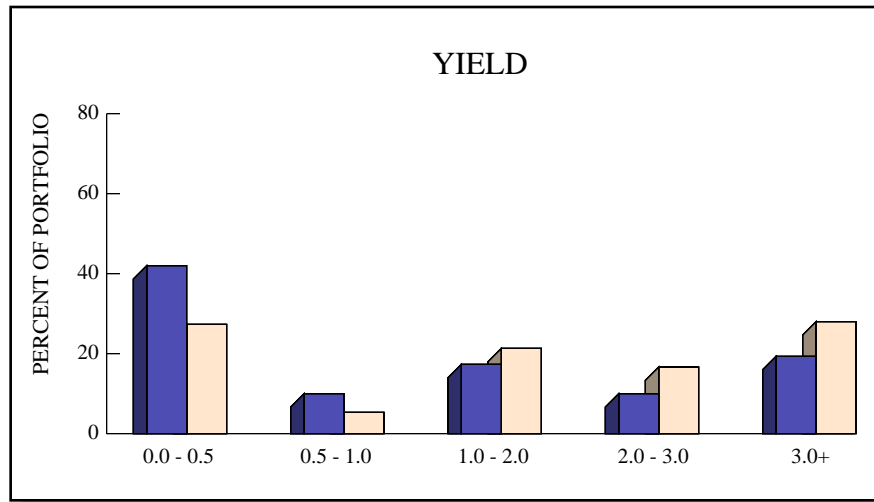
**COMPARATIVE BENCHMARK: BLOOMBERG BARCLAYS AGGREGATE INDEX**



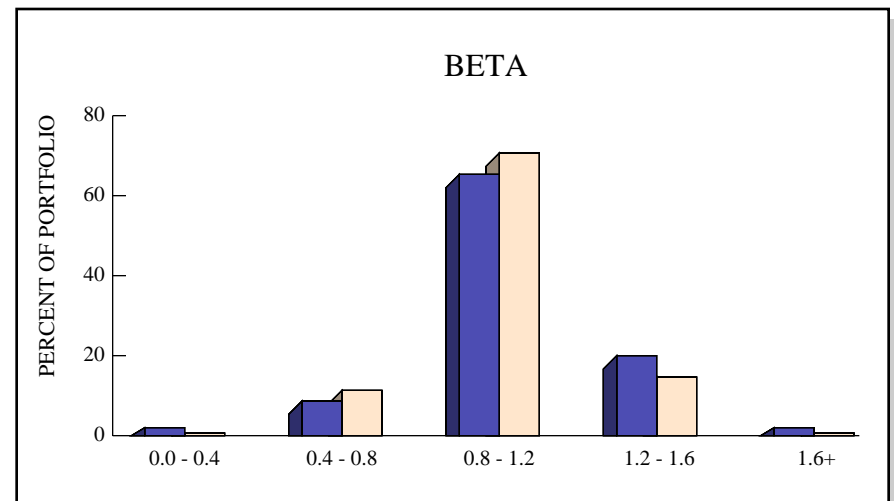
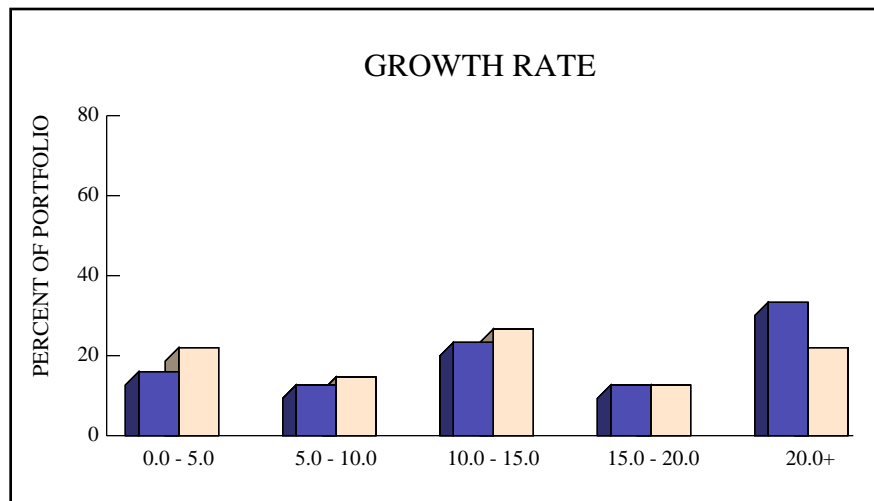
RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
6/10	3.5	3.5	0.0
9/10	2.4	2.5	-0.1
12/10	-1.2	-1.3	0.1
3/11	0.4	0.4	0.0
6/11	2.3	2.3	0.0
9/11	3.8	3.8	0.0
12/11	1.1	1.1	0.0
3/12	0.3	0.3	0.0
6/12	2.1	2.1	0.0
9/12	1.6	1.6	0.0
12/12	0.3	0.2	0.1
3/13	-0.1	-0.1	0.0
6/13	-2.3	-2.3	0.0
9/13	0.5	0.6	-0.1
12/13	-0.1	-0.1	0.0
3/14	1.8	1.8	0.0
6/14	2.1	2.0	0.1
9/14	0.2	0.2	0.0
12/14	1.8	1.8	0.0
3/15	1.6	1.6	0.0
6/15	-1.7	-1.7	0.0
9/15	1.2	1.2	0.0
12/15	-0.6	-0.6	0.0
3/16	3.0	3.0	0.0
6/16	2.2	2.2	0.0
9/16	0.5	0.5	0.0
12/16	-3.0	-3.0	0.0
3/17	0.8	0.8	0.0
6/17	1.5	1.4	0.1
9/17	0.9	0.8	0.1
12/17	0.4	0.4	0.0
3/18	-1.4	-1.5	0.1
6/18	-0.2	-0.2	0.0
9/18	0.0	0.0	0.0
12/18	1.7	1.6	0.1
3/19	2.9	2.9	0.0
6/19	3.1	3.1	0.0
9/19	2.3	2.3	0.0
12/19	0.2	0.2	0.0
3/20	3.1	3.1	0.0

<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>38</b>
<b>Quarters Below the Benchmark</b>	<b>2</b>
<b>Batting Average</b>	<b>.950</b>

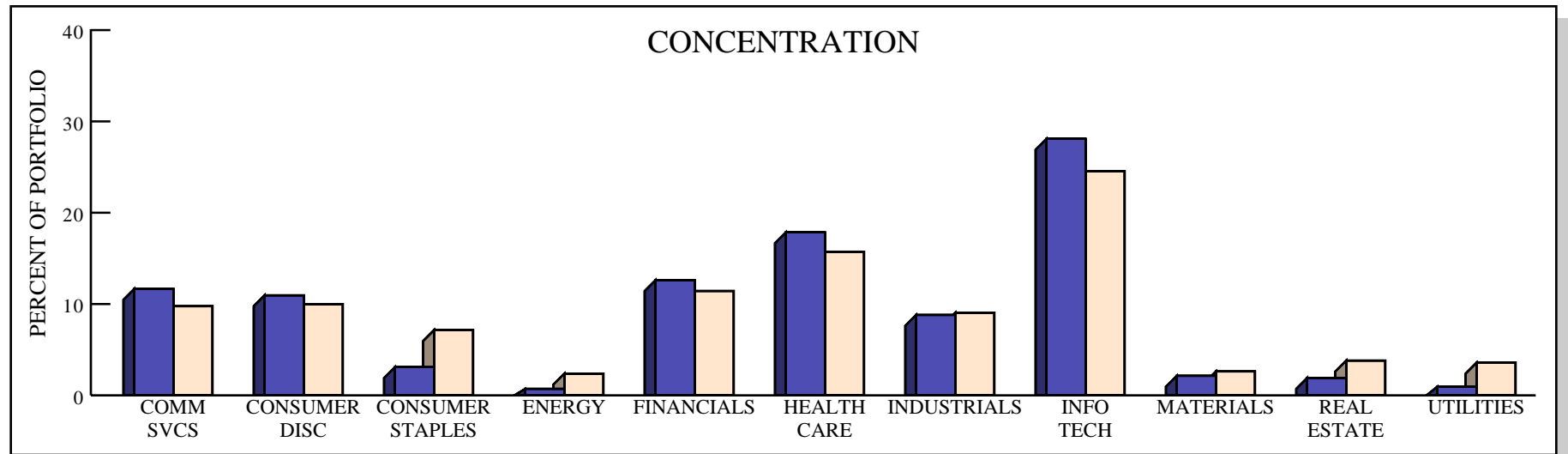
**STOCK CHARACTERISTICS**



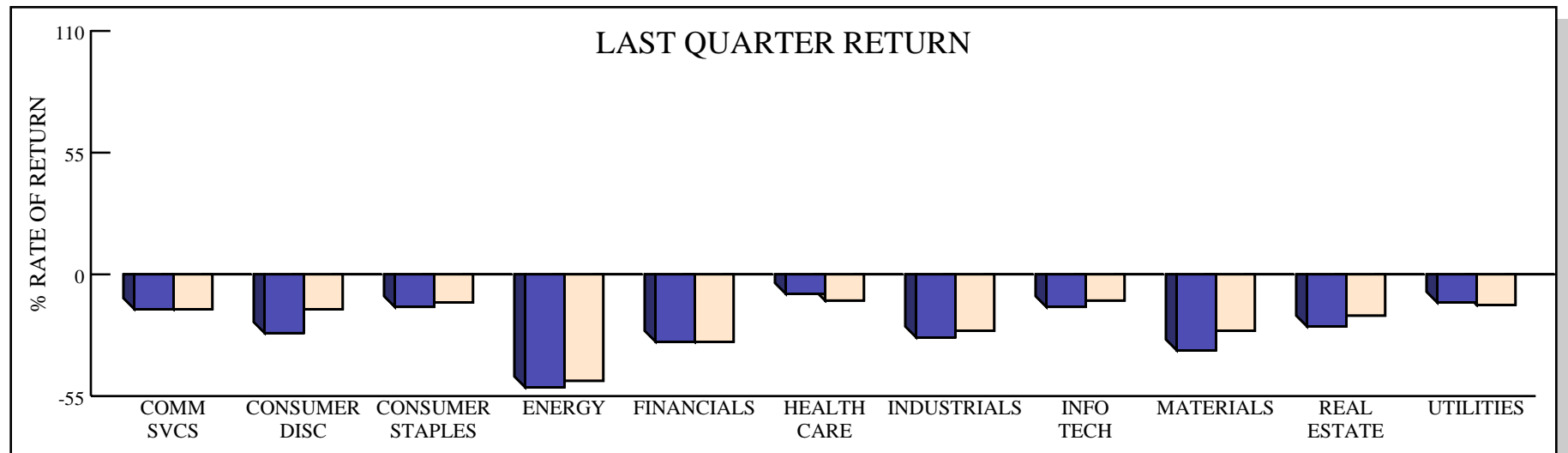
	# HOLDINGS	YIELD	GROWTH	P/E	BETA
PORTFOLIO	2,616	1.7%	16.9%	23.0	1.03
RUSSELL 3000	2,976	2.2%	13.2%	24.9	0.99



**STOCK INDUSTRY ANALYSIS**

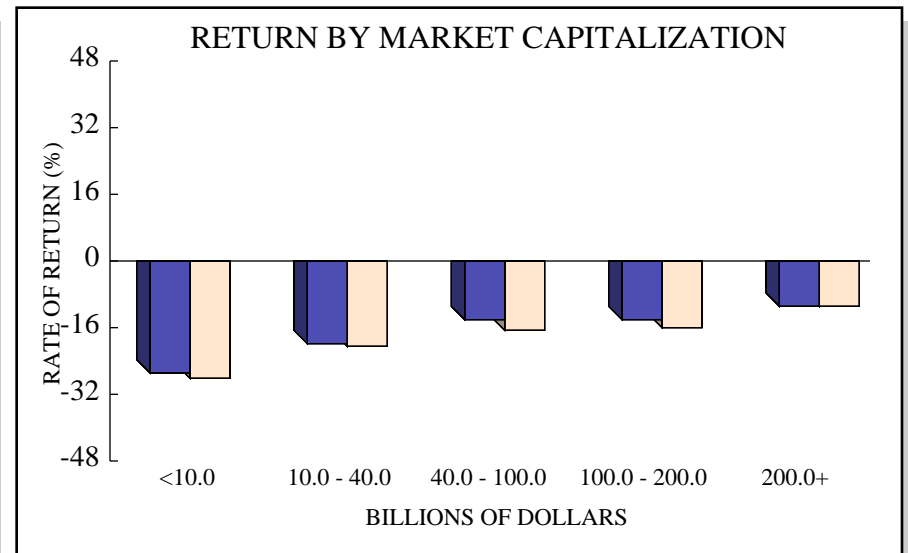
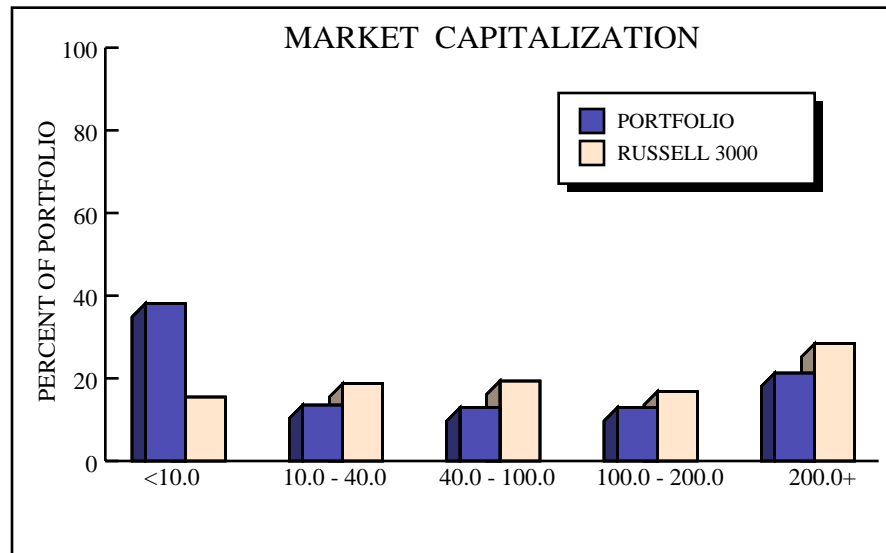


■ PORTFOLIO      ■ RUSSELL 3000





**TOP TEN HOLDINGS**



**TOP TEN EQUITY HOLDINGS**

RANK	NAME	VALUE	% EQUITY	RETURN	INDUSTRY SECTOR	MKT CAP
1	MICROSOFT CORP	\$ 43,141,888	5.02%	0.3%	Information Technology	\$ 1199.6 B
2	ALPHABET INC-CL C	27,442,317	3.19%	-13.0%	Communication Services	396.5 B
3	FACEBOOK INC-CLASS A	24,477,066	2.85%	-18.7%	Communication Services	401.3 B
4	VISA INC-CLASS A SHARES	15,540,346	1.81%	-14.1%	Information Technology	274.9 B
5	ADOBE INC	15,106,852	1.76%	-3.5%	Information Technology	153.3 B
6	AMAZON.COM INC	14,320,693	1.67%	5.5%	Consumer Discretionary	970.6 B
7	MASTERCARD INC - A	13,860,713	1.61%	-19.0%	Information Technology	240.2 B
8	ABBOTT LABORATORIES	13,334,370	1.55%	-8.8%	Health Care	139.2 B
9	ZOETIS INC	12,506,210	1.45%	-11.0%	Health Care	55.9 B
10	SERVICENOW INC	11,555,192	1.34%	1.5%	Information Technology	54.4 B

**Domestic Industry Sector Allocations**  
**(Percent of Invested Equity)**  
**As of March 31, 2020**

	Comm Services	Consumer Discretionary	Consumer Staples	Energy	Financials	Health Care	Industrials	Information Technology	Materials	Real Estate	Utilities
<b>Eagle</b>	<b>31.7</b>	<b>16.7</b>	<b>0.0</b>	<b>0.0</b>	<b>26.9</b>	<b>4.6</b>	<b>6.6</b>	<b>12.3</b>	<b>1.2</b>	<b>0.0</b>	<b>0.0</b>
<b>LSV Large Cap</b>	<b>7.7</b>	<b>8.9</b>	<b>6.3</b>	<b>2.4</b>	<b>14.7</b>	<b>22.1</b>	<b>10.4</b>	<b>22.0</b>	<b>4.4</b>	<b>0.7</b>	<b>0.6</b>
<b>Russell 1000 Value</b>	<b>8.6</b>	<b>5.2</b>	<b>10.6</b>	<b>5.4</b>	<b>21.3</b>	<b>15.5</b>	<b>9.4</b>	<b>6.8</b>	<b>4.2</b>	<b>5.1</b>	<b>7.8</b>
<b>Federated</b>	<b>6.6</b>	<b>13.5</b>	<b>0.9</b>	<b>0.0</b>	<b>6.7</b>	<b>26.0</b>	<b>9.5</b>	<b>30.2</b>	<b>3.8</b>	<b>2.8</b>	<b>0.0</b>
<b>Polen</b>	<b>17.6</b>	<b>9.0</b>	<b>0.0</b>	<b>0.0</b>	<b>2.9</b>	<b>17.0</b>	<b>0.0</b>	<b>53.5</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Russell 1000 Growth</b>	<b>11.6</b>	<b>14.1</b>	<b>4.6</b>	<b>0.1</b>	<b>2.9</b>	<b>15.1</b>	<b>8.0</b>	<b>39.8</b>	<b>1.2</b>	<b>2.5</b>	<b>0.0</b>
<b>AMI</b>	<b>0.0</b>	<b>5.3</b>	<b>14.1</b>	<b>0.0</b>	<b>8.5</b>	<b>25.2</b>	<b>14.1</b>	<b>29.7</b>	<b>3.1</b>	<b>0.0</b>	<b>0.0</b>
<b>Copeland</b>	<b>4.2</b>	<b>9.5</b>	<b>8.2</b>	<b>0.0</b>	<b>14.5</b>	<b>15.2</b>	<b>16.0</b>	<b>13.1</b>	<b>3.6</b>	<b>8.5</b>	<b>7.2</b>
<b>Emerald</b>	<b>4.3</b>	<b>12.5</b>	<b>7.7</b>	<b>0.4</b>	<b>8.3</b>	<b>31.6</b>	<b>14.1</b>	<b>17.2</b>	<b>0.5</b>	<b>3.4</b>	<b>0.0</b>
<b>Russell 2000 Growth</b>	<b>2.3</b>	<b>9.5</b>	<b>3.4</b>	<b>0.2</b>	<b>5.9</b>	<b>33.8</b>	<b>17.9</b>	<b>18.0</b>	<b>2.7</b>	<b>4.4</b>	<b>1.9</b>
<b>LSV Small Cap</b>	<b>2.5</b>	<b>11.1</b>	<b>1.5</b>	<b>2.1</b>	<b>19.4</b>	<b>15.1</b>	<b>20.3</b>	<b>14.6</b>	<b>6.6</b>	<b>5.5</b>	<b>1.2</b>
<b>Smith, Graham &amp; Co</b>	<b>0.0</b>	<b>13.0</b>	<b>2.5</b>	<b>2.2</b>	<b>20.9</b>	<b>17.7</b>	<b>14.2</b>	<b>24.7</b>	<b>2.5</b>	<b>1.0</b>	<b>1.4</b>
<b>Russell 2000 Value</b>	<b>2.2</b>	<b>7.8</b>	<b>3.4</b>	<b>3.5</b>	<b>29.9</b>	<b>6.0</b>	<b>12.9</b>	<b>10.9</b>	<b>4.3</b>	<b>11.5</b>	<b>7.6</b>
<b>S&amp;P 500</b>	<b>10.7</b>	<b>9.8</b>	<b>7.8</b>	<b>2.6</b>	<b>10.9</b>	<b>15.4</b>	<b>8.2</b>	<b>25.5</b>	<b>2.4</b>	<b>3.0</b>	<b>3.6</b>

*Allocations may not total to 100% due to rounding.*

## International Industry Sector Allocations

As of March 31, 2020

	Comm Services	Consumer Discretionary	Consumer Staples	Energy	Financials	Health Care	Industrials	Information Technology	Materials	Real Estate	Utilities
<b>HGK</b>	4.3	21.1	4.5	1.6	14.4	0.0	31.2	13.9	0.0	6.3	2.7
<b>Hardman Johnston</b>	6.1	20.7	3.1	0.0	8.5	14.6	22.6	24.4	0.0	0.0	0.0
<b>S&amp;P Developed Ex US BMI</b>	5.3	10.5	10.8	4.3	16.4	12.5	15.0	9.9	7.2	4.3	3.8

*Allocations may not total to 100% due to rounding. Sector weights for international equity portfolios are provided by each respective manager and may differ slightly from custodian accounting.*

## APPENDIX - MAJOR MARKET INDEX RETURNS

<b>Economic Data</b>	<b>Style</b>	<b>QTR</b>	<b>YTD</b>	<b>1 Year</b>	<b>3 years</b>	<b>5 Years</b>
Consumer Price Index	Economic Data	0.4	0.4	1.5	1.9	1.8
<b>Domestic Equity</b>	<b>Style</b>	<b>QTR</b>	<b>YTD</b>	<b>1 Year</b>	<b>3 years</b>	<b>5 Years</b>
Russell 3000	Broad Equity	-20.9	-20.9	-9.1	4.0	5.8
S&P 500	Large Cap Core	-19.6	-19.6	-7.0	5.1	6.7
Russell 1000	Large Cap	-20.2	-20.2	-8.0	4.6	6.2
Russell 1000 Growth	Large Cap Growth	-14.1	-14.1	0.9	11.3	10.4
Russell 1000 Value	Large Cap Value	-26.7	-26.7	-17.2	-2.2	1.9
Russell Mid Cap	Midcap	-27.1	-27.1	-18.3	-0.8	1.8
Russell Mid Cap Growth	Midcap Growth	-20.0	-20.0	-9.4	6.5	5.6
Russell Mid Cap Value	Midcap Value	-31.7	-31.7	-24.1	-6.0	-0.8
Russell 2000	Small Cap	-30.6	-30.6	-24.0	-4.7	-0.3
Russell 2000 Growth	Small Cap Growth	-25.8	-25.8	-18.6	0.1	1.7
Russell 2000 Value	Small Cap Value	-35.7	-35.7	-29.7	-9.5	-2.4
<b>International Equity</b>	<b>Style</b>	<b>QTR</b>	<b>YTD</b>	<b>1 Year</b>	<b>3 years</b>	<b>5 Years</b>
MSCI All Country World Ex US	Foreign Equity	-23.3	-23.3	-15.1	-1.5	-0.2
MSCI EAFE	Developed Markets Equity	-22.7	-22.7	-13.9	-1.3	-0.1
MSCI EAFE Growth	Developed Markets Growth	-17.4	-17.4	-5.4	3.4	2.9
MSCI EAFE Value	Developed Markets Value	-28.1	-28.1	-22.3	-6.1	-3.3
MSCI Emerging Markets	Emerging Markets Equity	-23.6	-23.6	-17.4	-1.3	0.0
<b>Domestic Fixed Income</b>	<b>Style</b>	<b>QTR</b>	<b>YTD</b>	<b>1 Year</b>	<b>3 years</b>	<b>5 Years</b>
Bloomberg Barclays Aggregate Index	Core Fixed Income	3.1	3.1	8.9	4.8	3.4
Bloomberg Barclays Capital Gov't Bond	Treasuries	8.1	8.1	13.1	5.8	3.6
Bloomberg Barclays Capital Credit Bond	Corporate Bonds	-3.1	-3.1	5.1	4.2	3.3
Intermediate Aggregate	Core Intermediate	2.5	2.5	6.9	3.9	2.8
ML/BoA 1-3 Year Treasury	Short Term Treasuries	2.8	2.8	5.4	2.7	1.8
Bloomberg Barclays Capital High Yield	High Yield Bonds	-12.7	-12.7	-6.9	0.8	2.8
<b>Alternative Assets</b>	<b>Style</b>	<b>QTR</b>	<b>YTD</b>	<b>1 Year</b>	<b>3 years</b>	<b>5 Years</b>
Bloomberg Barclays Global Treasury Ex US	International Treasuries	-3.2	-3.2	0.5	2.5	2.1
NCREIF NFI-ODCE Index	Real Estate	1.0	1.0	4.9	6.8	8.5
HFRI FOF Composite	Hedge Funds	-6.2	-6.2	-3.5	0.6	0.4

**APPENDIX - DISCLOSURES**

- \* The shadow index is a customized index that matches your portfolio's asset allocation on a monthly basis. This index was calculated using the following asset classes and corresponding benchmarks:

Large Cap Equity	S&P 500
Small Cap Equity	Russell 2000
International Equity	Blended International Index
Emerging Markets Equity	Blended Emerging Markets Index
Real Estate	NCREIF Property Index
Fixed Income	Bloomberg Barclays Aggregate Index
Cash & Equivalent	90 Day T Bill
- \* The Blended International Index utilizes the returns of the S&P Developed BMI through April 30, 2015 and the MSCI EAFE Index thereafter.
- \* The Blended Emerging Markets Index utilizes the returns of the S&P Emerging BMI through April 30, 2015 and the MSCI Emerging Markets Index thereafter.
- \* Dahab Associates utilizes data provided by a custodian and other vendors it believes are reliable. However, it cannot assume responsibility for errors and omissions therefrom.
- \* All returns were calculated on a time-weighted basis, and are gross of fees unless otherwise noted.
- \* All returns for periods greater than one year are annualized.
- \* Dahab Associates uses the modified duration measure to present average duration.
- \* All values are in US dollars.

PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
AMI ASSET MANAGEMENT - SMALL CAP GROWTH EQUITY  
PERFORMANCE REVIEW  
MARCH 2020

## **INVESTMENT RETURN**

On March 31st, 2020, the Pennsylvania Municipal Retirement System's AMI Asset Management Small Cap Growth Equity portfolio was valued at \$28,343,080, a decrease of \$9,169,968 from the December ending value of \$37,513,048. Last quarter, the account recorded total net withdrawals of \$71,802 in addition to \$9,098,166 in net investment losses. The fund's net investment loss was a result of income receipts totaling \$41,421 and realized and unrealized capital losses totaling \$9,139,587.

## **RELATIVE PERFORMANCE**

### **Total Fund**

During the first quarter, the AMI Asset Management Small Cap Growth Equity portfolio lost 24.3%, which was 1.5% greater than the Russell 2000 Growth Index's return of -25.8% and ranked in the 57th percentile of the Small Cap Growth universe. Over the trailing year, the portfolio returned -25.9%, which was 7.3% less than the benchmark's -18.6% performance, and ranked in the 93rd percentile. Since September 2017, the account returned -9.2% per annum and ranked in the 92nd percentile. For comparison, the Russell 2000 Growth returned an annualized -4.0% over the same time frame.

## **ASSET ALLOCATION**

At the end of the first quarter, small cap equities comprised 97.8% of the total portfolio (\$27.7 million), while cash & equivalents comprised the remaining 2.2% (\$620,215).

## **EQUITY ANALYSIS**

Last quarter, the AMI portfolio was invested in seven of the eleven industry sectors in our analysis. Relative to the Russell 2000 Growth index, the portfolio was overweight in the Consumer Staples, Financials, and Information Technology sectors, while the Consumer Discretionary, Health Care, and Industrials sectors were underweight. The Communications Services, Energy, Real Estate, and Utilities sectors were vacant.

The additional weight in the Consumer Staples and Information Technology sectors helped the portfolio stay ahead of the benchmark, since these two sectors were among the better performers; however this effect was partially eclipsed by the underweight to Health Care, which was the top performing sector. The portfolio also added value through better selection in the Consumer Staples, Health Care, and Materials sectors.

**EXECUTIVE SUMMARY****PERFORMANCE SUMMARY**

	Qtr / YTD	1 Year	3 Year	5 Year	Since 09/17
<b>Total Portfolio - Gross</b>	-24.3	-25.9	----	----	-9.2
<i>SMALL CAP GROWTH RANK</i>	(57)	(93)	----	----	(92)
<b>Total Portfolio - Net</b>	-24.5	-26.5	----	----	-9.9
Russell 2000G	-25.8	-18.6	0.1	1.7	-4.0
<b>Small Cap Equity - Gross</b>	-25.4	-27.1	----	----	-9.8
<i>SMALL CAP GROWTH RANK</i>	(62)	(95)	----	----	(95)
Russell 2000G	-25.8	-18.6	0.1	1.7	-4.0

**ASSET ALLOCATION**

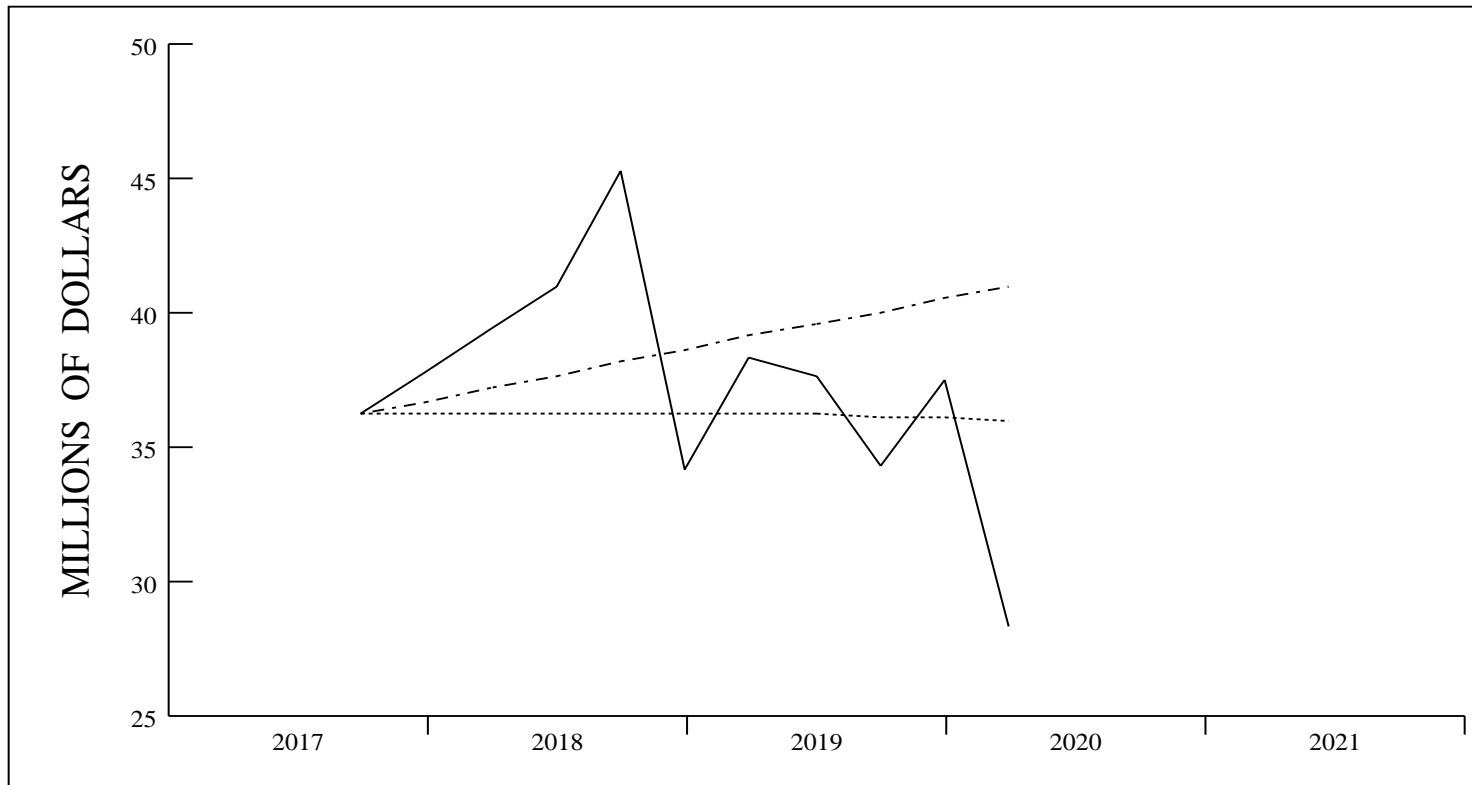
Small Cap	97.8%	\$ 27,722,865
Cash	2.2%	620,215
<b>Total Portfolio</b>	<b>100.0%</b>	<b>\$ 28,343,080</b>

**INVESTMENT RETURN**

Market Value 12/2019	\$ 37,513,048
Contribs / Withdrawals	- 71,802
Income	41,421
Capital Gains / Losses	- 9,139,587
Market Value 3/2020	\$ 28,343,080



**INVESTMENT GROWTH**

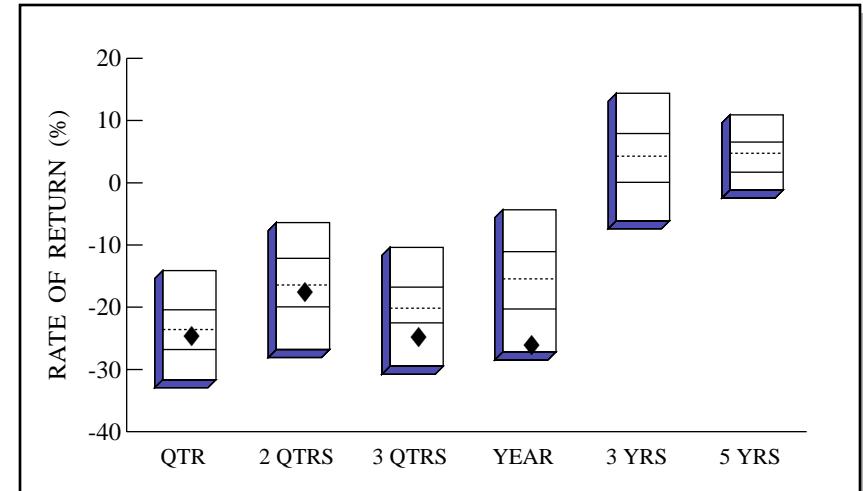
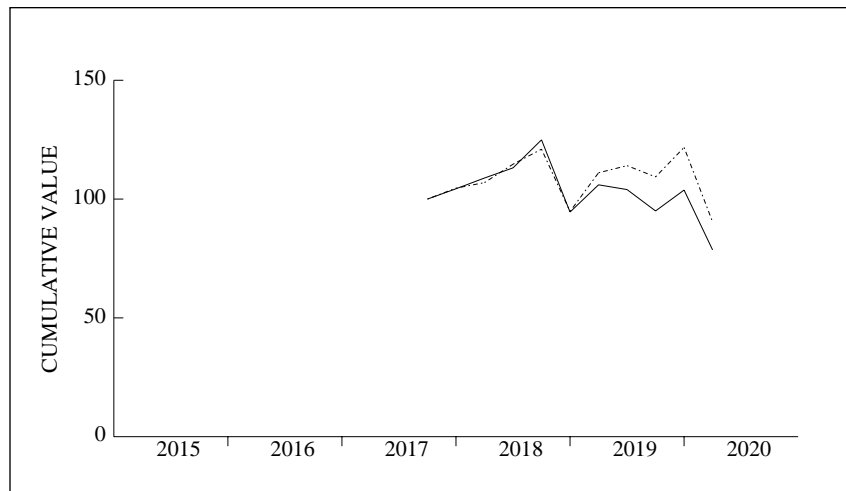


— ACTUAL RETURN  
 - - - 5.25%  
 . . . 0.0%

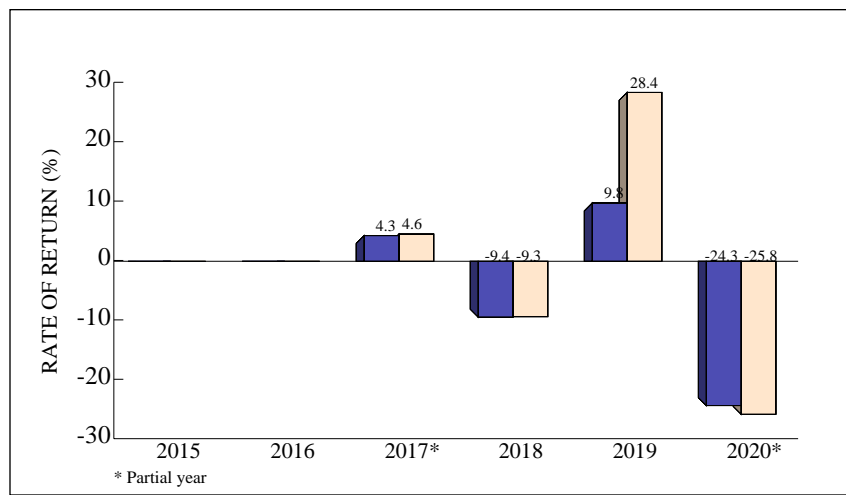
VALUE ASSUMING  
 5.25% RETURN \$ 41,024,680

	LAST QUARTER	PERIOD 9/17 - 3/20
BEGINNING VALUE	\$ 37,513,048	\$ 36,293,387
NET CONTRIBUTIONS	- 71,802	- 216,555
<u>INVESTMENT RETURN</u>	<u>- 9,098,166</u>	<u>- 7,733,752</u>
ENDING VALUE	\$ 28,343,080	\$ 28,343,080
INCOME	41,421	389,770
<u>CAPITAL GAINS (LOSSES)</u>	<u>- 9,139,587</u>	<u>- 8,123,522</u>
INVESTMENT RETURN	- 9,098,166	- 7,733,752

**TOTAL RETURN COMPARISONS**



Small Cap Growth Universe

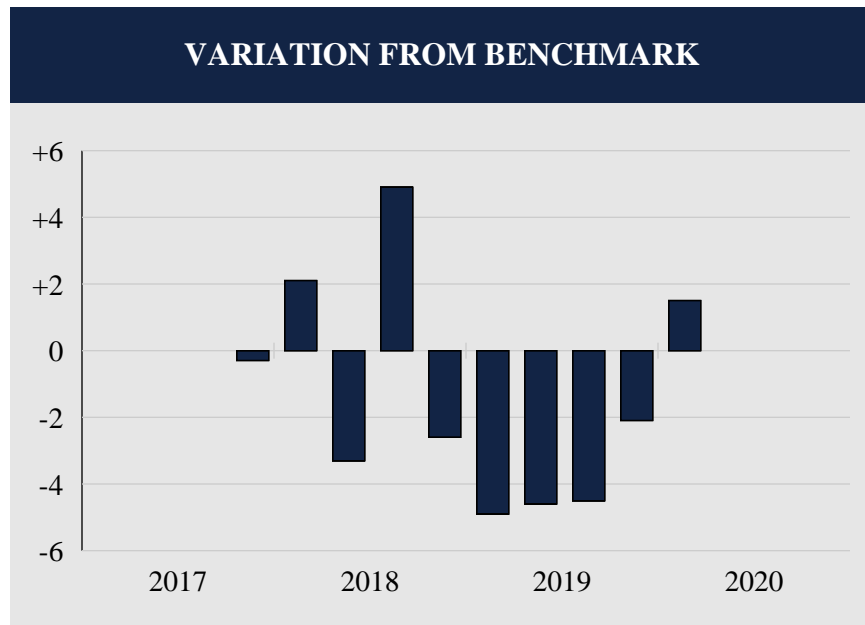


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-24.3	-17.3	-24.4	-25.9	----	----
(RANK)	(57)	(55)	(85)	(93)	----	----
5TH %ILE	-14.1	-6.4	-10.4	-4.4	14.4	10.9
25TH %ILE	-20.4	-12.1	-16.8	-11.1	7.9	6.6
MEDIAN	-23.6	-16.4	-20.2	-15.4	4.3	4.7
75TH %ILE	-26.8	-20.0	-22.5	-20.3	0.1	1.7
95TH %ILE	-31.7	-26.8	-29.5	-27.2	-6.1	-1.2
<b>Russ 2000G</b>	<b>-25.8</b>	<b>-17.3</b>	<b>-20.8</b>	<b>-18.6</b>	<b>0.1</b>	<b>1.7</b>

Small Cap Growth Universe

### TOTAL PORTFOLIO QUARTERLY PERFORMANCE SUMMARY

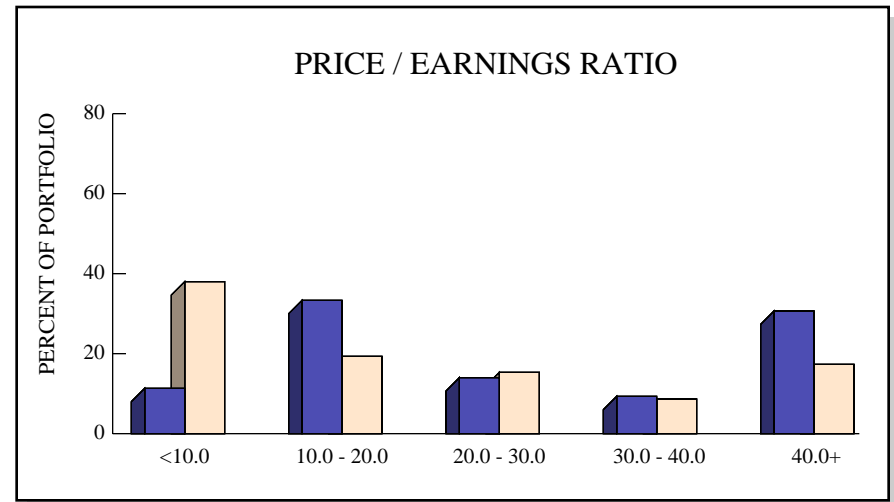
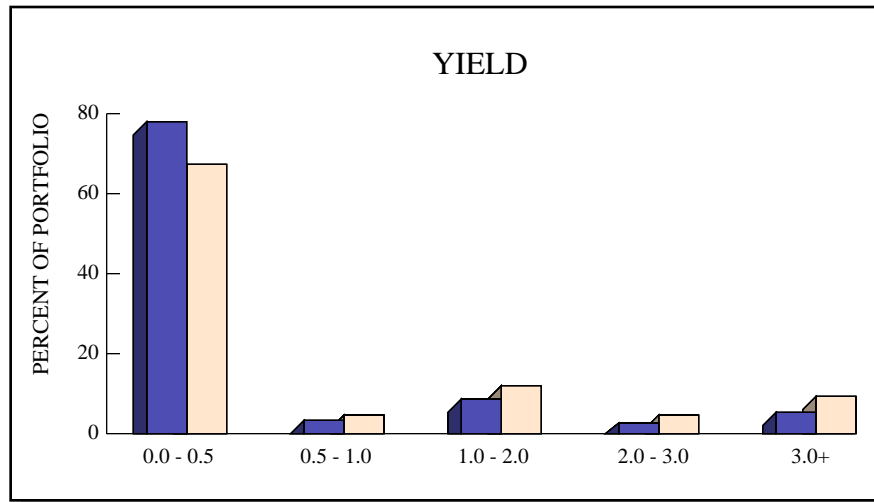
COMPARATIVE BENCHMARK: RUSSELL 2000 GROWTH



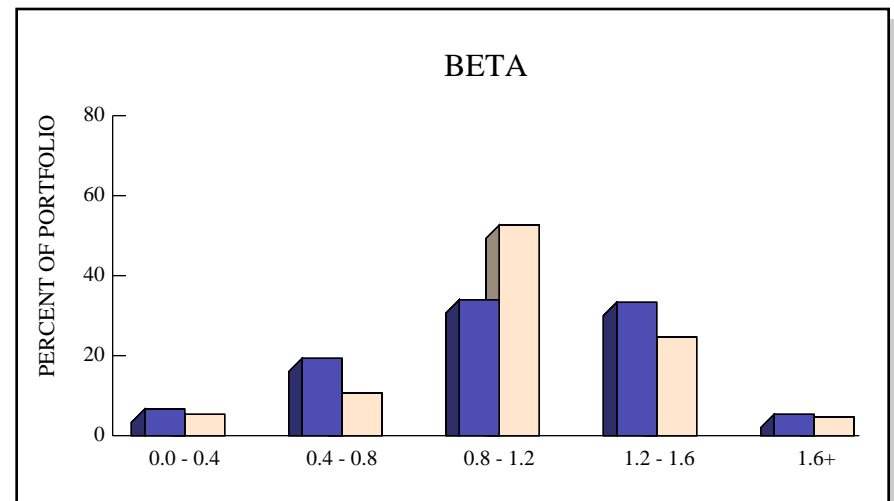
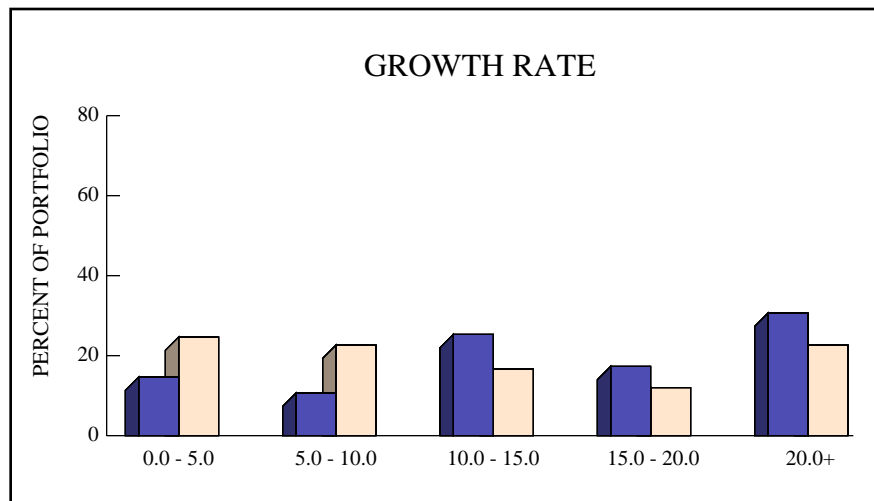
RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
12/17	4.3	4.6	-0.3
3/18	4.4	2.3	2.1
6/18	3.9	7.2	-3.3
9/18	10.4	5.5	4.9
12/18	-24.3	-21.7	-2.6
3/19	12.2	17.1	-4.9
6/19	-1.9	2.7	-4.6
9/19	-8.7	-4.2	-4.5
12/19	9.3	11.4	-2.1
3/20	-24.3	-25.8	1.5

<b>Total Quarters Observed</b>	<b>10</b>
<b>Quarters At or Above the Benchmark</b>	<b>3</b>
<b>Quarters Below the Benchmark</b>	<b>7</b>
<b>Batting Average</b>	<b>.300</b>

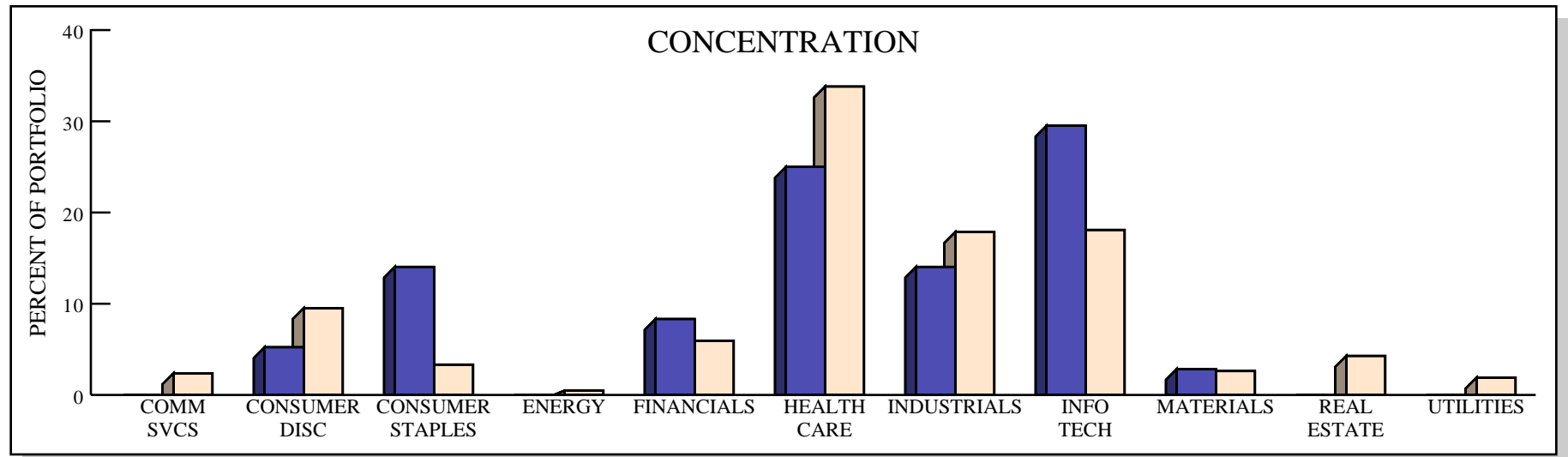
**STOCK CHARACTERISTICS**



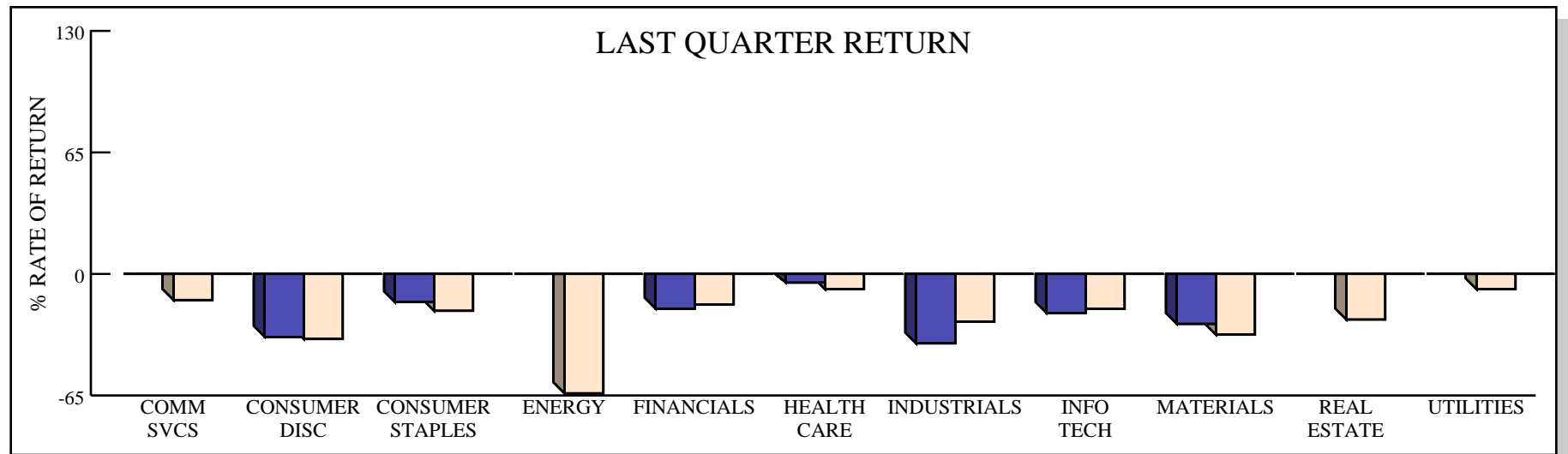
	# HOLDINGS	YIELD	GROWTH	P/E	BETA
PORTFOLIO	31	0.5%	12.4%	29.3	1.03
RUSSELL 2000G	1,167	0.9%	13.1%	16.0	1.04



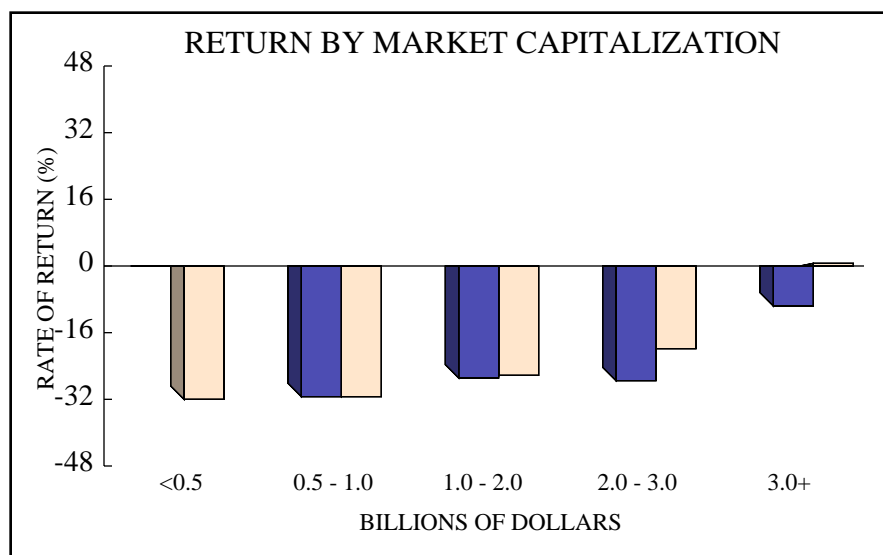
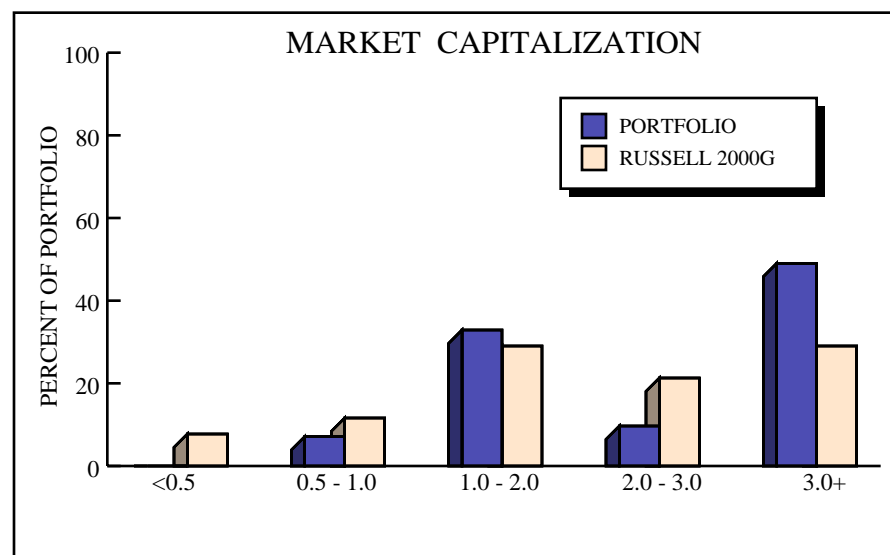
**STOCK INDUSTRY ANALYSIS**



■ PORTFOLIO      ■ RUSSELL 2000G



**TOP TEN HOLDINGS**



**TOP TEN EQUITY HOLDINGS**

RANK	NAME	VALUE	% EQUITY	RETURN	INDUSTRY SECTOR	MKT CAP
1	ICU MEDICAL INC	\$ 1,401,293	5.05%	7.8%	Health Care	\$ 4.2 B
2	REYNOLDS CONSUMER PRODUCTS I	1,160,733	4.19%	0.0%	Consumer Staples	6.1 B
3	QUALYS INC	1,154,879	4.17%	4.3%	Information Technology	3.4 B
4	QUIDEL CORP	1,119,533	4.04%	30.4%	Health Care	4.1 B
5	REALPAGE INC	1,082,154	3.90%	-1.5%	Information Technology	5.0 B
6	CUBIC CORP	1,069,020	3.86%	-34.9%	Industrials	1.3 B
7	SCIENCE APPLICATIONS INTE	1,059,970	3.82%	-13.9%	Information Technology	4.3 B
8	HORIZON PHARMA PLC	1,040,669	3.75%	-18.2%	Health Care	5.6 B
9	MERIT MEDICAL SYSTEMS INC	1,026,500	3.70%	0.1%	Health Care	1.7 B
10	VERINT SYSTEMS INC	1,012,005	3.65%	-22.3%	Information Technology	2.9 B

PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
COPELAND CAPITAL MANAGEMENT - SMALL CAP DIVIDEND GROWTH  
PERFORMANCE REVIEW  
MARCH 2020

## **INVESTMENT RETURN**

On March 31st, 2020, the Pennsylvania Municipal Retirement System's Copeland Capital Management Small Cap Dividend Growth portfolio was valued at \$35,137,059, a decrease of \$12,741,031 from the December ending value of \$47,878,090. Last quarter, the account recorded total net withdrawals of \$58,946 in addition to \$12,682,085 in net investment losses. The fund's net investment loss was a result of income receipts totaling \$280,257 and realized and unrealized capital losses totaling \$12,962,342.

## **RELATIVE PERFORMANCE**

### **Total Fund**

During the first quarter, the Copeland Capital Management Small Cap Dividend Growth portfolio lost 26.5%, which was 0.7% less than the Russell 2000 Growth Index's return of -25.8% and ranked in the 74th percentile of the Small Cap Growth universe. Over the trailing year, the portfolio returned -16.1%, which was 2.5% greater than the benchmark's -18.6% performance, and ranked in the 55th percentile. Since September 2017, the account returned -1.7% per annum and ranked in the 66th percentile. For comparison, the Russell 2000 Growth returned an annualized -4.0% over the same time frame.

## **ASSET ALLOCATION**

At the end of the first quarter, small cap equities comprised 95.6% of the total portfolio (\$33.6 million), while cash & equivalents comprised the remaining 4.4% (\$1.5 million).

## **EQUITY ANALYSIS**

Last quarter, the Copeland portfolio was invested in ten of the eleven industry sectors in our analysis. Compared to the allocations within the Russell 2000 Growth Index, the portfolio was overweight in the Consumer Staples, Financials, Real Estate, and Utilities sectors. The Health Care sector was significantly underweight, while the Industrials and Information Technology sectors had slightly lower weightings. The Energy sector was not invested.

Selection effects were mixed, with some sectors such as Communication Services, Consumer Discretionary, Industrials, and Real Estate beating their index counterparts. Conversely, the Consumer Staples, Financials, and Health Care sectors underperformed. The effect of a lower allocation to the Health Care sector, which made up about a third of the index was to put the portfolio at a disadvantage, since that sector was a top performer for the quarter.



**EXECUTIVE SUMMARY****PERFORMANCE SUMMARY**

	Qtr / YTD	1 Year	3 Year	5 Year	Since 09/17
<b>Total Portfolio - Gross</b>	-26.5	-16.1	----	----	-1.7
<i>SMALL CAP GROWTH RANK</i>	(74)	(55)	----	----	(66)
<b>Total Portfolio - Net</b>	-26.7	-16.8	----	----	-2.6
Russell 2000G	-25.8	-18.6	0.1	1.7	-4.0
<b>Small Cap Equity - Gross</b>	-27.2	-16.5	----	----	-1.8
<i>SMALL CAP GROWTH RANK</i>	(77)	(58)	----	----	(66)
Russell 2000G	-25.8	-18.6	0.1	1.7	-4.0

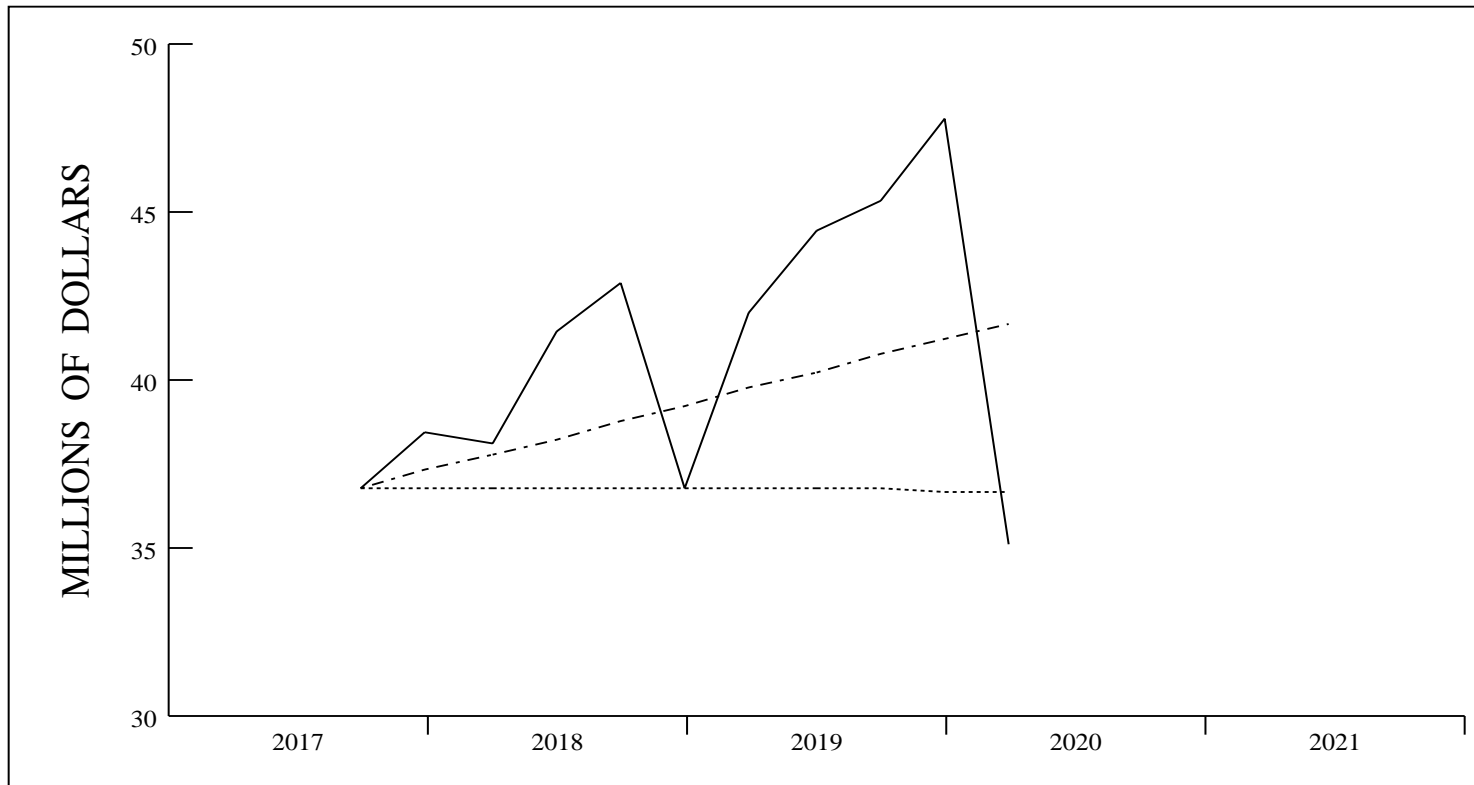
**ASSET ALLOCATION**

Small Cap	95.6%	\$ 33,603,413
Cash	4.4%	1,533,646
<b>Total Portfolio</b>	<b>100.0%</b>	<b>\$ 35,137,059</b>

**INVESTMENT RETURN**

Market Value 12/2019	\$ 47,878,090
Contribs / Withdrawals	- 58,946
Income	280,257
Capital Gains / Losses	- 12,962,342
Market Value 3/2020	\$ 35,137,059

**INVESTMENT GROWTH**

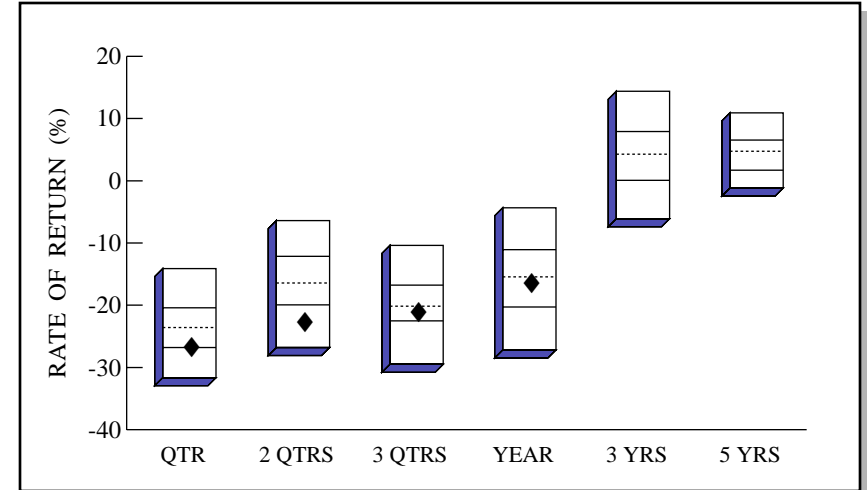
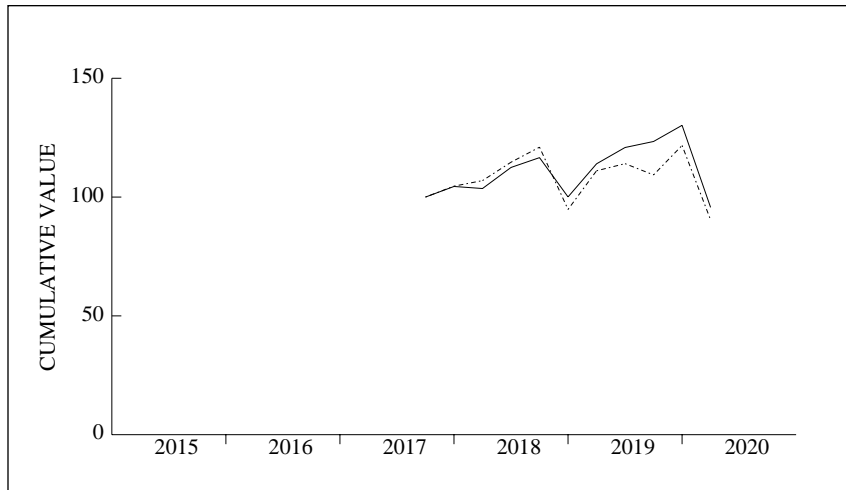


— ACTUAL RETURN  
 - - - 5.25%  
 . . . 0.0%

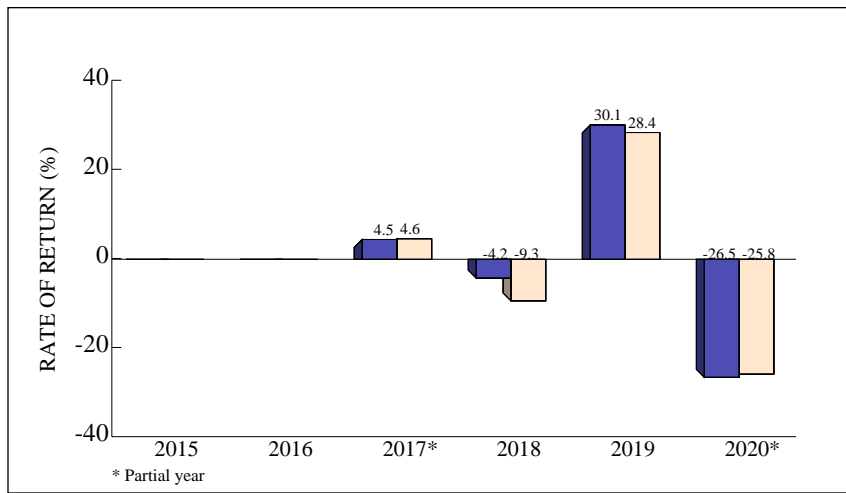
VALUE ASSUMING  
 5.25% RETURN \$ 41,718,245

	LAST QUARTER	PERIOD 9/17 - 3/20
BEGINNING VALUE	\$ 47,878,090	\$ 36,860,615
NET CONTRIBUTIONS	- 58,946	-169,252
<u>INVESTMENT RETURN</u>	<u>- 12,682,085</u>	<u>- 1,554,304</u>
ENDING VALUE	\$ 35,137,059	\$ 35,137,059
INCOME	280,257	2,171,157
<u>CAPITAL GAINS (LOSSES)</u>	<u>- 12,962,342</u>	<u>- 3,725,461</u>
INVESTMENT RETURN	- 12,682,085	- 1,554,304

**TOTAL RETURN COMPARISONS**



Small Cap Growth Universe

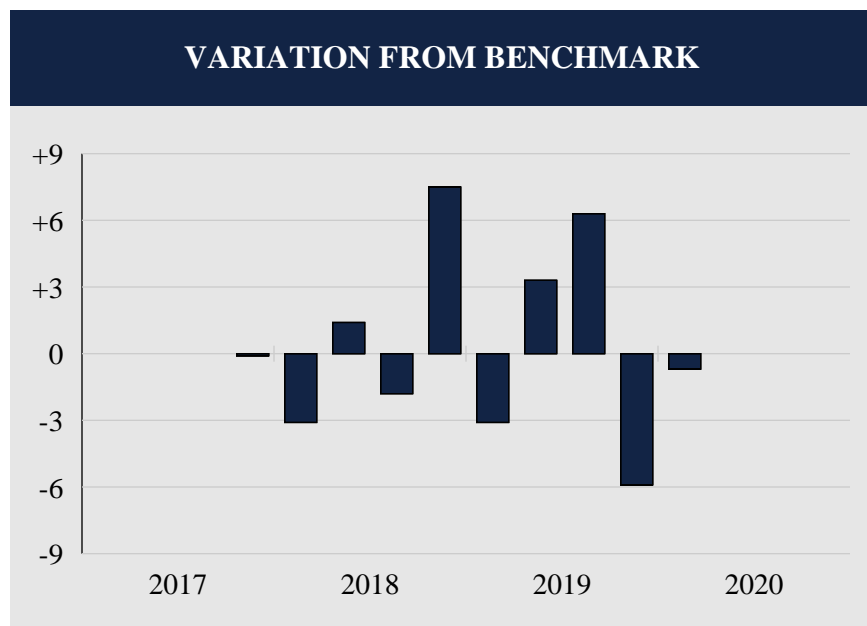


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-26.5	-22.5	-20.8	-16.1	----	----
(RANK)	(74)	(88)	(57)	(55)	----	----
5TH %ILE	-14.1	-6.4	-10.4	-4.4	14.4	10.9
25TH %ILE	-20.4	-12.1	-16.8	-11.1	7.9	6.6
MEDIAN	-23.6	-16.4	-20.2	-15.4	4.3	4.7
75TH %ILE	-26.8	-20.0	-22.5	-20.3	0.1	1.7
95TH %ILE	-31.7	-26.8	-29.5	-27.2	-6.1	-1.2
<b>Russ 2000G</b>	<b>-25.8</b>	<b>-17.3</b>	<b>-20.8</b>	<b>-18.6</b>	<b>0.1</b>	<b>1.7</b>

Small Cap Growth Universe

### TOTAL PORTFOLIO QUARTERLY PERFORMANCE SUMMARY

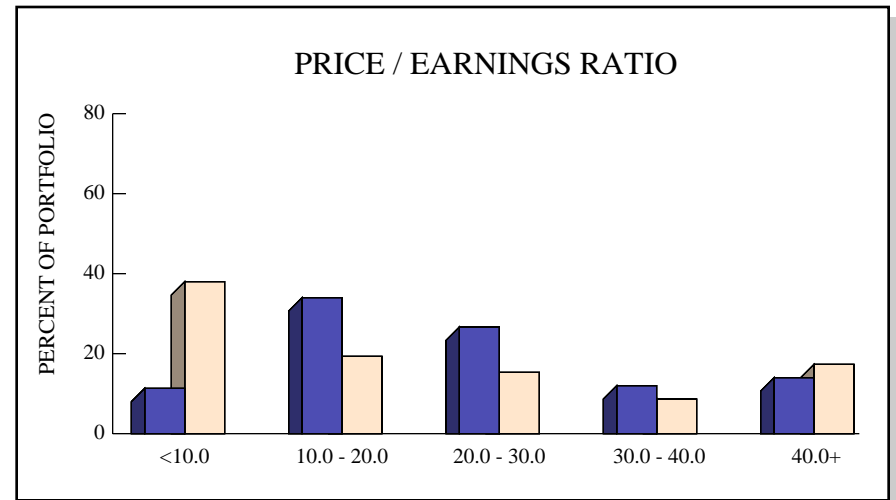
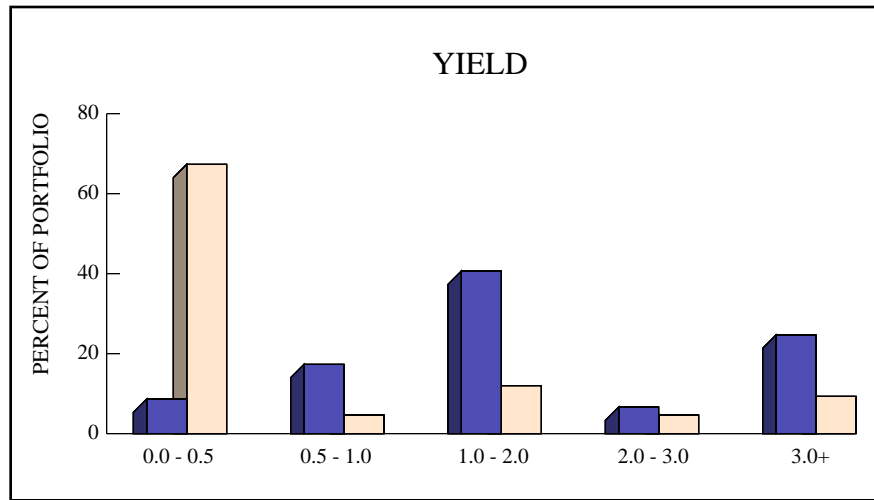
COMPARATIVE BENCHMARK: RUSSELL 2000 GROWTH



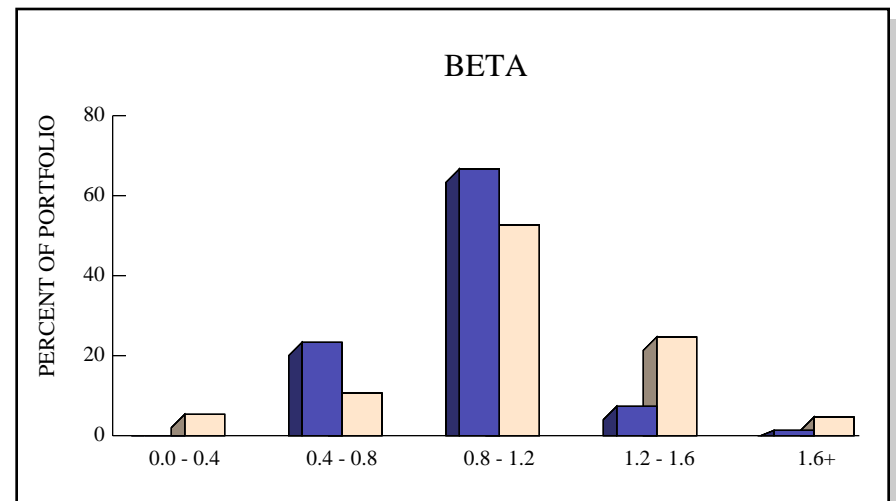
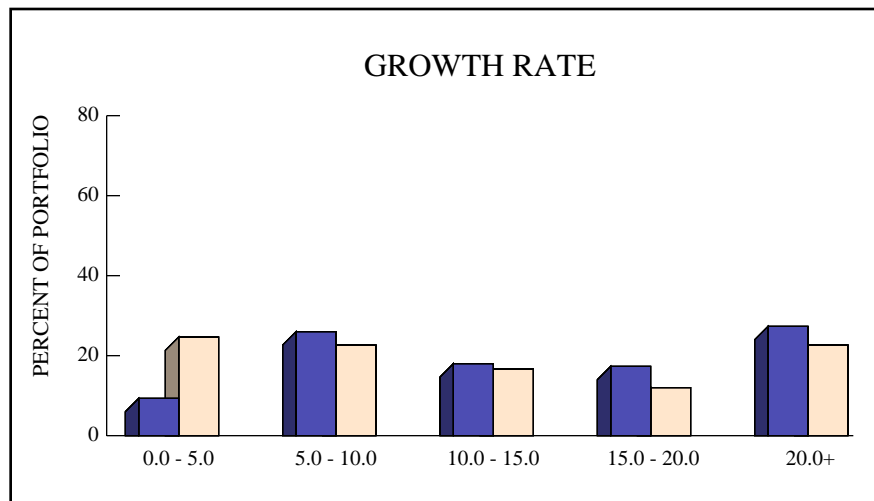
RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
12/17	4.5	4.6	-0.1
3/18	-0.8	2.3	-3.1
6/18	8.6	7.2	1.4
9/18	3.7	5.5	-1.8
12/18	-14.2	-21.7	7.5
3/19	14.0	17.1	-3.1
6/19	6.0	2.7	3.3
9/19	2.1	-4.2	6.3
12/19	5.5	11.4	-5.9
3/20	-26.5	-25.8	-0.7

<b>Total Quarters Observed</b>	<b>10</b>
<b>Quarters At or Above the Benchmark</b>	<b>4</b>
<b>Quarters Below the Benchmark</b>	<b>6</b>
<b>Batting Average</b>	<b>.400</b>

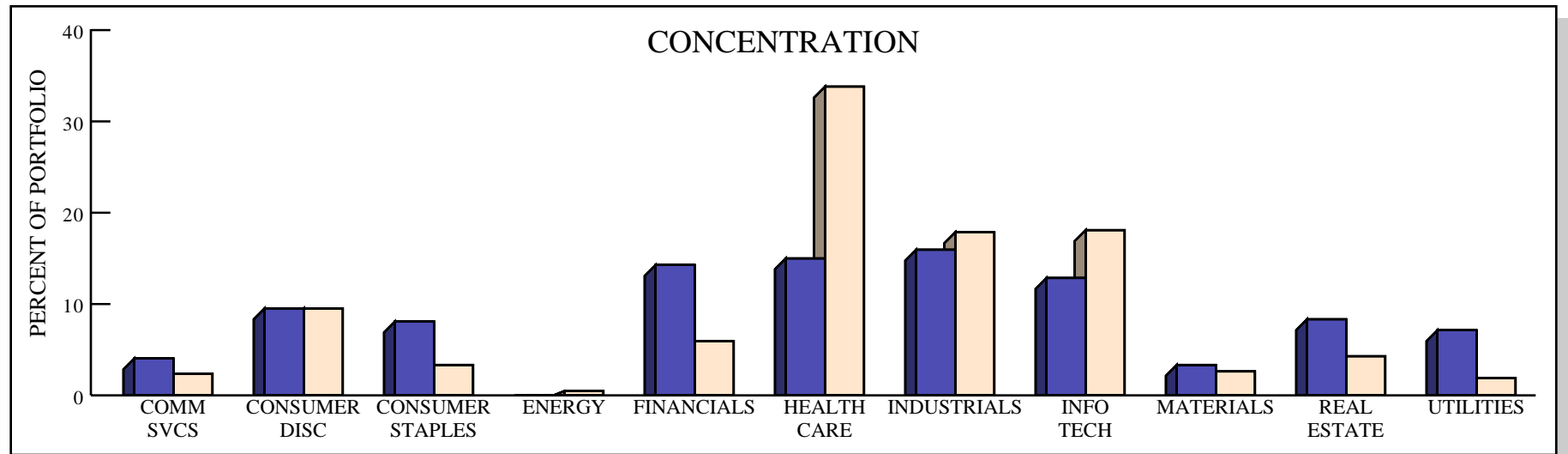
**STOCK CHARACTERISTICS**



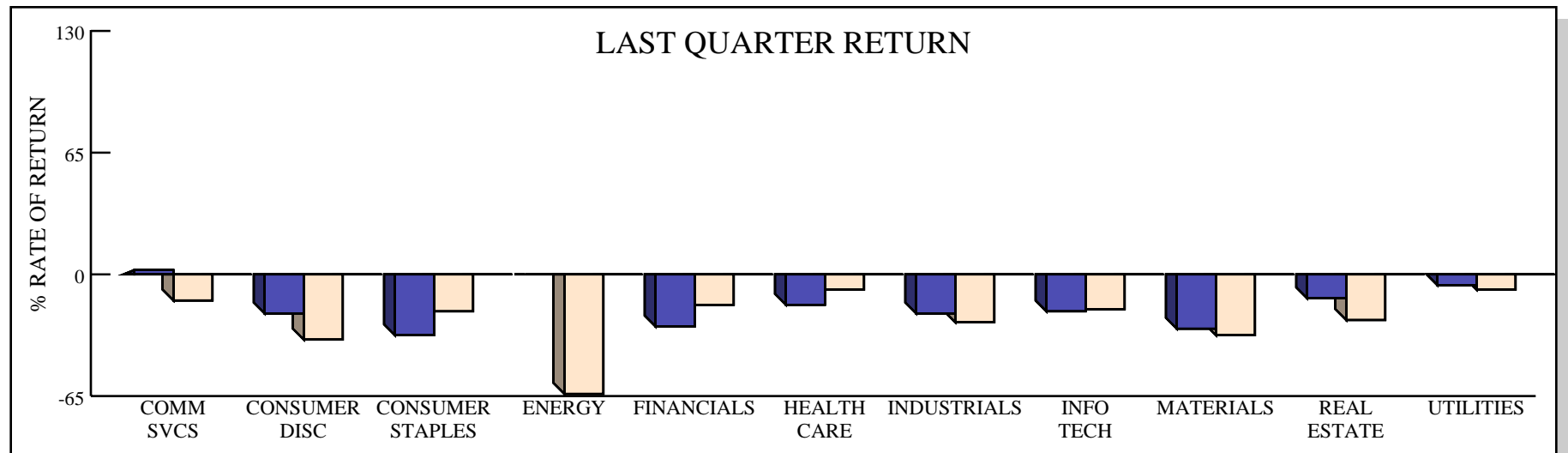
	# HOLDINGS	YIELD	GROWTH	P/E	BETA
PORTFOLIO	51	2.3%	15.4%	26.6	0.99
RUSSELL 2000G	1,167	0.9%	13.1%	16.0	1.04



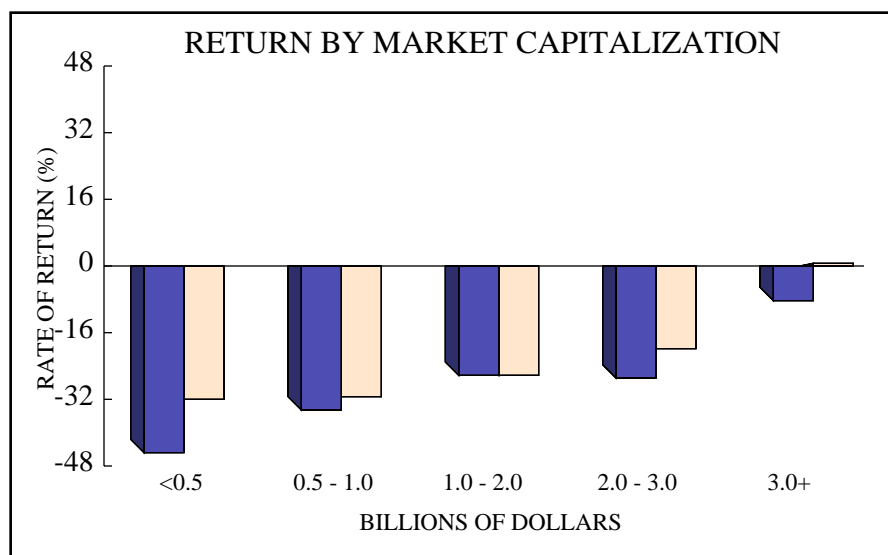
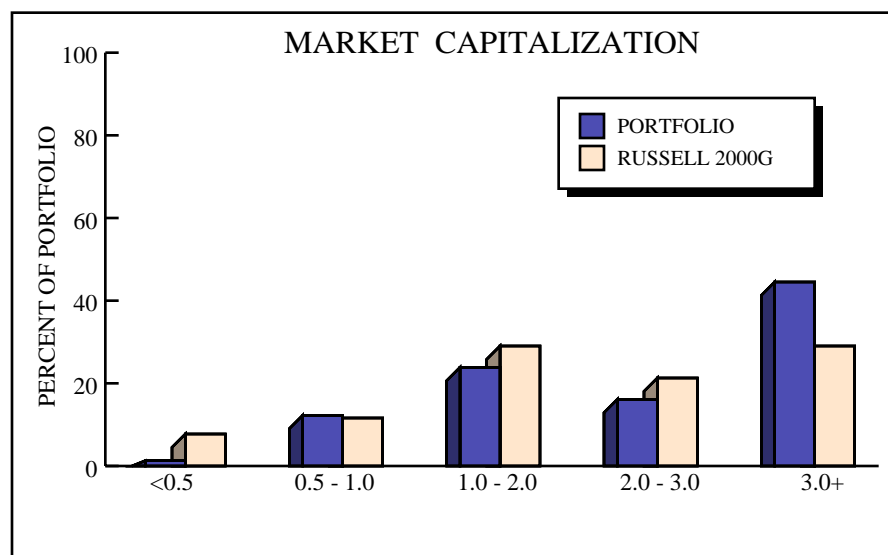
**STOCK INDUSTRY ANALYSIS**



■ PORTFOLIO      ■ RUSSELL 2000G



**TOP TEN HOLDINGS**



**TOP TEN EQUITY HOLDINGS**

RANK	NAME	VALUE	% EQUITY	RETURN	INDUSTRY SECTOR	MKT CAP
1	CHEMED CORP	\$ 1,384,940	4.12%	-1.3%	Health Care	\$ 7.0 B
2	ALGONQUIN POWER & UTILITIES	1,103,972	3.29%	-4.2%	Utilities	7.0 B
3	QTS REALTY TRUST INC-CL A	1,098,129	3.27%	8.0%	Real Estate	3.4 B
4	ENCOMPASS HEALTH CORP	1,065,395	3.17%	-7.2%	Health Care	6.3 B
5	COGENT COMMUNICATIONS HOLDIN	995,362	2.96%	25.6%	Communication Services	3.9 B
6	EXPONENT INC	943,244	2.81%	4.5%	Industrials	3.7 B
7	POOL CORP	935,838	2.78%	-7.1%	Consumer Discretionary	7.9 B
8	TETRA TECH INC	925,263	2.75%	-17.9%	Industrials	3.9 B
9	BWX TECHNOLOGIES INC	902,742	2.69%	-21.3%	Industrials	4.6 B
10	POWER INTEGRATIONS INC	875,880	2.61%	-10.5%	Information Technology	2.6 B

PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
EAGLE CAPITAL MANAGEMENT - EQUITY  
PERFORMANCE REVIEW  
MARCH 2020



## **INVESTMENT RETURN**

On March 31st, 2020, the Pennsylvania Municipal Retirement System's Eagle Capital Management Equity portfolio was valued at \$124,409,687, a decrease of \$39,076,979 from the December ending value of \$163,486,666. Last quarter, the account recorded total net withdrawals of \$303,202 in addition to \$38,773,777 in net investment losses. The fund's net investment loss was a result of income receipts totaling \$446,214 and realized and unrealized capital losses totaling \$39,219,991.

## **RELATIVE PERFORMANCE**

### **Total Fund**

During the first quarter, the Eagle Capital Management Equity portfolio lost 23.7%, which was 3.0% greater than the Russell 1000 Value Index's return of -26.7% and ranked in the 29th percentile of the Large Cap Value universe. Over the trailing year, the portfolio returned -9.8%, which was 7.4% greater than the benchmark's -17.2% performance, and ranked in the 17th percentile. Since March 2016, the account returned 8.7% per annum and ranked in the 5th percentile. For comparison, the Russell 1000 Value returned an annualized 2.8% over the same time frame.

## **ASSET ALLOCATION**

At the end of the first quarter, large cap equities comprised 99.6% of the total portfolio (\$124.0 million), while cash & equivalents comprised the remaining 0.4% (\$443,489).

## **EQUITY ANALYSIS**

The Eagle portfolio was invested last quarter across seven of the eleven sectors in our analysis. The Communications Services and Consumer Discretionary sectors held significantly higher allocations than within the Russell 1000 Value Index, with the former making up nearly a third of the portfolio, three times the index weight. Financials and Information Technology were also overweight. The Health Care, Industrials, and Materials had reduced allocations, while the Consumer Staples, Energy, Real Estate, and Utilities were vacant.

Better selection in the Communication Services, Consumer Discretionary, and Information Technology sectors, which represented over 60% of the portfolio, combined helped the portfolio to moderate losses and come out ahead of the benchmark.

**EXECUTIVE SUMMARY****PERFORMANCE SUMMARY**

	Qtr / YTD	1 Year	3 Year	5 Year	Since 03/16
<b>Total Portfolio - Gross</b>	-23.7	-9.8	4.3	----	8.7
<i>LARGE CAP VALUE RANK</i>	(29)	(17)	(7)	----	(5)
<i>LARGE CAP CORE RANK</i>	(82)	(62)	(44)	----	(18)
<b>Total Portfolio - Net</b>	-23.9	-10.5	3.5	----	7.9
Russell 1000V	-26.7	-17.2	-2.2	1.9	2.8
Russell 1000	-20.2	-8.0	4.6	6.2	7.7
<b>Large Cap Equity - Gross</b>	-24.0	-9.7	4.4	----	9.0
<i>LARGE CAP VALUE RANK</i>	(31)	(16)	(7)	----	(4)
<i>LARGE CAP CORE RANK</i>	(84)	(61)	(42)	----	(14)
Russell 1000V	-26.7	-17.2	-2.2	1.9	2.8
Russell 1000	-20.2	-8.0	4.6	6.2	7.7

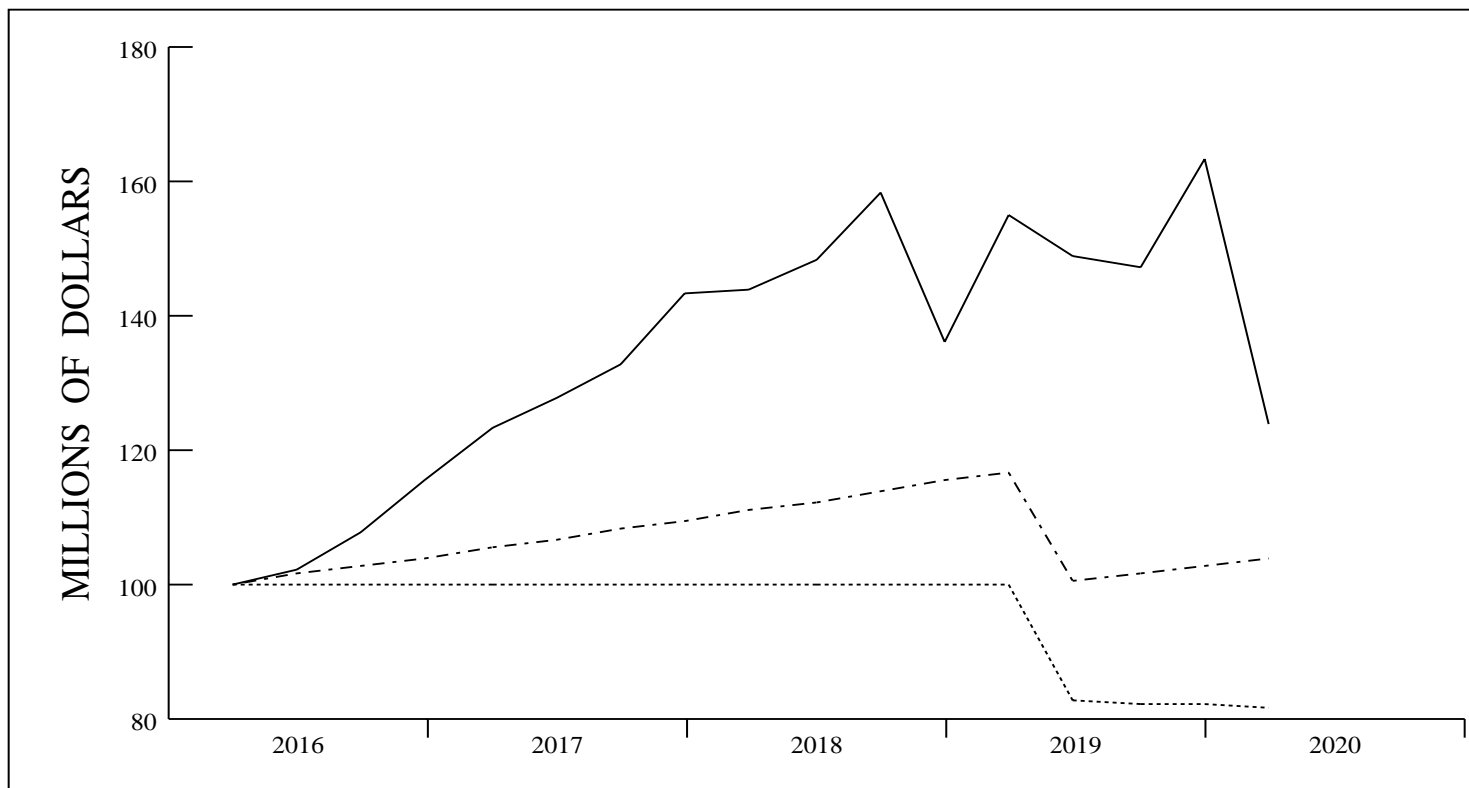
**ASSET ALLOCATION**

Large Cap Equity	99.6%	\$ 123,966,198
Cash	0.4%	443,489
<b>Total Portfolio</b>	<b>100.0%</b>	<b>\$ 124,409,687</b>

**INVESTMENT RETURN**

Market Value 12/2019	\$ 163,486,666
Contribs / Withdrawals	-303,202
Income	446,214
Capital Gains / Losses	- 39,219,991
Market Value 3/2020	\$ 124,409,687

**INVESTMENT GROWTH**

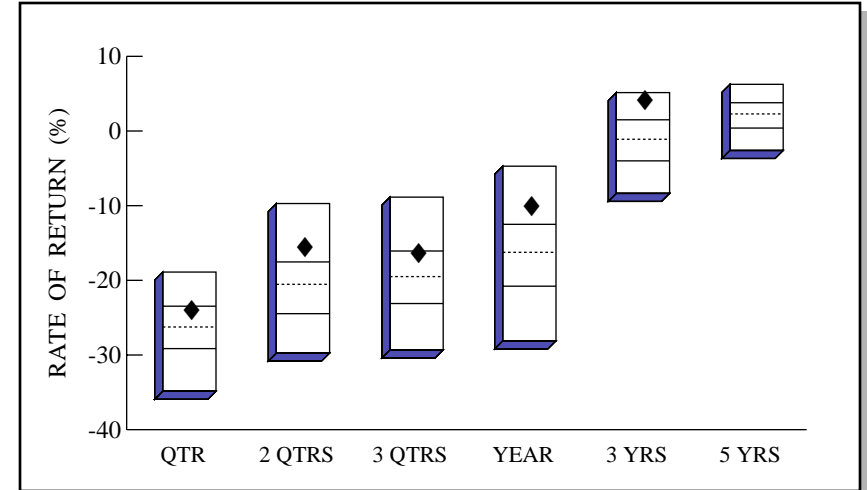
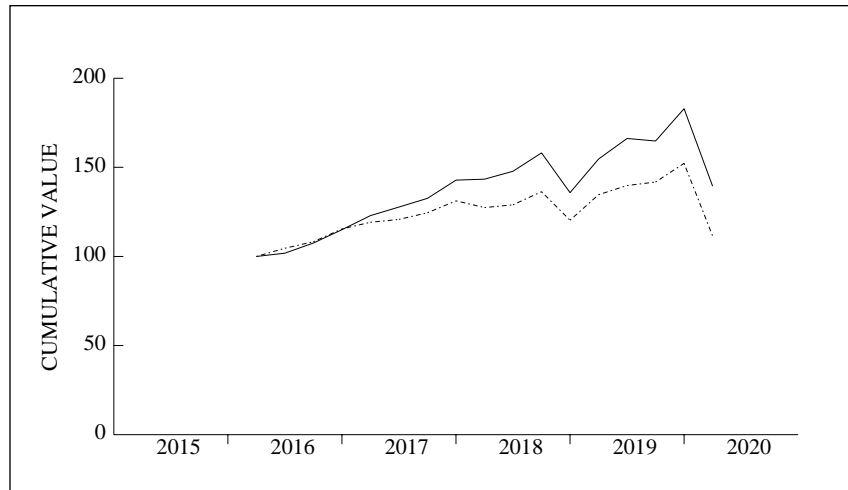


— ACTUAL RETURN  
 - - - 5.25%  
 ..... 0.0%

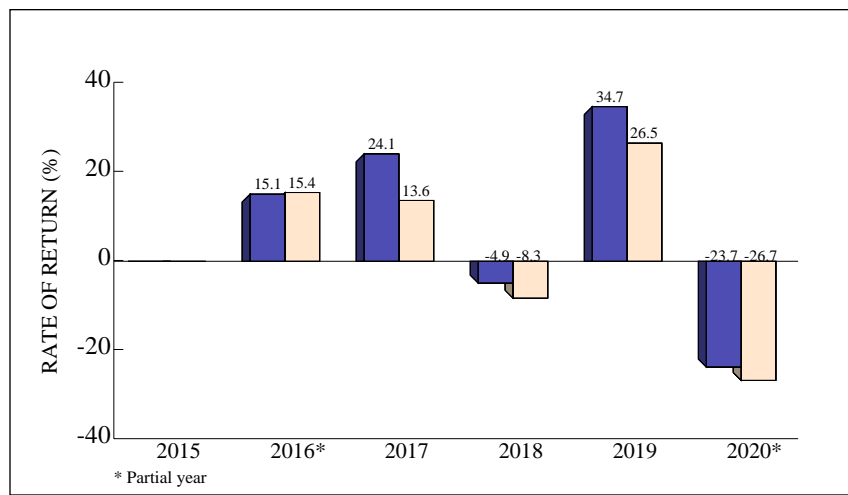
VALUE ASSUMING  
 5.25% RETURN \$ 104,026,991

	LAST QUARTER	PERIOD 3/16 - 3/20
BEGINNING VALUE	\$ 163,486,666	\$ 100,475,791
NET CONTRIBUTIONS	-303,202	- 18,371,382
<u>INVESTMENT RETURN</u>	<u>- 38,773,777</u>	<u>42,305,278</u>
ENDING VALUE	\$ 124,409,687	\$ 124,409,687
INCOME	446,214	6,382,361
<u>CAPITAL GAINS (LOSSES)</u>	<u>- 39,219,991</u>	<u>35,922,917</u>
INVESTMENT RETURN	- 38,773,777	42,305,278

**TOTAL RETURN COMPARISONS**



Large Cap Value Universe

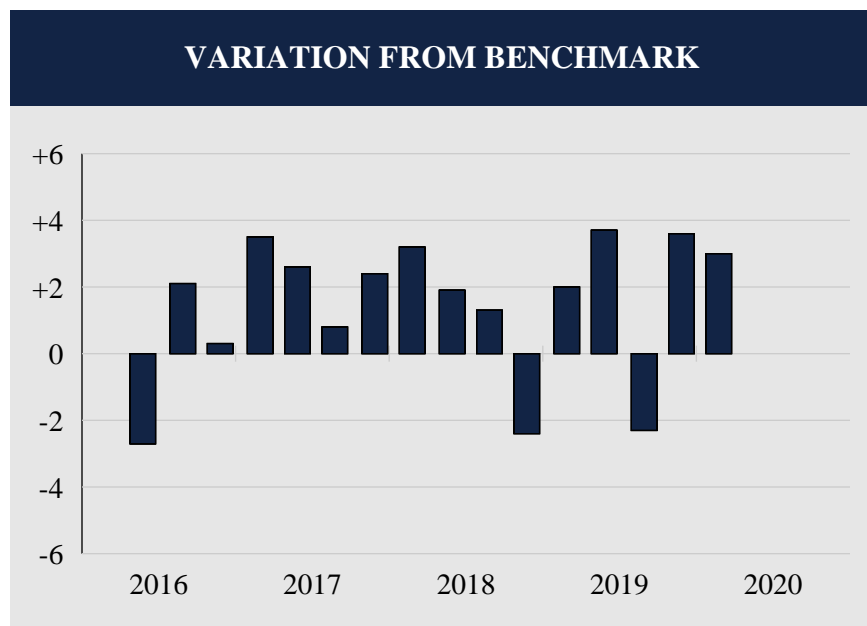


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-23.7	-15.3	-16.1	-9.8	4.3	---
(RANK)	(29)	(16)	(26)	(17)	(7)	---
5TH %ILE	-18.9	-9.7	-8.8	-4.7	5.2	6.3
25TH %ILE	-23.5	-17.5	-16.1	-12.5	1.5	3.8
MEDIAN	-26.3	-20.5	-19.5	-16.3	-1.1	2.3
75TH %ILE	-29.2	-24.5	-23.1	-20.8	-4.0	0.4
95TH %ILE	-34.9	-29.7	-29.3	-28.1	-8.4	-2.6
<b>Russ 1000V</b>	<b>-26.7</b>	<b>-21.3</b>	<b>-20.2</b>	<b>-17.2</b>	<b>-2.2</b>	<b>1.9</b>

Large Cap Value Universe

### TOTAL PORTFOLIO QUARTERLY PERFORMANCE SUMMARY

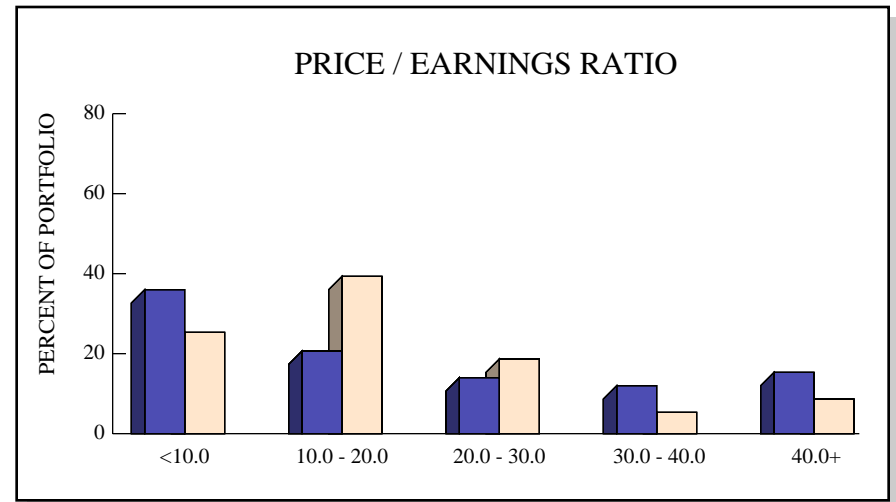
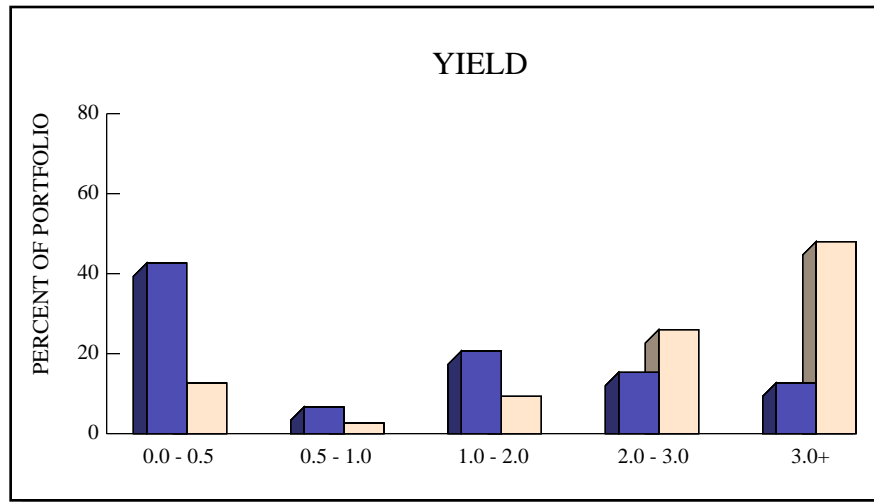
COMPARATIVE BENCHMARK: RUSSELL 1000 VALUE



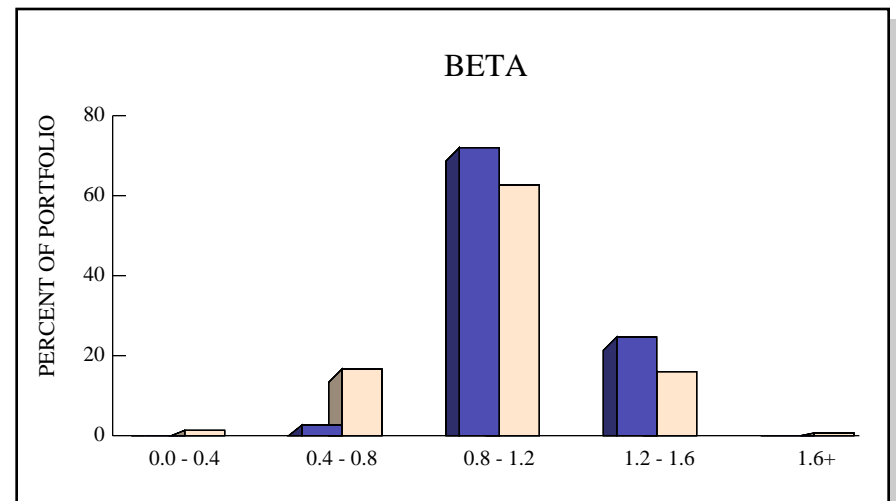
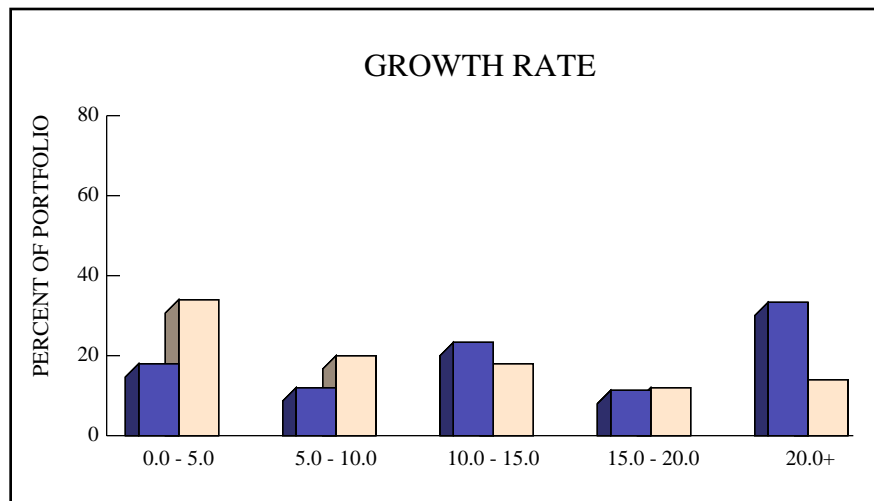
RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
6/16	1.9	4.6	-2.7
9/16	5.6	3.5	2.1
12/16	7.0	6.7	0.3
3/17	6.8	3.3	3.5
6/17	3.9	1.3	2.6
9/17	3.9	3.1	0.8
12/17	7.7	5.3	2.4
3/18	0.4	-2.8	3.2
6/18	3.1	1.2	1.9
9/18	7.0	5.7	1.3
12/18	-14.1	-11.7	-2.4
3/19	13.9	11.9	2.0
6/19	7.5	3.8	3.7
9/19	-0.9	1.4	-2.3
12/19	11.0	7.4	3.6
3/20	-23.7	-26.7	3.0

<b>Total Quarters Observed</b>	<b>16</b>
<b>Quarters At or Above the Benchmark</b>	<b>13</b>
<b>Quarters Below the Benchmark</b>	<b>3</b>
<b>Batting Average</b>	<b>.813</b>

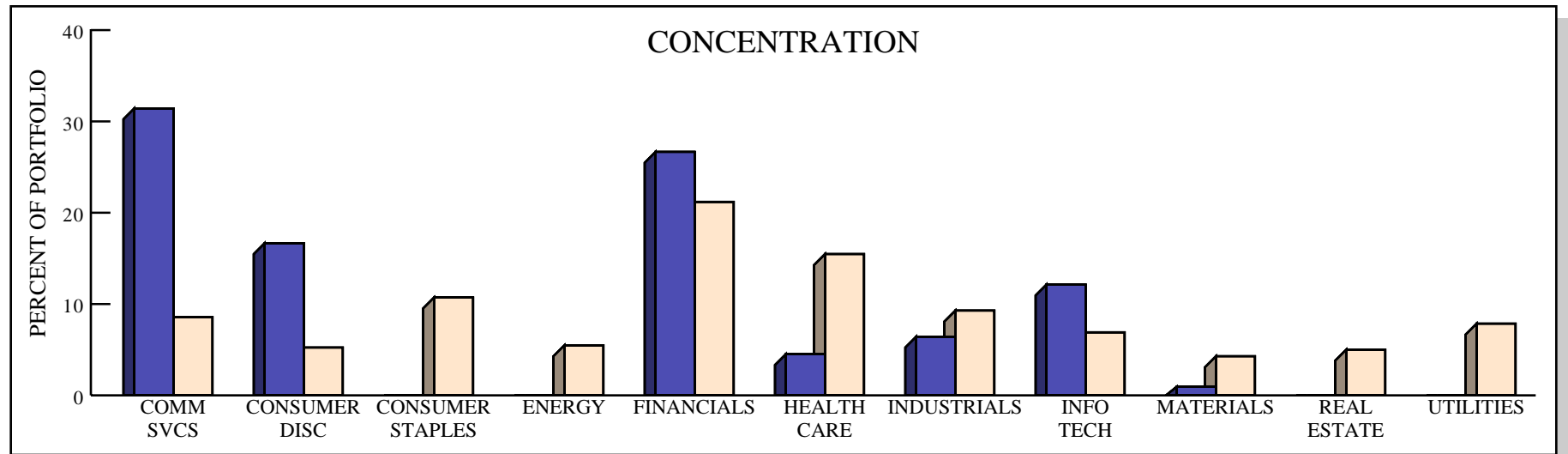
**STOCK CHARACTERISTICS**



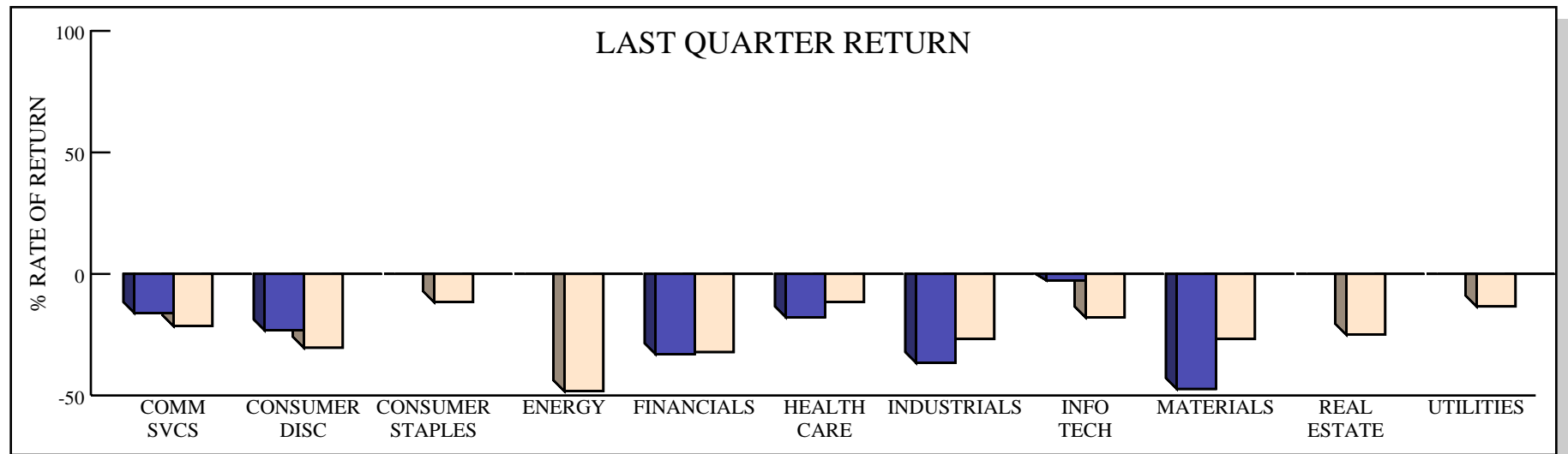
	# HOLDINGS	YIELD	GROWTH	P/E	BETA
PORTFOLIO	31	1.5%	17.0%	23.9	1.03
RUSSELL 1000V	765	3.4%	8.6%	18.3	0.99



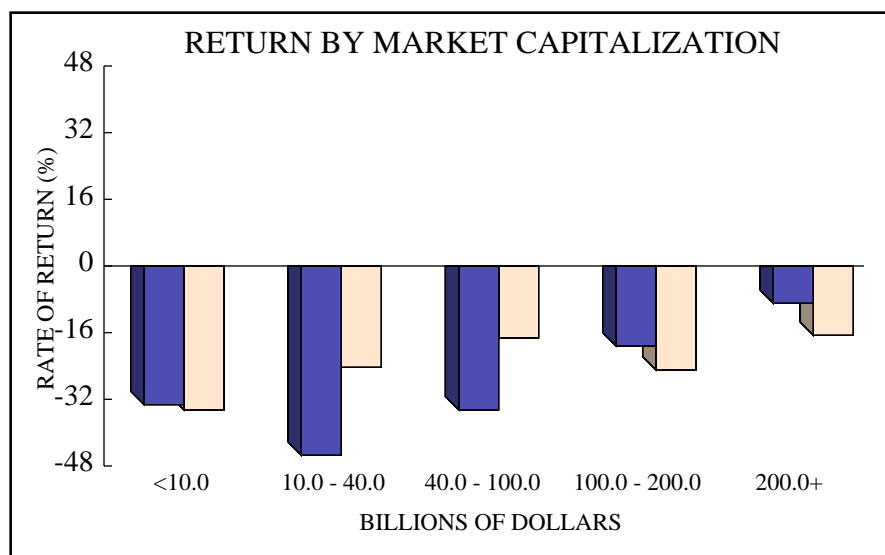
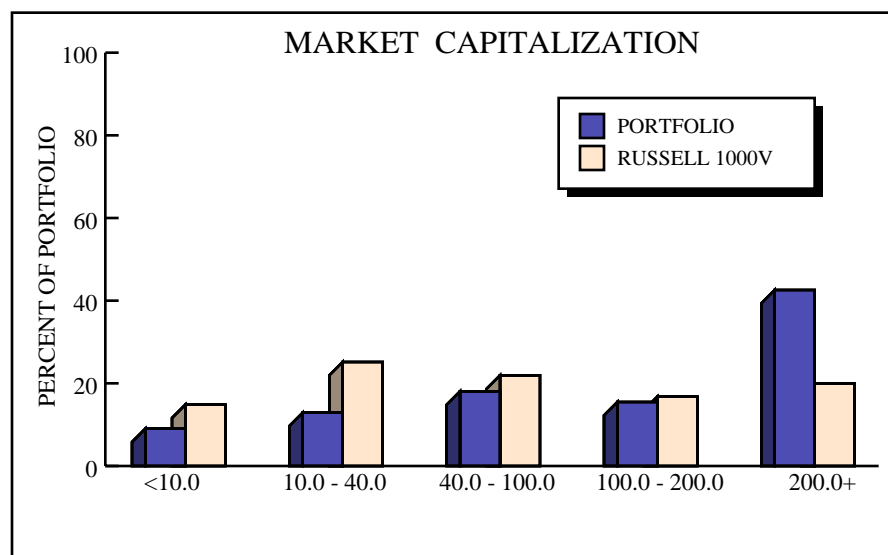
**STOCK INDUSTRY ANALYSIS**



■ PORTFOLIO      ■ RUSSELL 1000V



**TOP TEN HOLDINGS**



**TOP TEN EQUITY HOLDINGS**

RANK	NAME	VALUE	% EQUITY	RETURN	INDUSTRY SECTOR	MKT CAP
1	MICROSOFT CORP	\$ 12,622,163	10.18%	0.3%	Information Technology	\$ 1199.6 B
2	ALPHABET INC-CL C	11,383,910	9.18%	-13.0%	Communication Services	396.5 B
3	BERKSHIRE HATHAWAY INC-CL B	9,827,295	7.93%	-19.3%	Financials	252.7 B
4	AMAZON.COM INC	9,144,187	7.38%	5.5%	Consumer Discretionary	970.6 B
5	COMCAST CORP-CLASS A	7,866,591	6.35%	-22.7%	Communication Services	156.2 B
6	GOLDMAN SACHS GROUP INC	6,004,739	4.84%	-32.4%	Financials	53.2 B
7	CITIGROUP INC	5,719,896	4.61%	-46.9%	Financials	88.4 B
8	FACEBOOK INC-CLASS A	5,532,923	4.46%	-18.7%	Communication Services	401.3 B
9	GENERAL ELECTRIC CO	5,255,319	4.24%	-28.8%	Industrials	69.4 B
10	MARRIOTT INTERNATIONAL -CL A	4,975,837	4.01%	-50.4%	Consumer Discretionary	24.3 B



PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
EMERALD ADVISORS - DIVERSIFIED SMALL CAP GROWTH  
PERFORMANCE REVIEW  
MARCH 2020

## **INVESTMENT RETURN**

On March 31st, 2020, the Pennsylvania Municipal Retirement System's Emerald Advisors Diversified Small Cap Growth portfolio was valued at \$52,750,893, a decrease of \$17,401,647 from the December ending value of \$70,152,540. Last quarter, the account recorded total net withdrawals of \$88,130 in addition to \$17,313,517 in net investment losses. The fund's net investment loss was a result of income receipts totaling \$124,822 and realized and unrealized capital losses totaling \$17,438,339.

## **RELATIVE PERFORMANCE**

### **Total Fund**

During the first quarter, the Emerald Advisors Diversified Small Cap Growth portfolio lost 24.7%, which was 1.1% greater than the Russell 2000 Growth Index's return of -25.8% and ranked in the 60th percentile of the Small Cap Growth universe. Over the trailing year, the portfolio returned -18.2%, which was 0.4% greater than the benchmark's -18.6% performance, and ranked in the 64th percentile. Since September 1998, the account returned 9.8% per annum. For comparison, the Russell 2000 Growth returned an annualized 6.5% over the same time frame.

## **ASSET ALLOCATION**

At the end of the first quarter, small cap equities comprised 95.9% of the total portfolio (\$50.6 million), while cash & equivalents comprised the remaining 4.1% (\$2.2 million).

## **EQUITY ANALYSIS**

The Emerald portfolio was invested in ten of the eleven industry sectors shown in our analysis last quarter. Relative to the Russell 2000 Growth Index, the portfolio placed more weight in its Communication Services, Consumer Discretionary, Consumer Staples, and Financials sectors. The Health Care, Industrials, and Materials sectors were underweight, while the Utilities sector was vacant.

Most invested sectors beat their index counterparts last quarter, and those that underperformed, which included Health Care, Information Technology, and Materials, did so by small margins. The cumulative effect of better selection gave the portfolio its lead over the index.

**EXECUTIVE SUMMARY****PERFORMANCE SUMMARY**

	Qtr / YTD	1 Year	3 Year	5 Year	10 Year	Since 09/98
<b>Total Portfolio - Gross</b>	-24.7	-18.2	2.9	3.8	11.9	9.8
<i>SMALL CAP GROWTH RANK</i>	(60)	(64)	(60)	(58)	(22)	----
<b>Total Portfolio - Net</b>	-24.8	-18.6	2.4	3.3	11.4	9.3
Russell 2000G	-25.8	-18.6	0.1	1.7	8.9	6.5
<b>Small Cap Equity - Gross</b>	-25.3	-18.7	2.9	3.8	12.1	10.0
<i>SMALL CAP GROWTH RANK</i>	(62)	(66)	(59)	(58)	(21)	----
Russell 2000G	-25.8	-18.6	0.1	1.7	8.9	6.5
Russell 2000	-30.6	-24.0	-4.7	-0.3	6.9	6.9

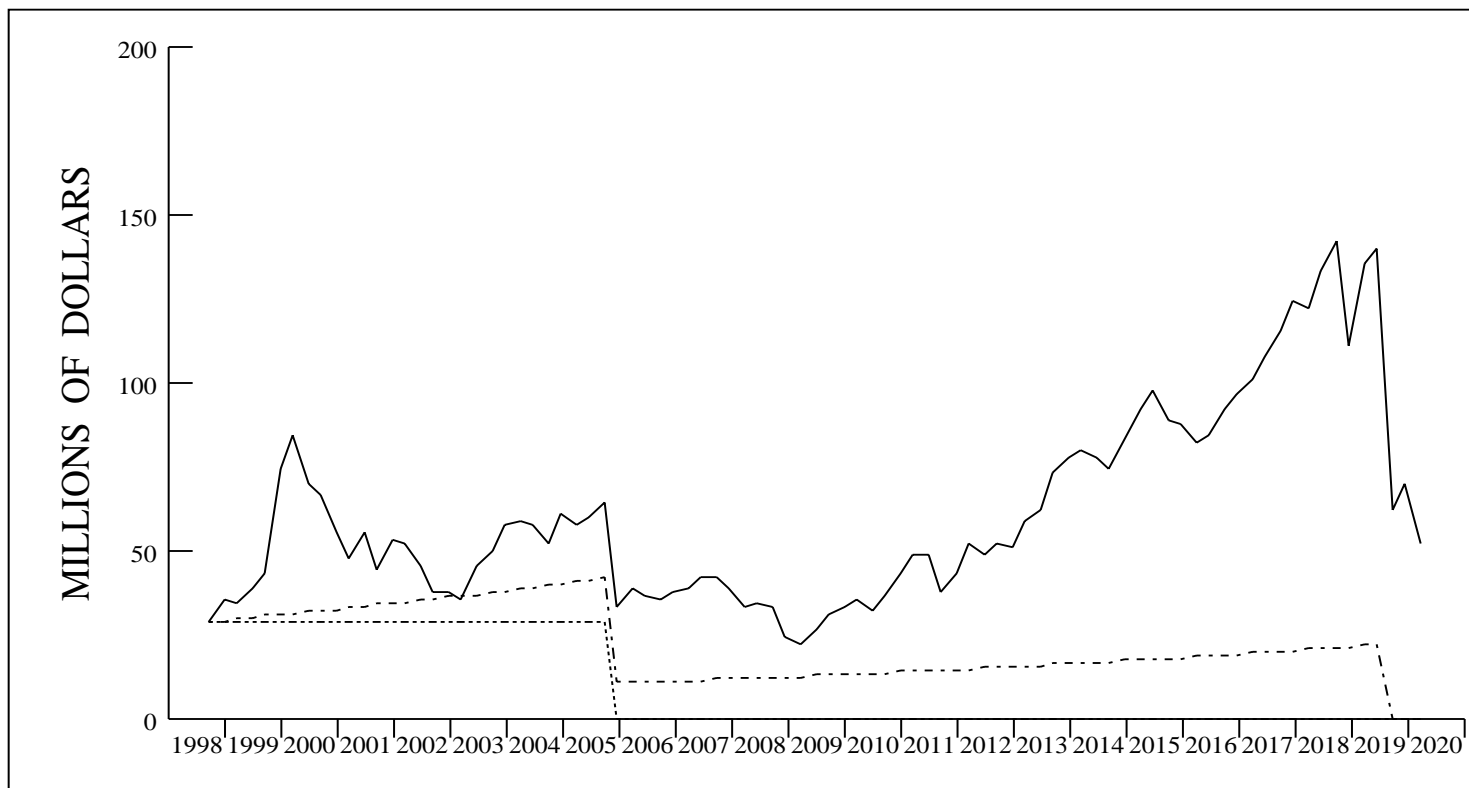
**ASSET ALLOCATION**

Small Cap	95.9%	\$ 50,581,660
Cash	4.1%	2,169,233
<b>Total Portfolio</b>	<b>100.0%</b>	<b>\$ 52,750,893</b>

**INVESTMENT RETURN**

Market Value 12/2019	\$ 70,152,540
Contribs / Withdrawals	- 88,130
Income	124,822
Capital Gains / Losses	- 17,438,339
Market Value 3/2020	\$ 52,750,893

**INVESTMENT GROWTH**

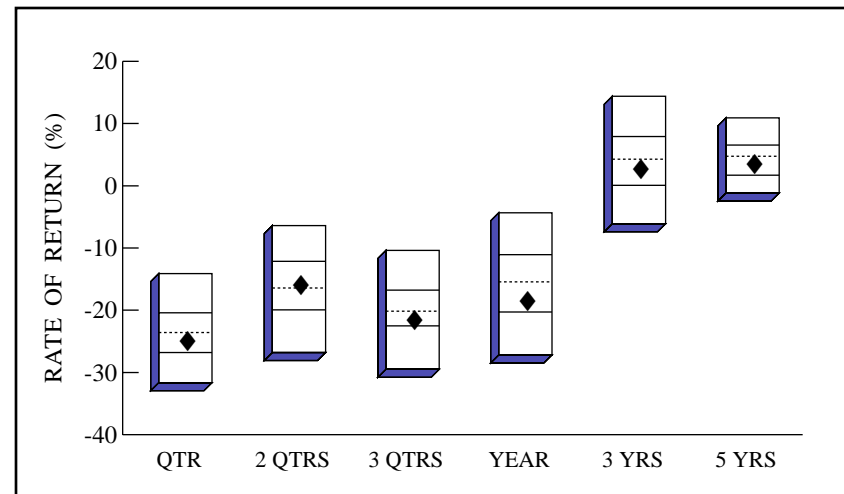
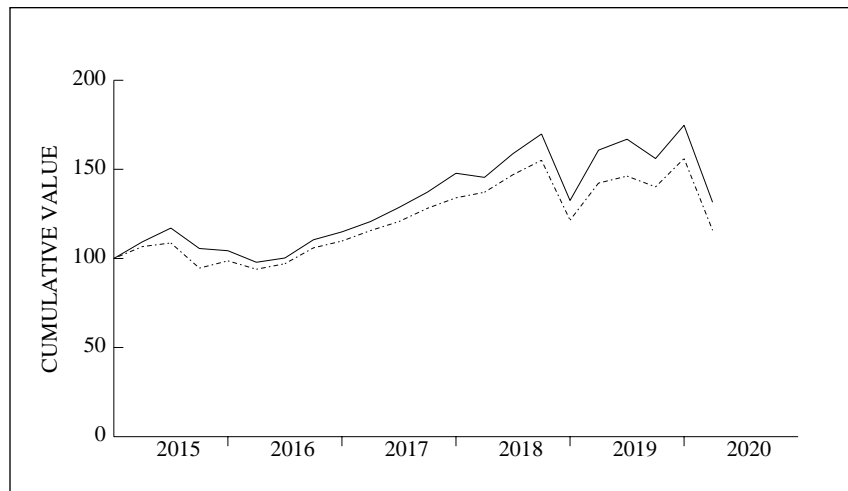


— ACTUAL RETURN  
 - - - 5.25%  
 . . . 0.0%

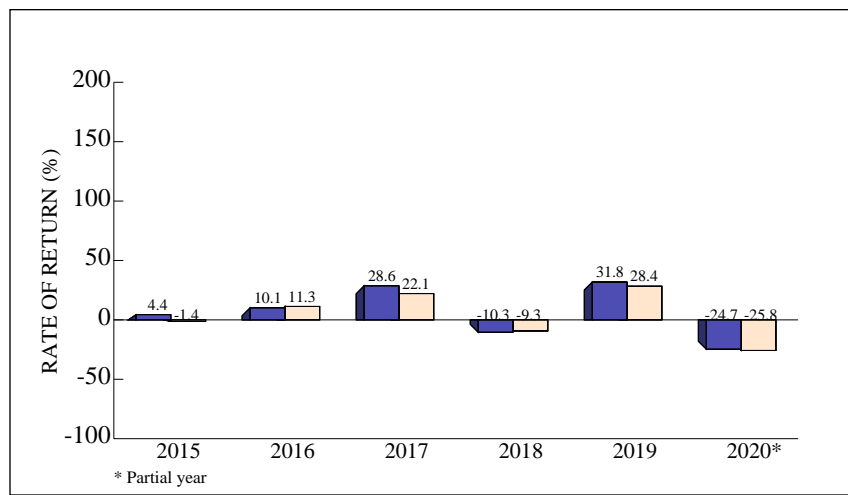
VALUE ASSUMING  
 5.25% RETURN \$ -49,272,438

	LAST QUARTER	PERIOD 9/98 - 3/20
BEGINNING VALUE	\$ 70,152,540	\$ 29,601,782
NET CONTRIBUTIONS	- 88,130	-101,784,076
<u>INVESTMENT RETURN</u>	<u>- 17,313,517</u>	<u>124,933,187</u>
ENDING VALUE	\$ 52,750,893	\$ 52,750,893
INCOME	124,822	6,401,632
<u>CAPITAL GAINS (LOSSES)</u>	<u>- 17,438,339</u>	<u>118,531,555</u>
INVESTMENT RETURN	- 17,313,517	124,933,187

### TOTAL RETURN COMPARISONS



Small Cap Growth Universe



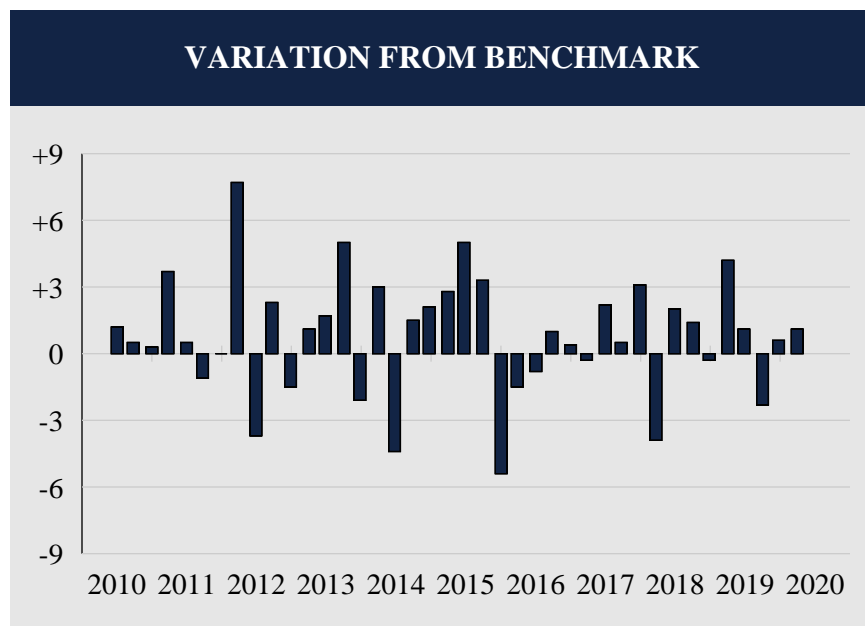
\* Partial year

	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-24.7	-15.7	-21.2	-18.2	2.9	3.8
(RANK)	(60)	(44)	(60)	(64)	(60)	(58)
5TH %ILE	-14.1	-6.4	-10.4	-4.4	14.4	10.9
25TH %ILE	-20.4	-12.1	-16.8	-11.1	7.9	6.6
MEDIAN	-23.6	-16.4	-20.2	-15.4	4.3	4.7
75TH %ILE	-26.8	-20.0	-22.5	-20.3	0.1	1.7
95TH %ILE	-31.7	-26.8	-29.5	-27.2	-6.1	-1.2
<b>Russ 2000G</b>	<b>-25.8</b>	<b>-17.3</b>	<b>-20.8</b>	<b>-18.6</b>	<b>0.1</b>	<b>1.7</b>

Small Cap Growth Universe

### TOTAL PORTFOLIO QUARTERLY PERFORMANCE SUMMARY - 10 YEARS

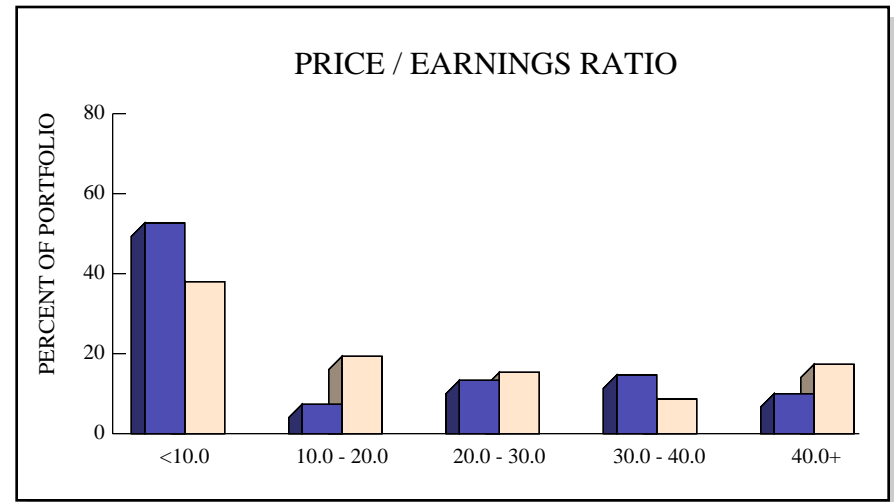
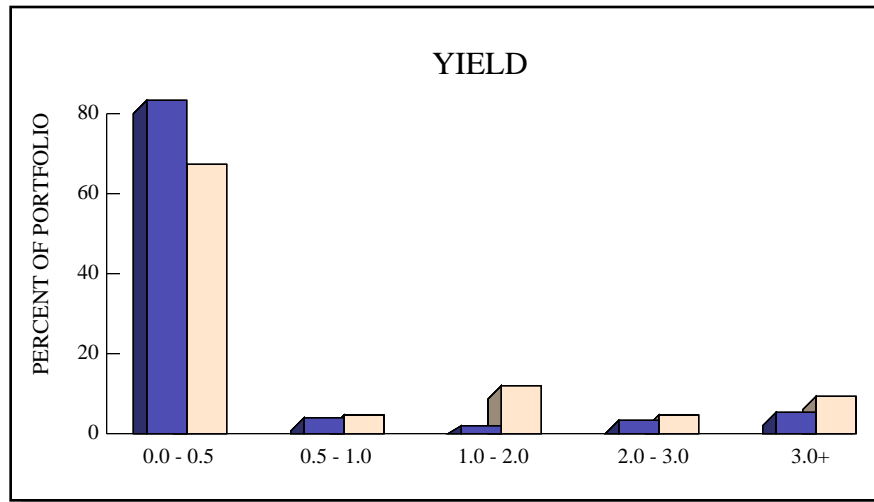
COMPARATIVE BENCHMARK: RUSSELL 2000 GROWTH



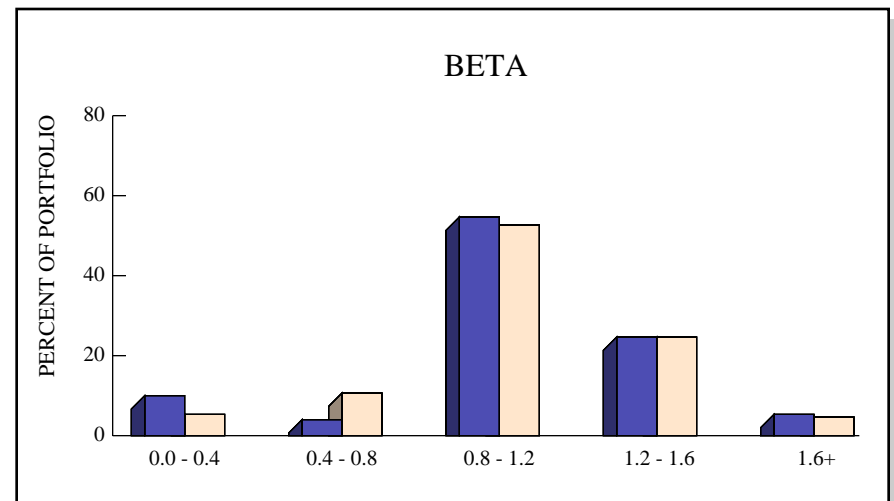
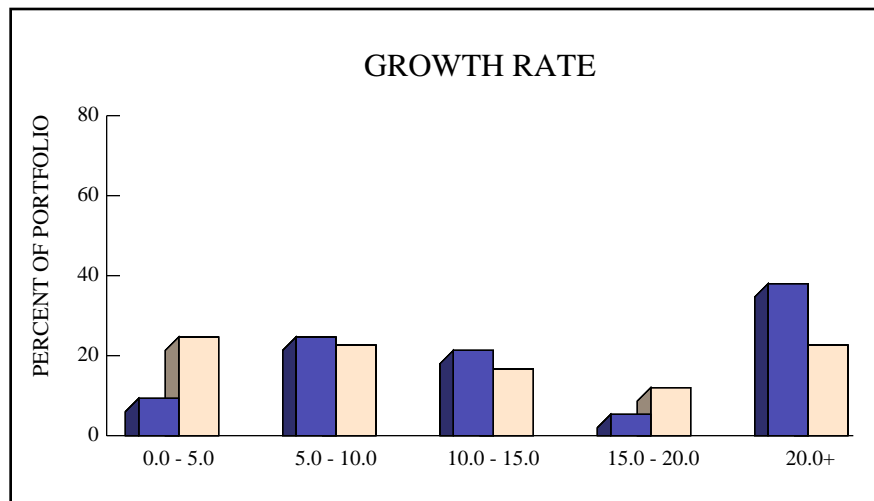
RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
6/10	-8.0	-9.2	1.2
9/10	13.3	12.8	0.5
12/10	17.4	17.1	0.3
3/11	12.9	9.2	3.7
6/11	-0.1	-0.6	0.5
9/11	-23.4	-22.3	-1.1
12/11	15.0	15.0	0.0
3/12	21.0	13.3	7.7
6/12	-7.6	-3.9	-3.7
9/12	7.1	4.8	2.3
12/12	-1.1	0.4	-1.5
3/13	14.3	13.2	1.1
6/13	5.4	3.7	1.7
9/13	17.8	12.8	5.0
12/13	6.1	8.2	-2.1
3/14	3.5	0.5	3.0
6/14	-2.7	1.7	-4.4
9/14	-4.6	-6.1	1.5
12/14	12.2	10.1	2.1
3/15	9.4	6.6	2.8
6/15	7.0	2.0	5.0
9/15	-9.8	-13.1	3.3
12/15	-1.1	4.3	-5.4
3/16	-6.2	-4.7	-1.5
6/16	2.4	3.2	-0.8
9/16	10.2	9.2	1.0
12/16	4.0	3.6	0.4
3/17	5.0	5.3	-0.3
6/17	6.6	4.4	2.2
9/17	6.7	6.2	0.5
12/17	7.7	4.6	3.1
3/18	-1.6	2.3	-3.9
6/18	9.2	7.2	2.0
9/18	6.9	5.5	1.4
12/18	-22.0	-21.7	-0.3
3/19	21.3	17.1	4.2
6/19	3.8	2.7	1.1
9/19	-6.5	-4.2	-2.3
12/19	12.0	11.4	0.6
3/20	-24.7	-25.8	1.1

<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>28</b>
<b>Quarters Below the Benchmark</b>	<b>12</b>
<b>Batting Average</b>	<b>.700</b>

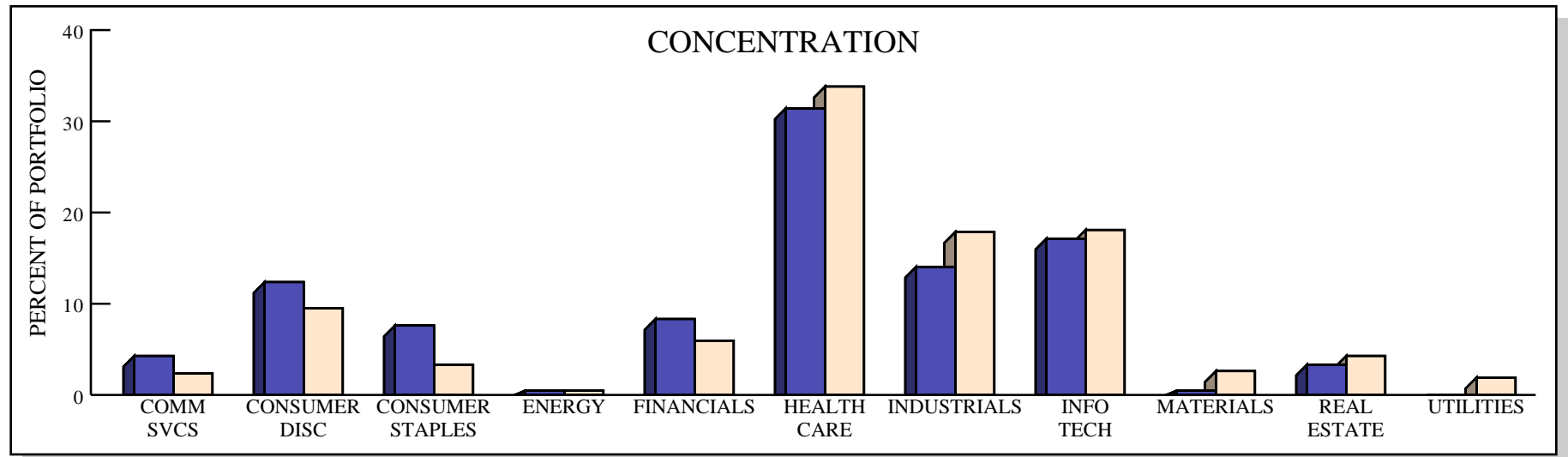
**STOCK CHARACTERISTICS**



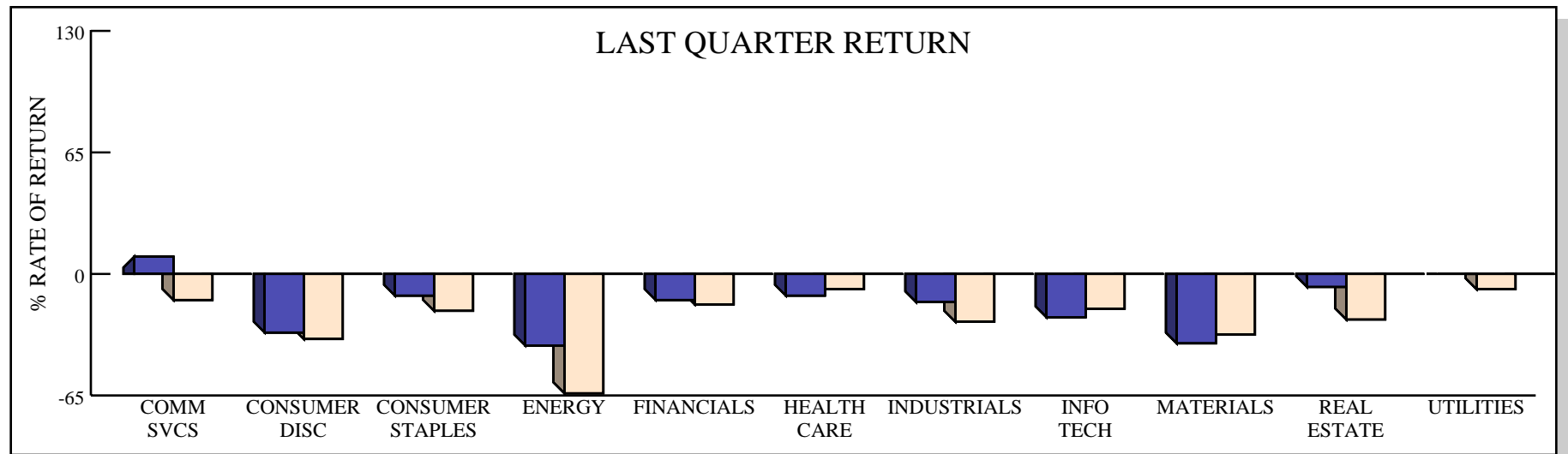
	# HOLDINGS	YIELD	GROWTH	P/E	BETA
PORTFOLIO	116	0.6%	17.0%	10.9	1.04
RUSSELL 2000G	1,167	0.9%	13.1%	16.0	1.04



**STOCK INDUSTRY ANALYSIS**

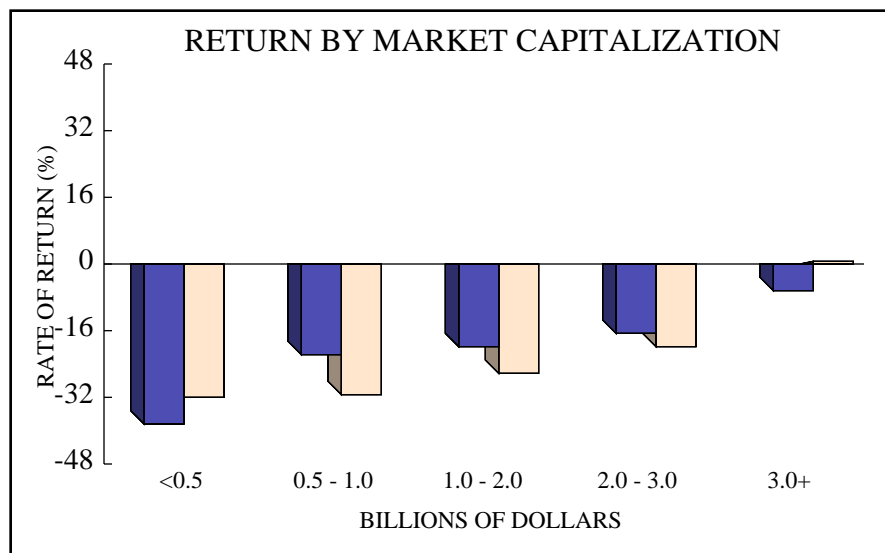
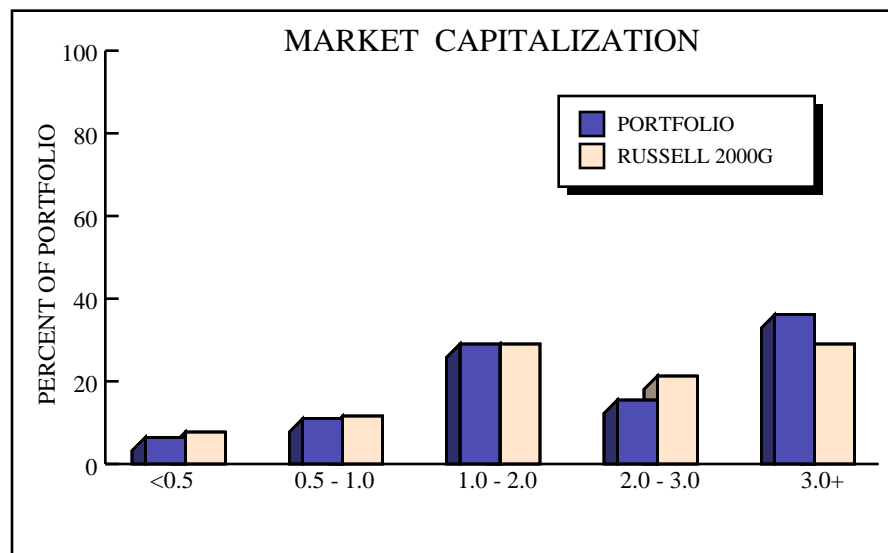


■ PORTFOLIO      ■ RUSSELL 2000G





**TOP TEN HOLDINGS**



**TOP TEN EQUITY HOLDINGS**

RANK	NAME	VALUE	% EQUITY	RETURN	INDUSTRY SECTOR	MKT CAP
1	CHEGG INC	\$ 1,587,093	3.14%	-5.6%	Consumer Discretionary	\$ 4.4 B
2	FRESHPET INC	1,447,358	2.86%	8.1%	Consumer Staples	2.6 B
3	TREX COMPANY INC	1,322,951	2.62%	-10.8%	Industrials	4.7 B
4	NEOGENOMICS INC	1,120,718	2.22%	-5.6%	Health Care	2.9 B
5	CHURCHILL DOWNS INC	1,059,561	2.09%	-25.0%	Consumer Discretionary	4.1 B
6	SIMPLY GOOD FOODS CO/THE	1,058,703	2.09%	-32.5%	Consumer Staples	1.8 B
7	HORIZON PHARMA PLC	1,045,468	2.07%	-18.2%	Health Care	5.6 B
8	COGENT COMMUNICATIONS HOLDIN	1,037,166	2.05%	25.6%	Communication Services	3.9 B
9	MERCURY SYSTEMS INC	956,812	1.89%	3.2%	Industrials	4.0 B
10	RAPID7 INC	932,462	1.84%	-22.7%	Information Technology	2.2 B

PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
FEDERATED HERMES - LARGE CAP GROWTH EQUITY  
PERFORMANCE REVIEW  
MARCH 2020

## **INVESTMENT RETURN**

On March 31st, 2020, the Pennsylvania Municipal Retirement System's Federated Hermes Large Cap Growth Equity portfolio was valued at \$92,989,446, a decrease of \$16,922,740 from the December ending value of \$109,912,186. Last quarter, the account recorded total net withdrawals of \$200,874 in addition to \$16,721,866 in net investment losses. The fund's net investment loss was a result of income receipts totaling \$233,177 and realized and unrealized capital losses totaling \$16,955,043.

## **RELATIVE PERFORMANCE**

### **Total Fund**

During the first quarter, the Federated Hermes Large Cap Growth Equity portfolio lost 15.2%, which was 1.1% less than the Russell 1000 Growth Index's return of -14.1% and ranked in the 62nd percentile of the Large Cap Growth universe. Over the trailing year, the portfolio returned -1.1%, which was 2.0% less than the benchmark's 0.9% performance, and ranked in the 52nd percentile. Since June 2015, the account returned 8.5% per annum and ranked in the 68th percentile. For comparison, the Russell 1000 Growth returned an annualized 10.9% over the same time frame.

## **ASSET ALLOCATION**

At the end of the first quarter, large cap equities comprised 94.9% of the total portfolio (\$88.3 million), while cash & equivalents comprised the remaining 5.1% (\$4.7 million).

## **EQUITY ANALYSIS**

The Federated portfolio was invested across nine of the eleven industry sectors in our analysis. Relative to the Russell 1000 Growth Index, the portfolio had more weight in the Financials and Health Care sectors and less in the Communication Services, Consumer Staples, and Information Technology sectors. Energy and Utilities were vacant.

While the extra emphasis on Health Care stocks was advantageous, the relatively lower allocation to Information Technology had the opposite effect, since both sectors performed better than most others. Selection also produced mixed effects—three sectors, including Health Care outperformed their bogies, but the remaining invested sectors fell short.

**EXECUTIVE SUMMARY****PERFORMANCE SUMMARY**

	<b>Qtr / YTD</b>	<b>1 Year</b>	<b>3 Year</b>	<b>5 Year</b>	<b>Since 06/15</b>
<b>Total Portfolio - Gross</b>	-15.2	-1.1	11.1	----	8.5
<i>LARGE CAP GROWTH RANK</i>	(62)	(52)	(46)	----	(68)
<b>Total Portfolio - Net</b>	-15.4	-1.8	10.2	----	7.7
Russell 1000G	-14.1	0.9	11.3	10.4	10.9
<b>Large Cap Equity - Gross</b>	-15.5	-1.0	11.6	----	9.0
<i>LARGE CAP GROWTH RANK</i>	(64)	(52)	(41)	----	(58)
Russell 1000G	-14.1	0.9	11.3	10.4	10.9

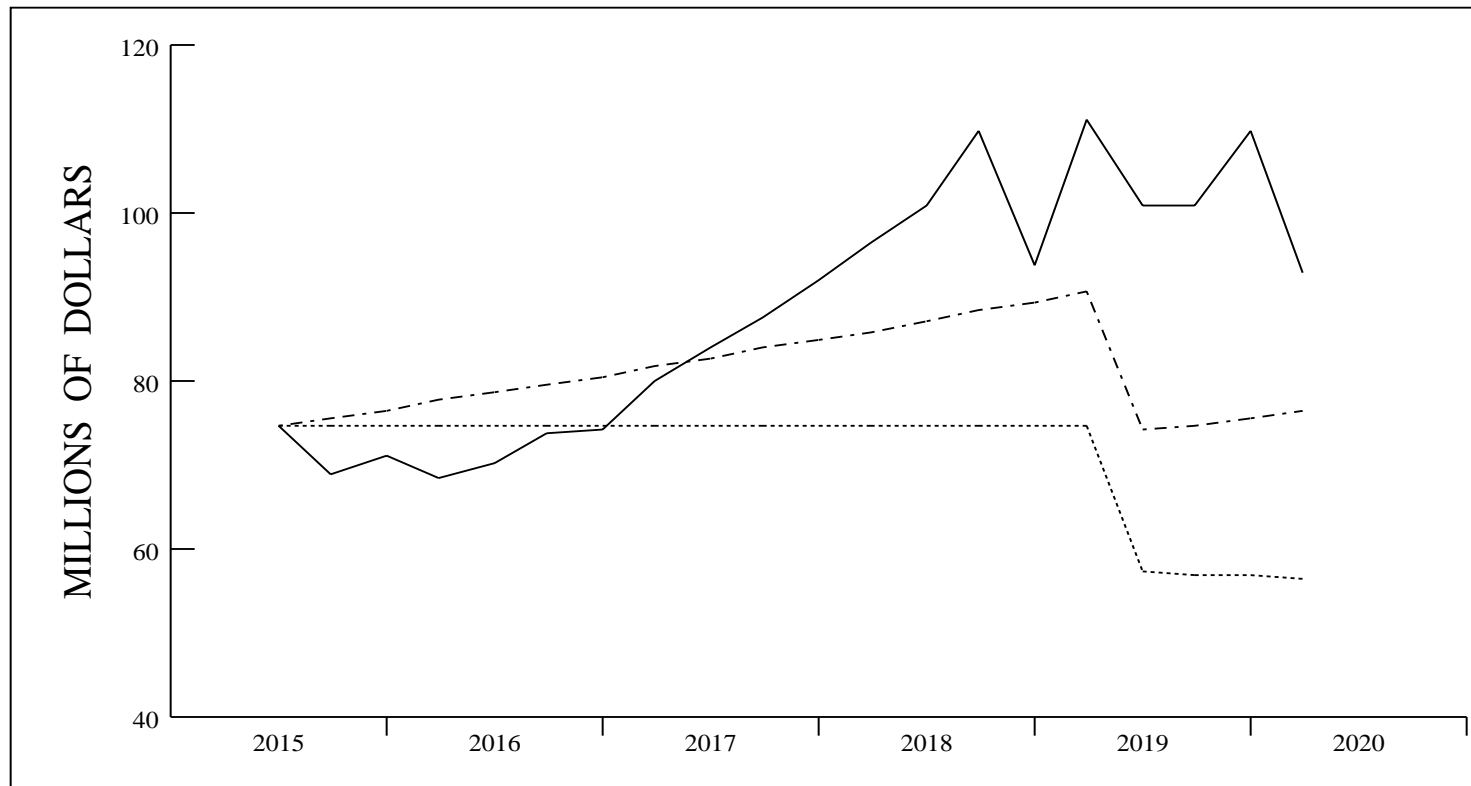
**ASSET ALLOCATION**

Large Cap Equity	94.9%	\$ 88,261,495
Cash	5.1%	4,727,951
<b>Total Portfolio</b>	<b>100.0%</b>	<b>\$ 92,989,446</b>

**INVESTMENT RETURN**

Market Value 12/2019	\$ 109,912,186
Contribs / Withdrawals	-200,874
Income	233,177
Capital Gains / Losses	- 16,955,043
Market Value 3/2020	\$ 92,989,446

**INVESTMENT GROWTH**

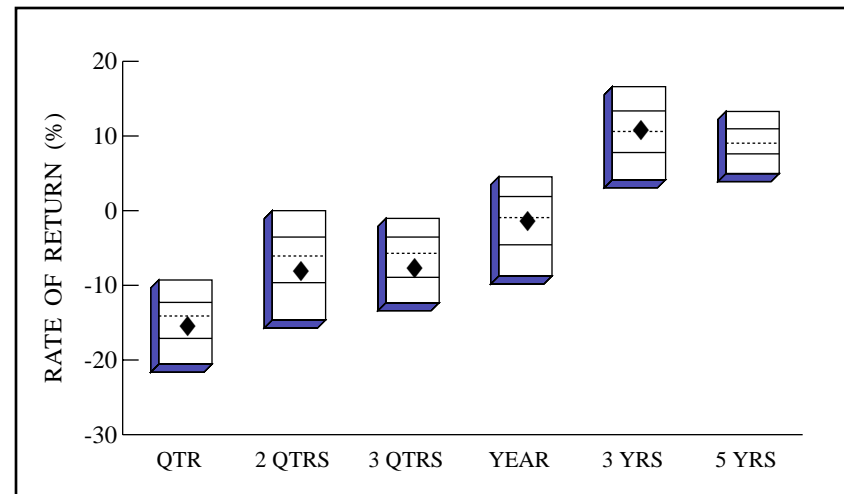
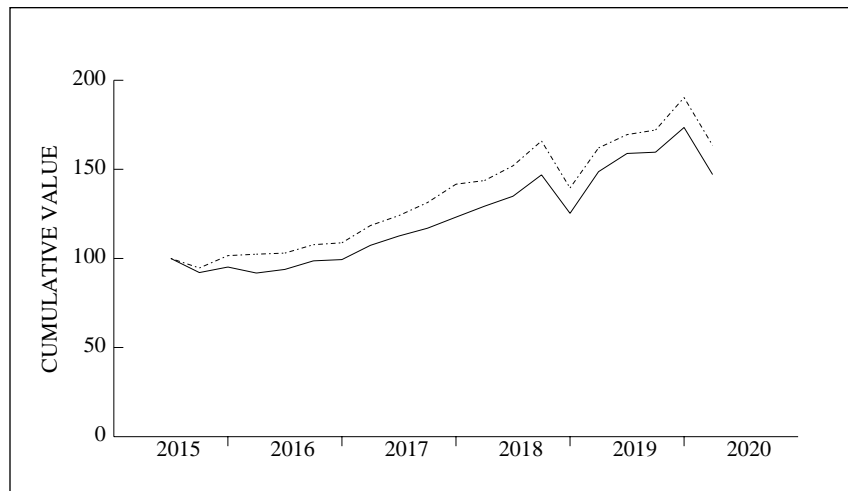


— ACTUAL RETURN  
 - - - 5.25%  
 . . . 0.0%

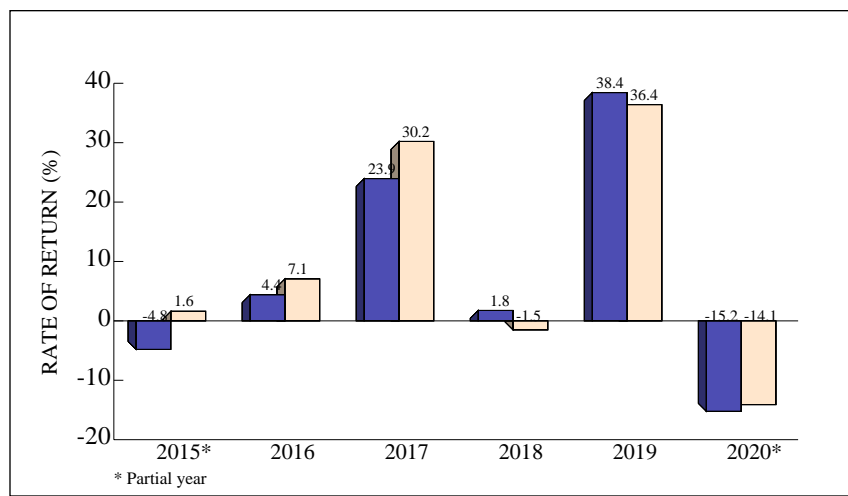
VALUE ASSUMING  
 5.25% RETURN \$ 76,544,205

	LAST QUARTER	PERIOD 6/15 - 3/20
BEGINNING VALUE	\$ 109,912,186	\$ 74,904,546
NET CONTRIBUTIONS	-200,874	- 18,078,101
<u>INVESTMENT RETURN</u>	<u>- 16,721,866</u>	<u>36,163,001</u>
ENDING VALUE	\$ 92,989,446	\$ 92,989,446
INCOME	233,177	3,815,683
<u>CAPITAL GAINS (LOSSES)</u>	<u>- 16,955,043</u>	<u>32,347,318</u>
INVESTMENT RETURN	- 16,721,866	36,163,001

TOTAL RETURN COMPARISONS



Large Cap Growth Universe

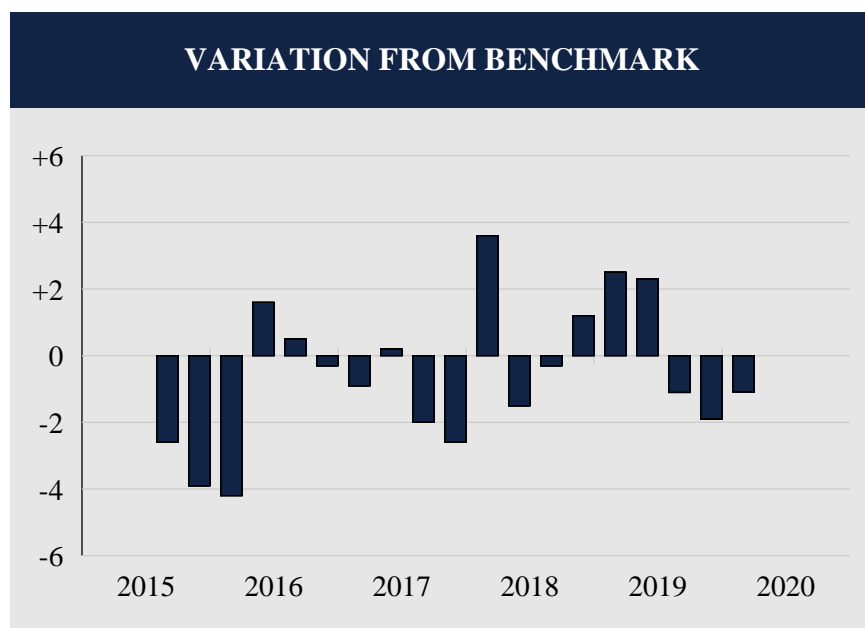


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-15.2	-7.8	-7.4	-1.1	11.1	---
(RANK)	(62)	(65)	(67)	(52)	(46)	---
5TH %ILE	-9.3	0.0	-1.0	4.6	16.6	13.3
25TH %ILE	-12.3	-3.6	-3.5	1.9	13.4	11.0
MEDIAN	-14.1	-6.1	-5.7	-0.9	10.6	9.1
75TH %ILE	-17.1	-9.7	-8.9	-4.6	7.8	7.6
95TH %ILE	-20.6	-14.6	-12.3	-8.8	4.1	5.0
<b>Russ 1000G</b>	<b>-14.1</b>	<b>-5.0</b>	<b>-3.6</b>	<b>0.9</b>	<b>11.3</b>	<b>10.4</b>

Large Cap Growth Universe

### TOTAL PORTFOLIO QUARTERLY PERFORMANCE SUMMARY

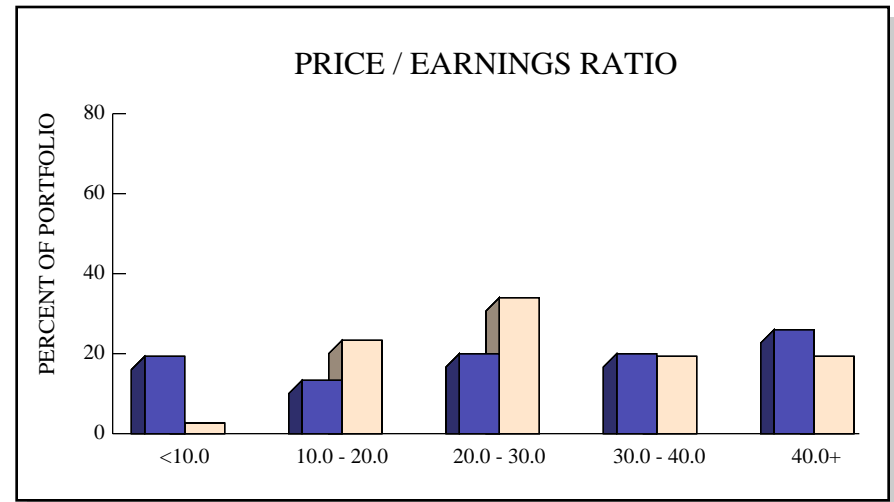
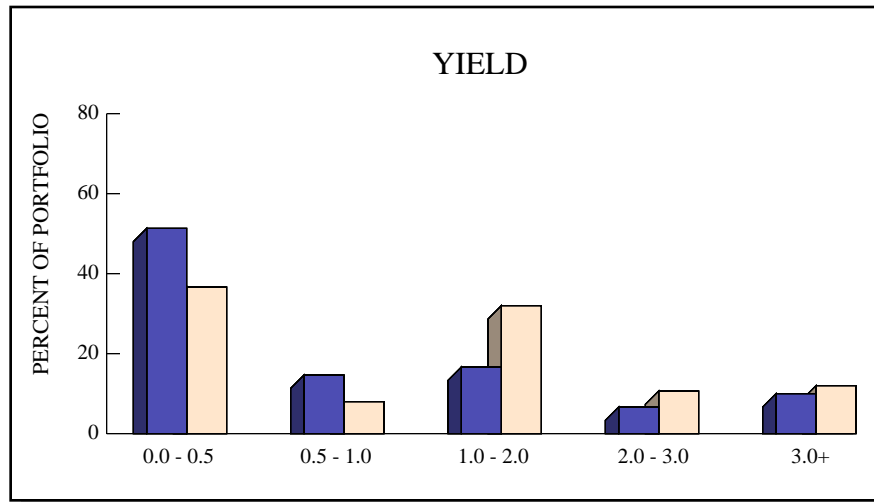
COMPARATIVE BENCHMARK: RUSSELL 1000 GROWTH



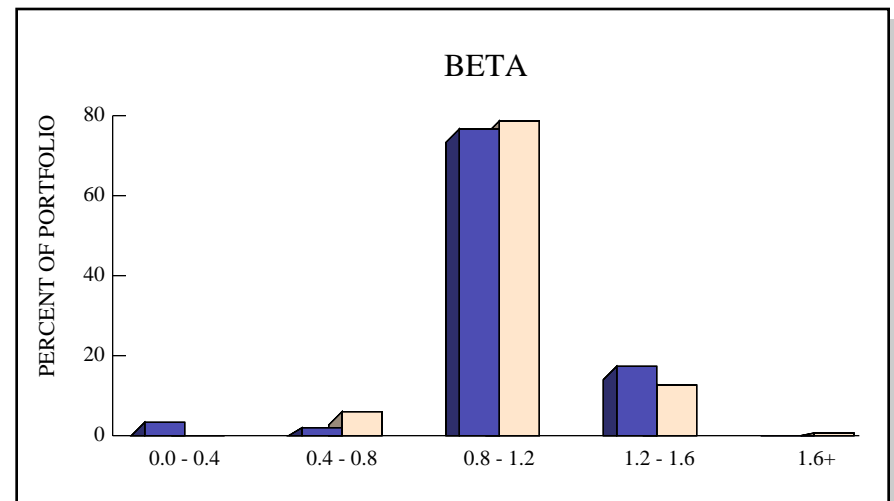
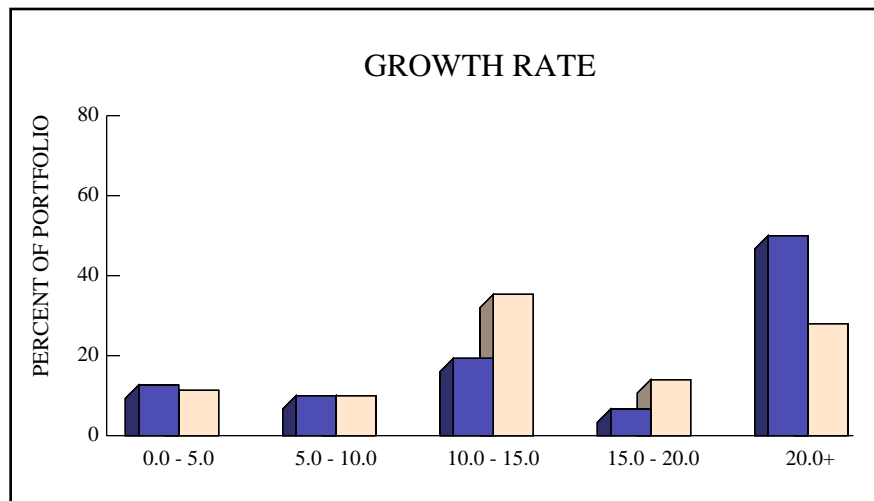
RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
9/15	-7.9	-5.3	-2.6
12/15	3.4	7.3	-3.9
3/16	-3.5	0.7	-4.2
6/16	2.2	0.6	1.6
9/16	5.1	4.6	0.5
12/16	0.7	1.0	-0.3
3/17	8.0	8.9	-0.9
6/17	4.9	4.7	0.2
9/17	3.9	5.9	-2.0
12/17	5.3	7.9	-2.6
3/18	5.0	1.4	3.6
6/18	4.3	5.8	-1.5
9/18	8.9	9.2	-0.3
12/18	-14.7	-15.9	1.2
3/19	18.6	16.1	2.5
6/19	6.9	4.6	2.3
9/19	0.4	1.5	-1.1
12/19	8.7	10.6	-1.9
3/20	-15.2	-14.1	-1.1

<b>Total Quarters Observed</b>	<b>19</b>
<b>Quarters At or Above the Benchmark</b>	<b>7</b>
<b>Quarters Below the Benchmark</b>	<b>12</b>
<b>Batting Average</b>	<b>.368</b>

**STOCK CHARACTERISTICS**

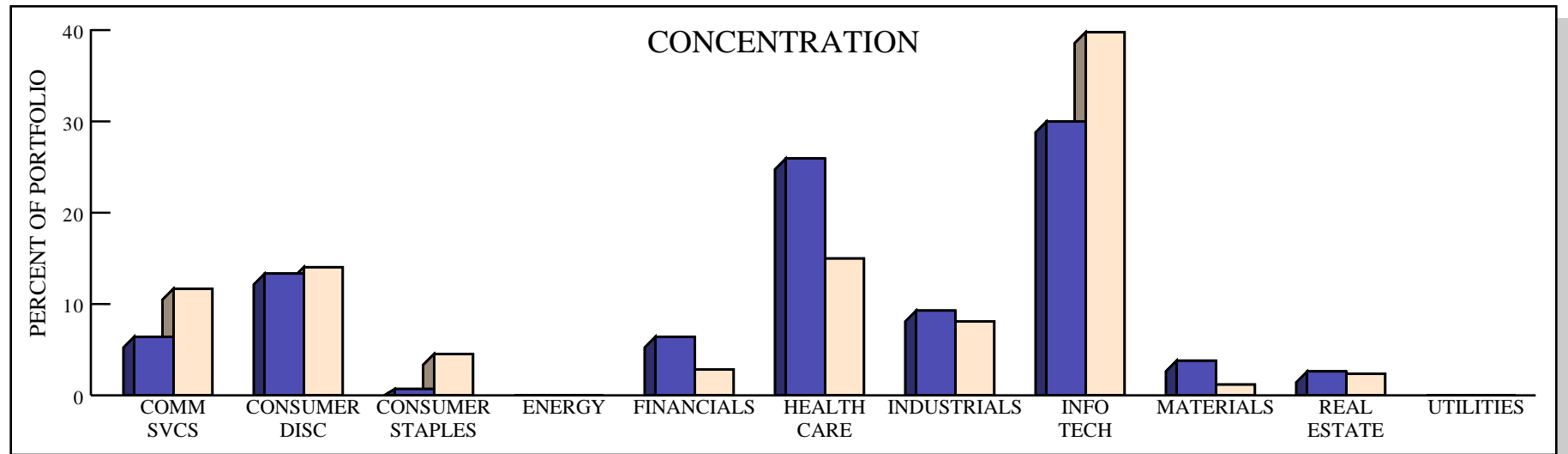


	# HOLDINGS	YIELD	GROWTH	P/E	BETA
PORTFOLIO	62	0.9%	20.1%	32.0	1.01
RUSSELL 1000G	532	1.3%	17.3%	31.4	0.99

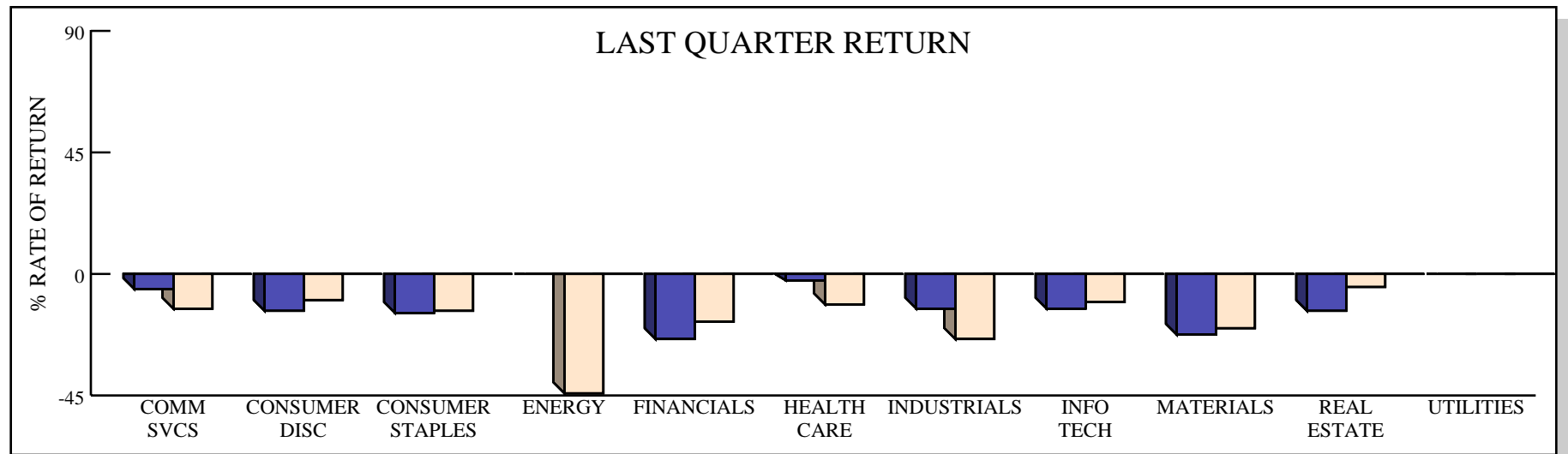




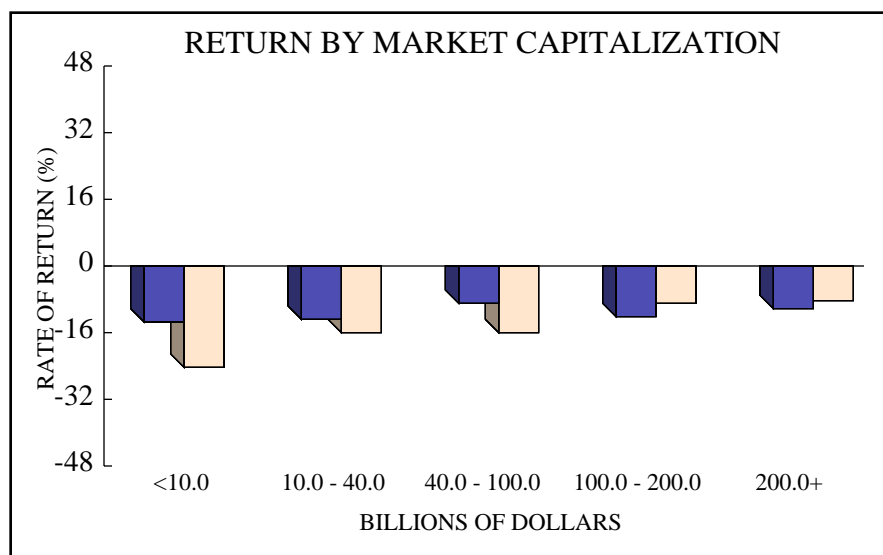
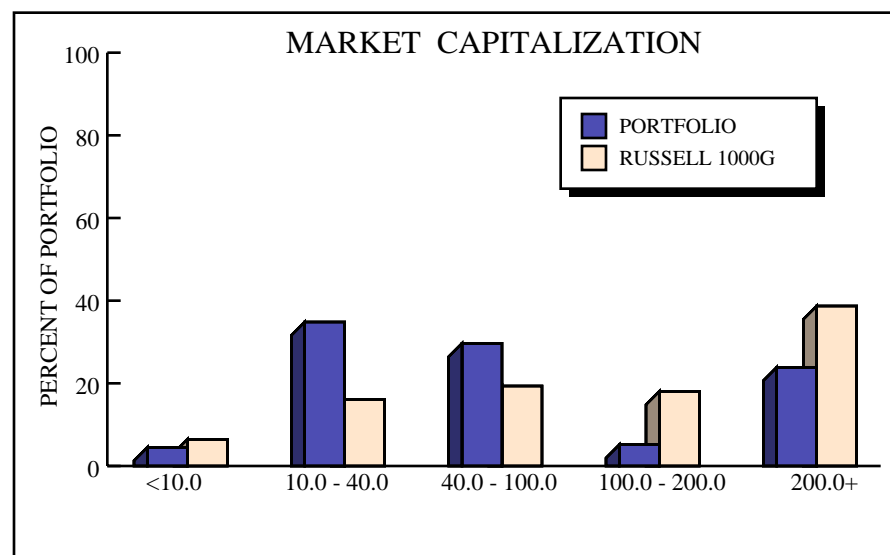
**STOCK INDUSTRY ANALYSIS**



■ PORTFOLIO      ■ RUSSELL 1000G



**TOP TEN HOLDINGS**



**TOP TEN EQUITY HOLDINGS**

RANK	NAME	VALUE	% EQUITY	RETURN	INDUSTRY SECTOR	MKT CAP
1	MICROSOFT CORP	\$ 4,368,567	4.95%	0.3%	Information Technology	\$ 1199.6 B
2	AMAZON.COM INC	3,328,172	3.77%	5.5%	Consumer Discretionary	970.6 B
3	SERVICENOW INC	2,951,774	3.34%	1.5%	Information Technology	54.4 B
4	VISA INC-CLASS A SHARES	2,859,880	3.24%	-14.1%	Information Technology	274.9 B
5	FIDELITY NATIONAL INFO SERV	2,834,212	3.21%	-12.3%	Information Technology	75.0 B
6	T-MOBILE US INC	2,819,040	3.19%	7.0%	Communication Services	71.9 B
7	SALESFORCE.COM INC	2,663,630	3.02%	-11.5%	Information Technology	128.9 B
8	MASTERCARD INC - A	2,560,536	2.90%	-19.0%	Information Technology	240.2 B
9	GALAPAGOS NV-SPON ADR	2,292,264	2.60%	-5.3%	Health Care	12.7 B
10	GENMAB A/S -SP ADR	1,968,551	2.23%	-5.1%	Health Care	13.8 B

PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
HARDMAN JOHNSTON GLOBAL ADVISORS - INTERNATIONAL EQUITY FULLY DISCRETIONARY  
PERFORMANCE REVIEW  
MARCH 2020

## **INVESTMENT RETURN**

As of March 31st, 2020, the Pennsylvania Municipal Retirement System's Hardman Johnston Global Advisors International Equity Fully Discretionary portfolio was valued at \$99,950,310, which was a decrease of \$27,262,599 from the December ending value of \$127,212,909. Last quarter, the Fund posted net withdrawals totaling \$194,630 and net investment losses of \$27,067,969. The portfolio's net investment loss was a product of \$348,905 in income receipts and realized and unrealized capital losses of \$27,416,874.

## **RELATIVE PERFORMANCE**

### **Total Fund**

For the first quarter, the Hardman Johnston Global Advisors International Equity Fully Discretionary portfolio lost 21.3%, which was 2.4% above the S&P BMI Developed Ex US Index's return of -23.7% and ranked in the 28th percentile of the International Equity universe. Over the trailing twelve-month period, the portfolio returned -8.5%, which was 6.6% greater than the benchmark's -15.1% return, and ranked in the 17th percentile. Since March 2012, the portfolio returned 6.7% annualized and ranked in the 9th percentile. The S&P BMI Developed Ex US Index returned an annualized 3.2% over the same period.

## **ASSET ALLOCATION**

On March 31st, 2020, international equities comprised 93.8% of the total portfolio (\$93.7 million), while cash & equivalents comprised the remaining 6.2% (\$6.2 million).

**EXECUTIVE SUMMARY****PERFORMANCE SUMMARY**

	Qtr / YTD	1 Year	3 Year	5 Year	Since 03/12
<b>Total Portfolio - Gross</b>	-21.3	-8.5	4.4	4.2	6.7
<i>INTERNATIONAL EQUITY RANK</i>	(28)	(17)	(9)	(9)	(9)
<b>Total Portfolio - Net</b>	-21.4	-9.1	3.8	3.6	6.0
S&P BMI Ex US	-23.7	-15.1	-1.8	0.0	3.2
<b>International Equity - Gross</b>	-21.9	-9.1	4.1	4.1	6.6
<i>INTERNATIONAL EQUITY RANK</i>	(33)	(19)	(10)	(11)	(9)
S&P BMI Ex US	-23.7	-15.1	-1.8	0.0	3.2

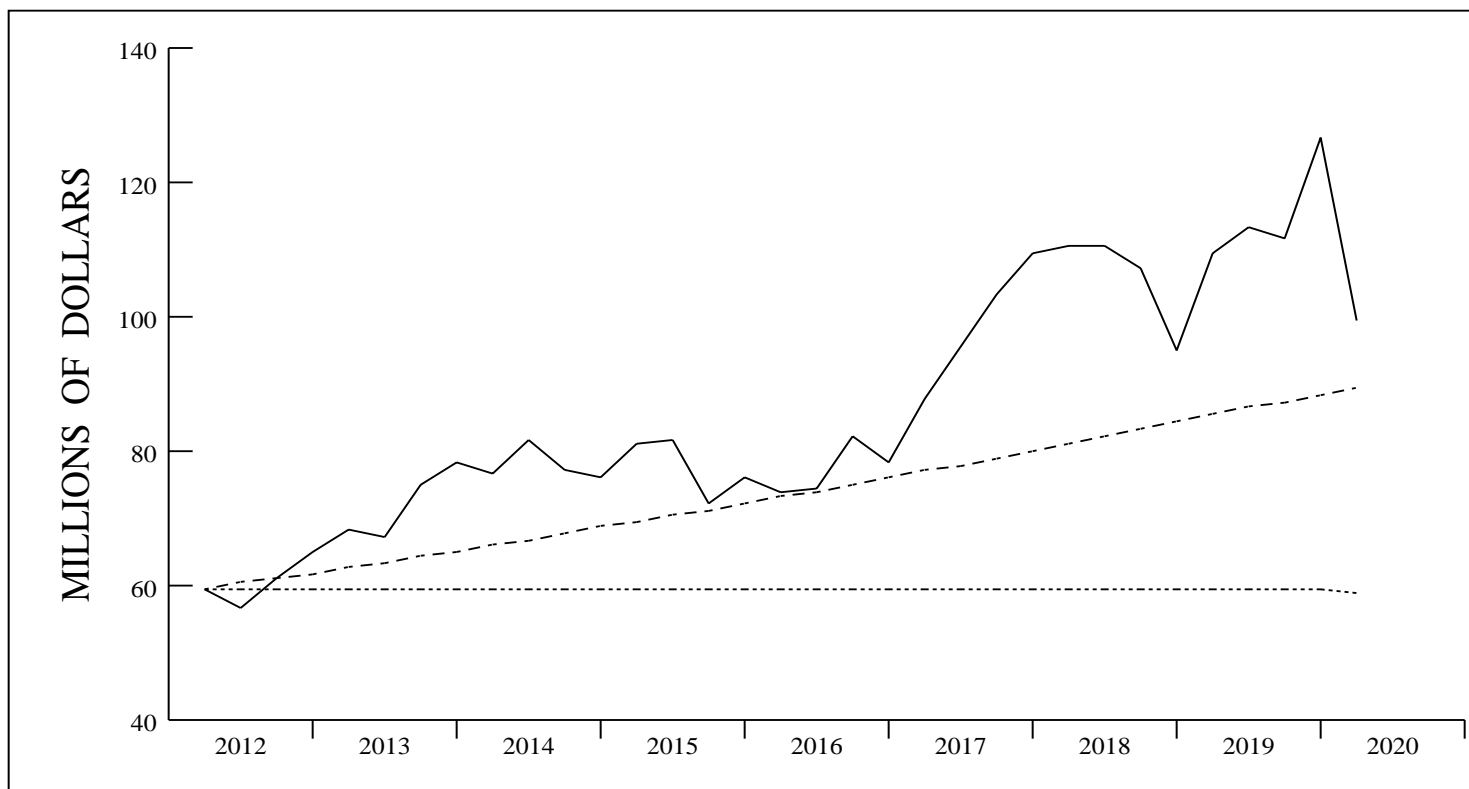
**ASSET ALLOCATION**

Int'l Equity	93.8%	\$ 93,741,294
Cash	6.2%	6,209,016
<b>Total Portfolio</b>	<b>100.0%</b>	<b>\$ 99,950,310</b>

**INVESTMENT RETURN**

Market Value 12/2019	\$ 127,212,909
Contribs / Withdrawals	-194,630
Income	348,905
Capital Gains / Losses	- 27,416,874
Market Value 3/2020	\$ 99,950,310

**INVESTMENT GROWTH**

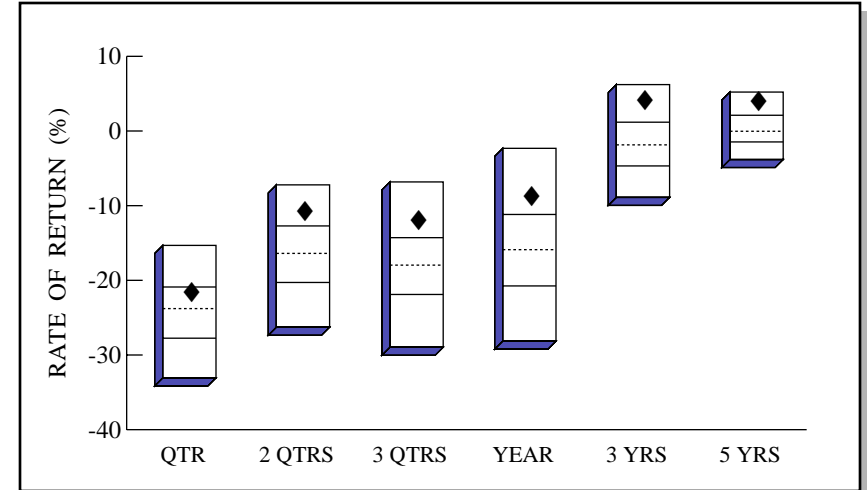
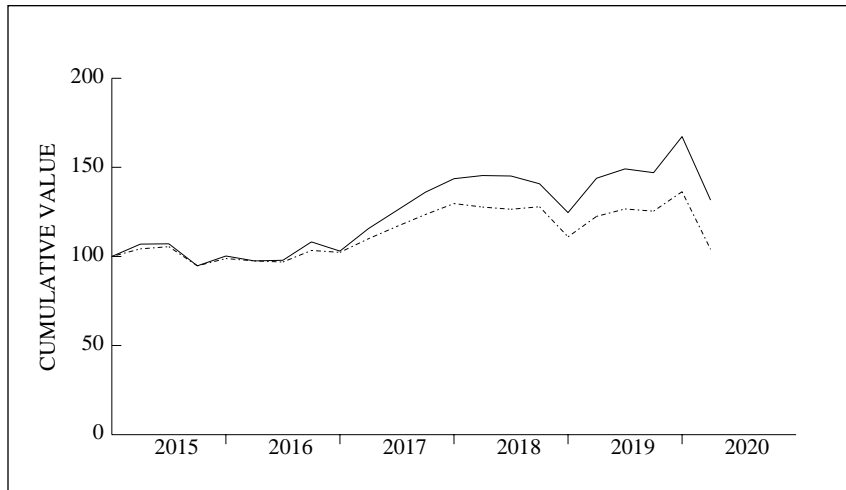


— ACTUAL RETURN  
 - - - 5.25%  
 . . . 0.0%

VALUE ASSUMING  
 5.25% RETURN \$ 89,564,959

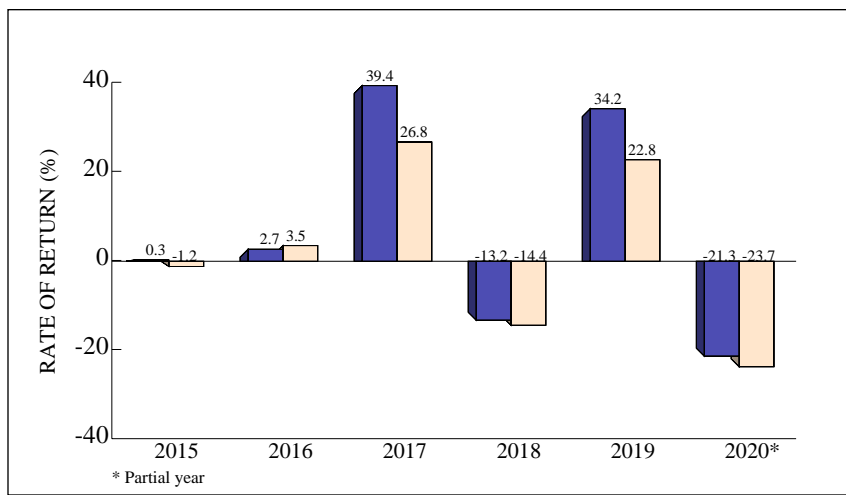
	LAST QUARTER	PERIOD 3/12 - 3/20
BEGINNING VALUE	\$ 127,212,909	\$ 59,853,568
NET CONTRIBUTIONS	-194,630	-551,941
<u>INVESTMENT RETURN</u>	<u>-27,067,969</u>	<u>40,648,683</u>
ENDING VALUE	\$ 99,950,310	\$ 99,950,310
INCOME	348,905	10,553,451
<u>CAPITAL GAINS (LOSSES)</u>	<u>-27,416,874</u>	<u>30,095,232</u>
INVESTMENT RETURN	-27,067,969	40,648,683

**TOTAL RETURN COMPARISONS**



■ ——— PORTFOLIO  
■ - - - - S&P BMI EX US

International Equity Universe

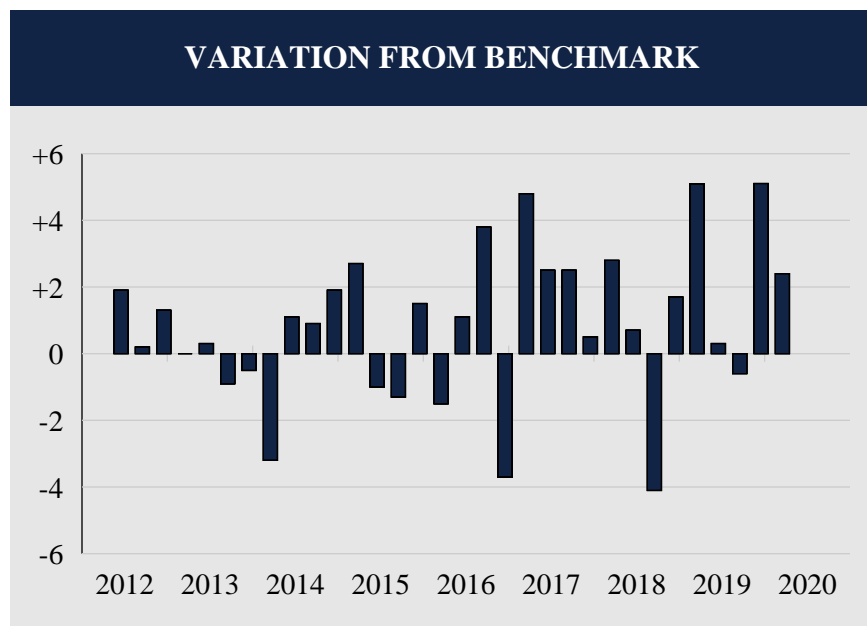


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-21.3	-10.4	-11.7	-8.5	4.4	4.2
(RANK)	(28)	(14)	(16)	(17)	(9)	(9)
5TH %ILE	-15.3	-7.2	-6.8	-2.3	6.2	5.2
25TH %ILE	-20.9	-12.7	-14.3	-11.2	1.2	2.1
MEDIAN	-23.8	-16.4	-18.0	-15.9	-1.9	0.0
75TH %ILE	-27.8	-20.3	-21.9	-20.7	-4.7	-1.5
95TH %ILE	-33.1	-26.3	-29.0	-28.1	-8.9	-3.8
<b>BMI Ex US</b>	<b>-23.7</b>	<b>-17.1</b>	<b>-17.8</b>	<b>-15.1</b>	<b>-1.8</b>	<b>0.0</b>

International Equity Universe

### TOTAL PORTFOLIO QUARTERLY PERFORMANCE SUMMARY

COMPARATIVE BENCHMARK: S&P BMI DEVELOPED EX US INDEX



RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
6/12	-5.3	-7.2	1.9
9/12	7.9	7.7	0.2
12/12	7.1	5.8	1.3
3/13	4.9	4.9	0.0
6/13	-1.5	-1.8	0.3
9/13	11.0	11.9	-0.9
12/13	4.9	5.4	-0.5
3/14	-2.0	1.2	-3.2
6/14	5.9	4.8	1.1
9/14	-5.0	-5.9	0.9
12/14	-1.8	-3.7	1.9
3/15	6.9	4.2	2.7
6/15	0.2	1.2	-1.0
9/15	-11.5	-10.2	-1.3
12/15	5.8	4.3	1.5
3/16	-2.8	-1.3	-1.5
6/16	0.4	-0.7	1.1
9/16	10.5	6.7	3.8
12/16	-4.8	-1.1	-3.7
3/17	12.3	7.5	4.8
6/17	8.8	6.3	2.5
9/17	8.2	5.7	2.5
12/17	5.5	5.0	0.5
3/18	1.3	-1.5	2.8
6/18	-0.2	-0.9	0.7
9/18	-3.0	1.1	-4.1
12/18	-11.5	-13.2	1.7
3/19	15.4	10.3	5.1
6/19	3.7	3.4	0.3
9/19	-1.5	-0.9	-0.6
12/19	13.8	8.7	5.1
3/20	-21.3	-23.7	2.4

<b>Total Quarters Observed</b>	<b>32</b>
<b>Quarters At or Above the Benchmark</b>	<b>23</b>
<b>Quarters Below the Benchmark</b>	<b>9</b>
<b>Batting Average</b>	<b>.719</b>



PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
HGK ASSET MANAGEMENT - HGK INTERNATIONAL EQUITY  
PERFORMANCE REVIEW  
MARCH 2020

## **INVESTMENT RETURN**

On March 31st, 2020, the Pennsylvania Municipal Retirement System's HGK Asset Management HGK International Equity portfolio was valued at \$102,728,434, a decrease of \$32,956,271 from the December ending value of \$135,684,705. Last quarter, the account recorded total net withdrawals of \$221,570 in addition to \$32,734,701 in net investment losses. The fund's net investment loss was a result of income receipts totaling \$205,222 and realized and unrealized capital losses totaling \$32,939,923.

## **RELATIVE PERFORMANCE**

### **Total Fund**

During the first quarter, the HGK Asset Management HGK International Equity portfolio lost 24.2%, which was 0.5% less than the S&P BMI Developed Ex US Index's return of -23.7% and ranked in the 53rd percentile of the International Equity universe. Over the trailing year, the portfolio returned -12.7%, which was 2.4% greater than the benchmark's -15.1% performance, and ranked in the 33rd percentile. Since March 2012, the account returned 6.5% per annum and ranked in the 9th percentile. For comparison, the S&P BMI Developed Ex US Index returned an annualized 3.2% over the same time frame.

## **ASSET ALLOCATION**

At the end of the first quarter, international equities comprised 95.8% of the total portfolio (\$98.4 million), while cash & equivalents comprised the remaining 4.2% (\$4.4 million).

**EXECUTIVE SUMMARY****PERFORMANCE SUMMARY**

	Qtr / YTD	1 Year	3 Year	5 Year	Since 03/12
<b>Total Portfolio - Gross</b>	-24.2	-12.7	0.7	2.2	6.5
<i>INTERNATIONAL EQUITY RANK</i>	(53)	(33)	(29)	(24)	(9)
<b>Total Portfolio - Net</b>	-24.3	-13.3	0.0	1.5	5.8
S&P BMI Ex US	-23.7	-15.1	-1.8	0.0	3.2
<b>International Equity - Gross</b>	-25.2	-13.5	0.6	2.3	6.8
<i>INTERNATIONAL EQUITY RANK</i>	(60)	(37)	(29)	(24)	(9)
S&P BMI Ex US	-23.7	-15.1	-1.8	0.0	3.2

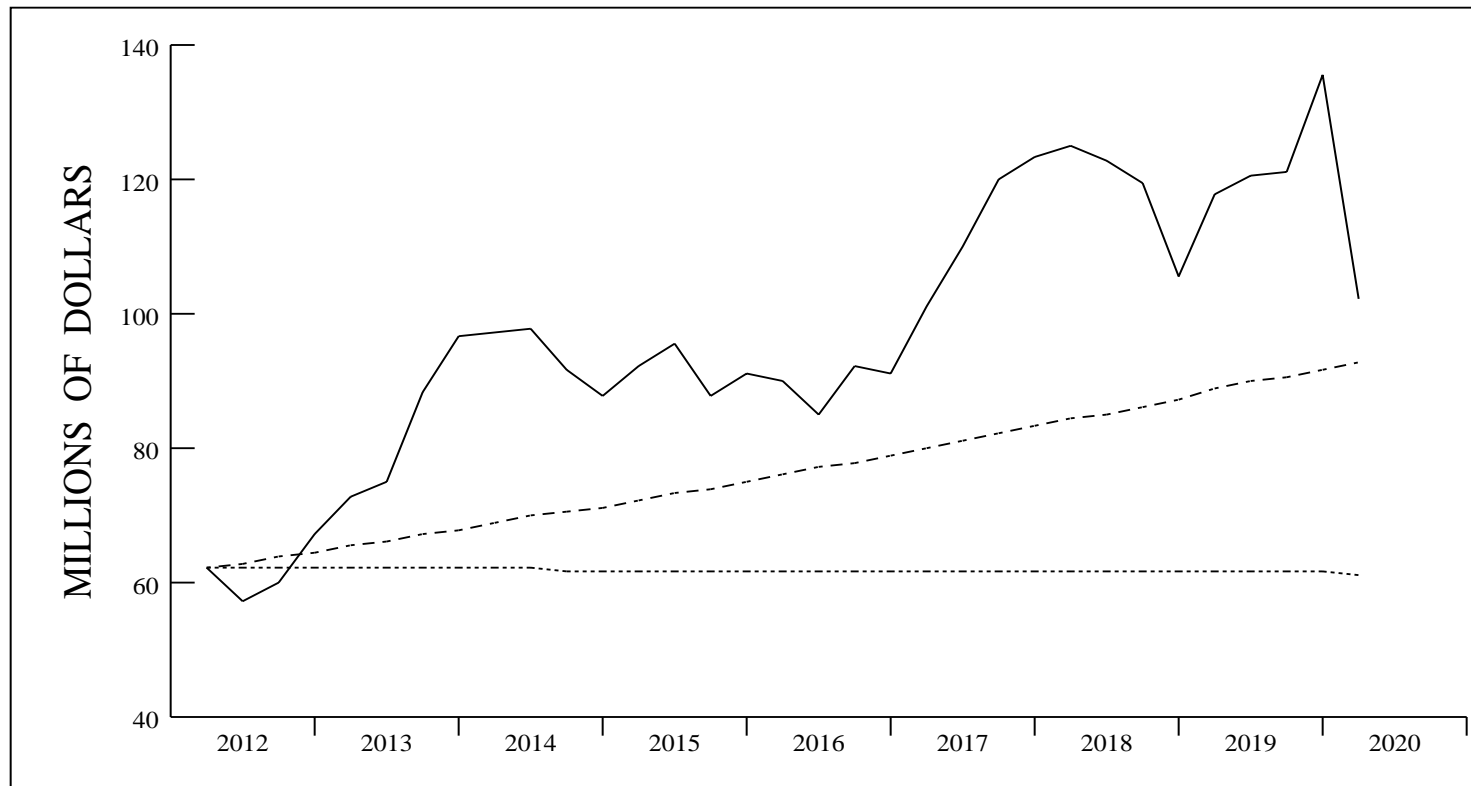
**ASSET ALLOCATION**

Int'l Equity	95.8%	\$ 98,363,733
Cash	4.2%	4,364,701
<b>Total Portfolio</b>	<b>100.0%</b>	<b>\$ 102,728,434</b>

**INVESTMENT RETURN**

Market Value 12/2019	\$ 135,684,705
Contribs / Withdrawals	-221,570
Income	205,222
Capital Gains / Losses	- 32,939,923
Market Value 3/2020	\$ 102,728,434

**INVESTMENT GROWTH**

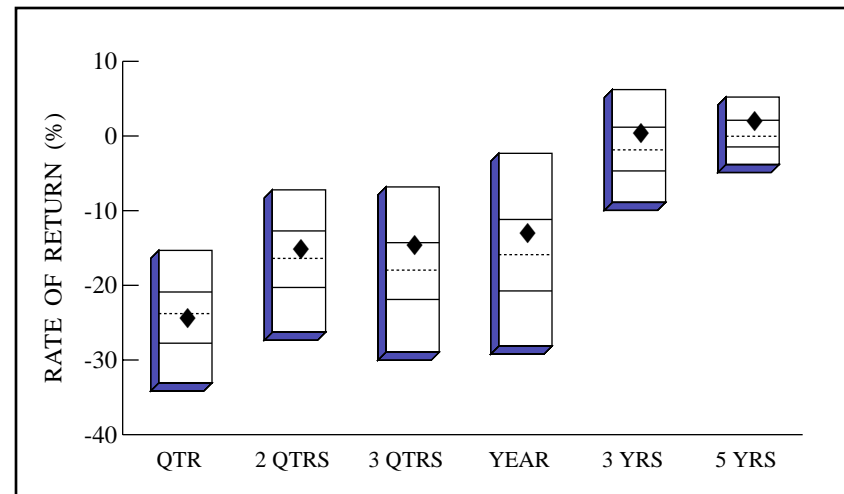
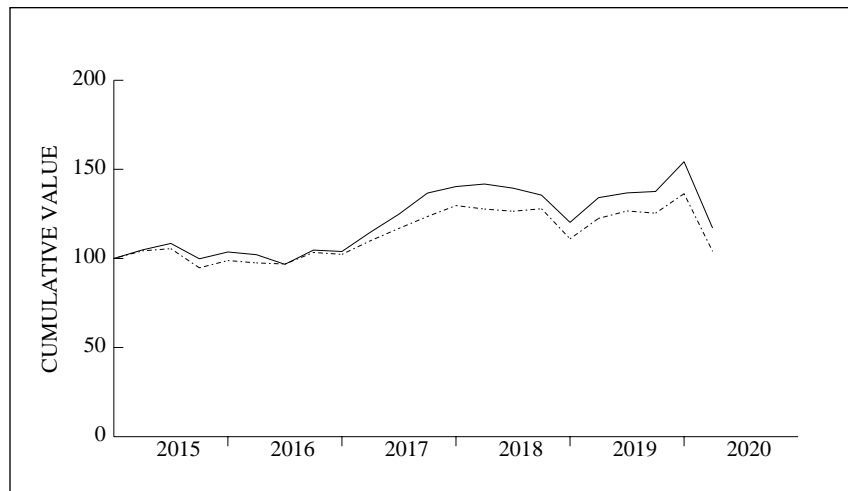


— ACTUAL RETURN  
 - - - 5.25%  
 . . . 0.0%

VALUE ASSUMING  
 5.25% RETURN \$ 92,930,192

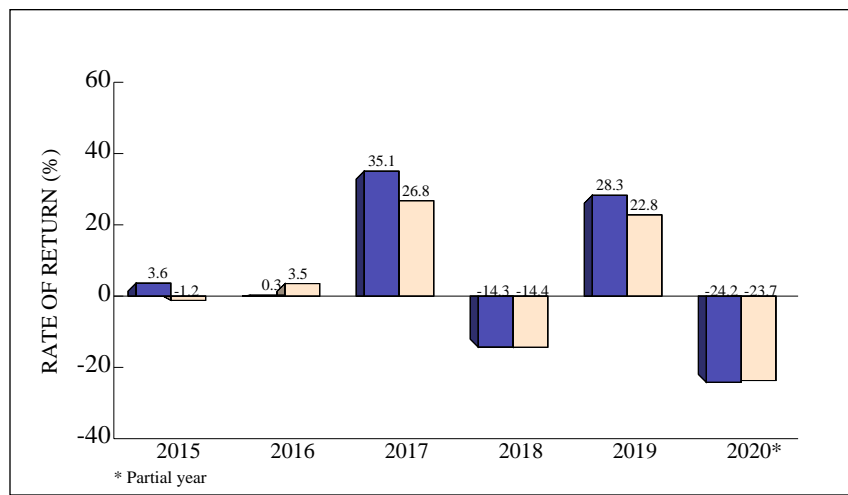
	LAST QUARTER	PERIOD 3/12 - 3/20
BEGINNING VALUE	\$ 135,684,705	\$ 62,430,922
NET CONTRIBUTIONS	-221,570	-957,178
<u>INVESTMENT RETURN</u>	<u>- 32,734,701</u>	<u>41,254,690</u>
ENDING VALUE	\$ 102,728,434	\$ 102,728,434
INCOME	205,222	16,830,344
<u>CAPITAL GAINS (LOSSES)</u>	<u>- 32,939,923</u>	<u>24,424,346</u>
INVESTMENT RETURN	- 32,734,701	41,254,690

### TOTAL RETURN COMPARISONS



■ ——— PORTFOLIO  
■ - - - - S&P BMI EX US

International Equity Universe

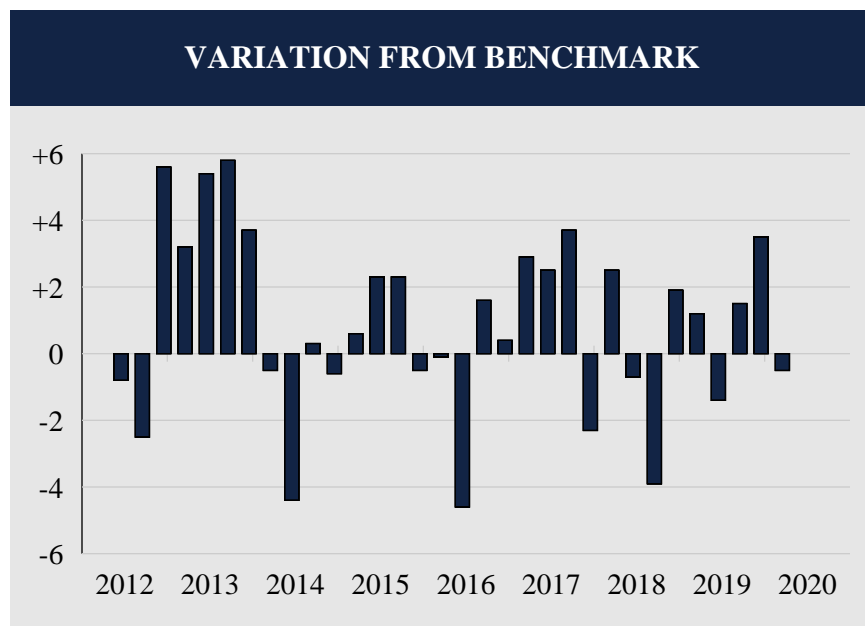


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-24.2	-14.9	-14.4	-12.7	0.7	2.2
(RANK)	(53)	(40)	(26)	(33)	(29)	(24)
5TH %ILE	-15.3	-7.2	-6.8	-2.3	6.2	5.2
25TH %ILE	-20.9	-12.7	-14.3	-11.2	1.2	2.1
MEDIAN	-23.8	-16.4	-18.0	-15.9	-1.9	0.0
75TH %ILE	-27.8	-20.3	-21.9	-20.7	-4.7	-1.5
95TH %ILE	-33.1	-26.3	-29.0	-28.1	-8.9	-3.8
<b>BMI Ex US</b>	<b>-23.7</b>	<b>-17.1</b>	<b>-17.8</b>	<b>-15.1</b>	<b>-1.8</b>	<b>0.0</b>

International Equity Universe

### TOTAL PORTFOLIO QUARTERLY PERFORMANCE SUMMARY

COMPARATIVE BENCHMARK: S&P BMI DEVELOPED EX US INDEX



RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
6/12	-8.0	-7.2	-0.8
9/12	5.2	7.7	-2.5
12/12	11.4	5.8	5.6
3/13	8.1	4.9	3.2
6/13	3.6	-1.8	5.4
9/13	17.7	11.9	5.8
12/13	9.1	5.4	3.7
3/14	0.7	1.2	-0.5
6/14	0.4	4.8	-4.4
9/14	-5.6	-5.9	0.3
12/14	-4.3	-3.7	-0.6
3/15	4.8	4.2	0.6
6/15	3.5	1.2	2.3
9/15	-7.9	-10.2	2.3
12/15	3.8	4.3	-0.5
3/16	-1.4	-1.3	-0.1
6/16	-5.3	-0.7	-4.6
9/16	8.3	6.7	1.6
12/16	-0.7	-1.1	0.4
3/17	10.4	7.5	2.9
6/17	8.8	6.3	2.5
9/17	9.4	5.7	3.7
12/17	2.7	5.0	-2.3
3/18	1.0	-1.5	2.5
6/18	-1.6	-0.9	-0.7
9/18	-2.8	1.1	-3.9
12/18	-11.3	-13.2	1.9
3/19	11.5	10.3	1.2
6/19	2.0	3.4	-1.4
9/19	0.6	-0.9	1.5
12/19	12.2	8.7	3.5
3/20	-24.2	-23.7	-0.5

<b>Total Quarters Observed</b>	<b>32</b>
<b>Quarters At or Above the Benchmark</b>	<b>19</b>
<b>Quarters Below the Benchmark</b>	<b>13</b>
<b>Batting Average</b>	<b>.594</b>

PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
LSV ASSET MANAGEMENT - US LARGE CAP VALUE  
PERFORMANCE REVIEW  
MARCH 2020

## **INVESTMENT RETURN**

On March 31st, 2020, the Pennsylvania Municipal Retirement System's LSV Asset Management US Large Cap Value portfolio was valued at \$121,382,935, a decrease of \$53,441,583 from the December ending value of \$174,824,518. Last quarter, the account recorded total net withdrawals of \$158,911 in addition to \$53,282,672 in net investment losses. The fund's net investment loss was a result of income receipts totaling \$1,109,387 and realized and unrealized capital losses totaling \$54,392,059.

## **RELATIVE PERFORMANCE**

### **Total Fund**

During the first quarter, the LSV Asset Management US Large Cap Value portfolio lost 30.5%, which was 3.8% less than the Russell 1000 Value Index's return of -26.7% and ranked in the 82nd percentile of the Large Cap Value universe. Over the trailing year, the portfolio returned -21.4%, which was 4.2% less than the benchmark's -17.2% performance, and ranked in the 79th percentile. Since March 2004, the account returned 6.3% per annum. For comparison, the Russell 1000 Value returned an annualized 5.9% over the same time frame.

## **ASSET ALLOCATION**

At the end of the first quarter, large cap equities comprised 99.2% of the total portfolio (\$120.4 million), while cash & equivalents comprised the remaining 0.8% (\$1.0 million).

## **EQUITY ANALYSIS**

Last quarter, the LSV large cap portfolio had a footprint in all eleven industry sectors in our analysis. Compared to its benchmark, the portfolio was overweight in the Health Care and Information Technology sectors, while underweight in the Consumer Staples, Financials, Real Estate, and Utilities sectors.

Despite positive allocation effects resulting from greater weight in the Health Care and Information Technology sectors, the portfolio retreated further than the Russell 1000 Value index during the first quarter. Stock selection in almost every sector produced sub-par returns. The portfolio's general bias toward lower market capitalization put it at a disadvantage, as lower cap stocks declined at a faster rate.



**EXECUTIVE SUMMARY****PERFORMANCE SUMMARY**

	Qtr / YTD	1 Year	3 Year	5 Year	10 Year	Since 03/04
<b>Total Portfolio - Gross</b>	-30.5	-21.4	-3.9	0.2	7.6	6.3
<i>LARGE CAP VALUE RANK</i>	(82)	(79)	(73)	(79)	(61)	----
<b>Total Portfolio - Net</b>	-30.6	-21.7	-4.2	-0.2	7.2	5.9
Russell 1000V	-26.7	-17.2	-2.2	1.9	7.7	5.9
<b>Large Cap Equity - Gross</b>	-30.7	-21.4	-3.9	0.2	7.7	6.4
<i>LARGE CAP VALUE RANK</i>	(83)	(79)	(74)	(79)	(59)	----
Russell 1000V	-26.7	-17.2	-2.2	1.9	7.7	5.9
S&P 500	-19.6	-7.0	5.1	6.7	10.5	7.5
Russell 1000G	-14.1	0.9	11.3	10.4	13.0	9.1

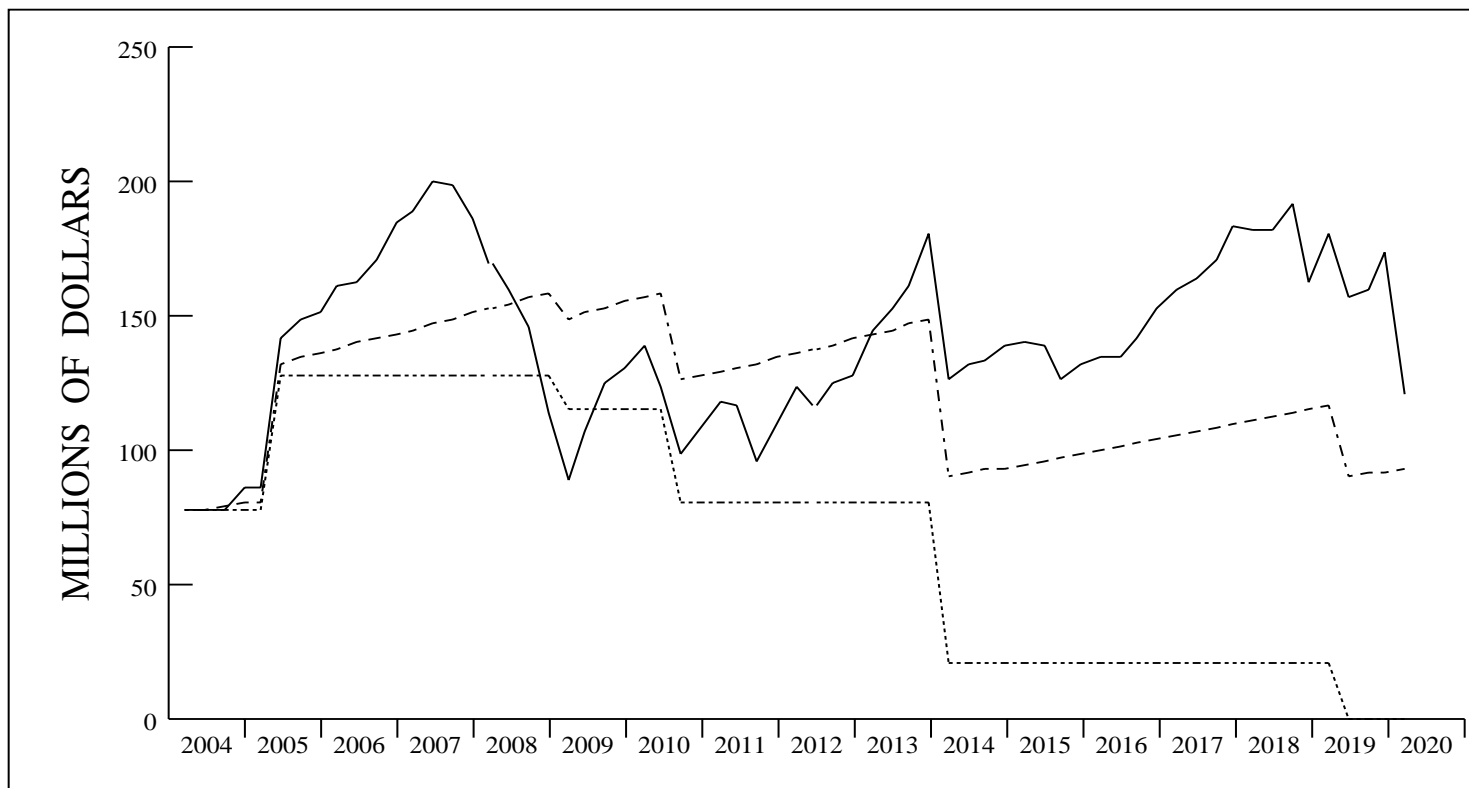
**ASSET ALLOCATION**

Large Cap Equity	99.2%	\$ 120,353,459
Cash	0.8%	1,029,476
<b>Total Portfolio</b>	<b>100.0%</b>	<b>\$ 121,382,935</b>

**INVESTMENT RETURN**

Market Value 12/2019	\$ 174,824,518
Contribs / Withdrawals	-158,911
Income	1,109,387
Capital Gains / Losses	- 54,392,059
Market Value 3/2020	\$ 121,382,935

**INVESTMENT GROWTH**

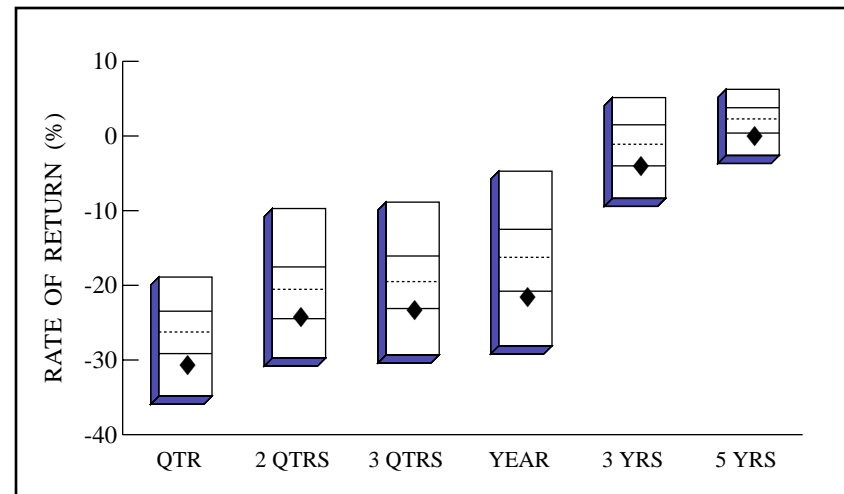
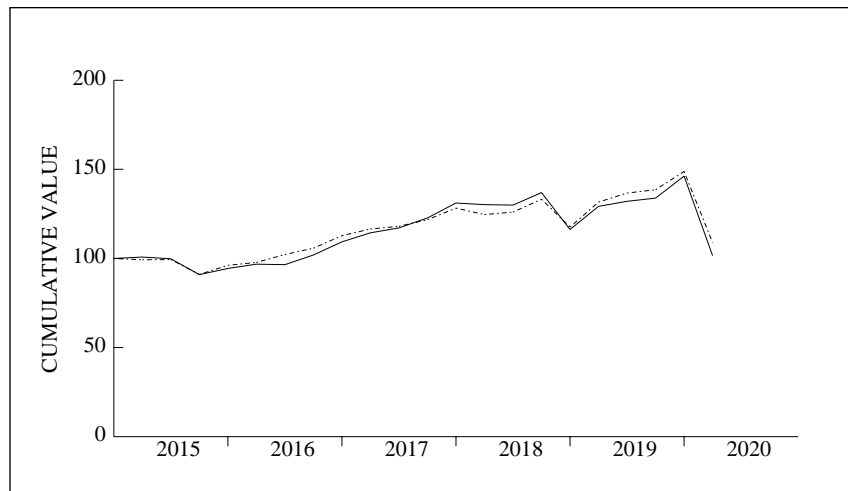


— ACTUAL RETURN  
 - - - 5.25%  
 . . . 0.0%

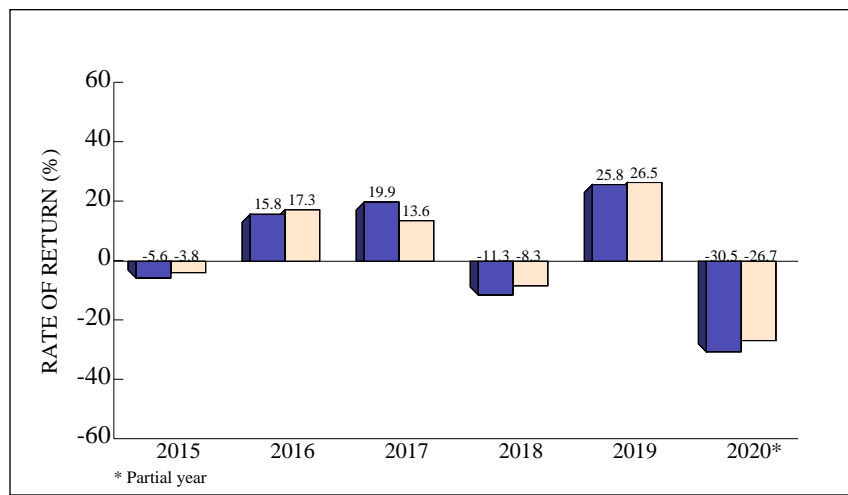
VALUE ASSUMING  
 5.25% RETURN \$ 94,016,754

	LAST QUARTER	PERIOD 3/04 - 3/20
BEGINNING VALUE	\$ 174,824,518	\$ 77,834,544
NET CONTRIBUTIONS	-158,911	- 84,720,740
<u>INVESTMENT RETURN</u>	<u>- 53,282,672</u>	<u>128,269,131</u>
ENDING VALUE	\$ 121,382,935	\$ 121,382,935
INCOME	1,109,387	57,006,664
<u>CAPITAL GAINS (LOSSES)</u>	<u>- 54,392,059</u>	<u>71,262,467</u>
INVESTMENT RETURN	- 53,282,672	128,269,131

### TOTAL RETURN COMPARISONS



Large Cap Value Universe

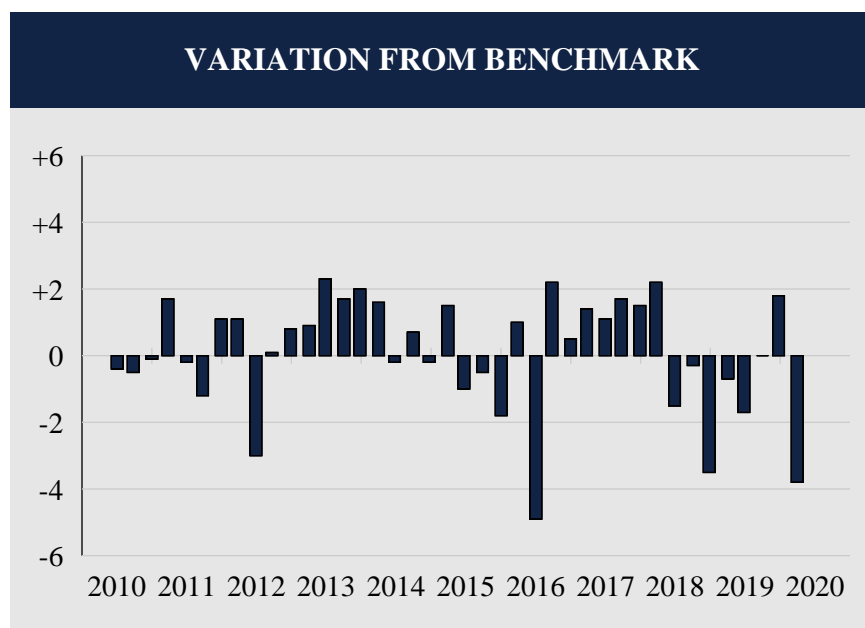


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-30.5	-24.1	-23.0	-21.4	-3.9	0.2
(RANK)	(82)	(74)	(75)	(79)	(73)	(79)
5TH %ILE	-18.9	-9.7	-8.8	-4.7	5.2	6.3
25TH %ILE	-23.5	-17.5	-16.1	-12.5	1.5	3.8
MEDIAN	-26.3	-20.5	-19.5	-16.3	-1.1	2.3
75TH %ILE	-29.2	-24.5	-23.1	-20.8	-4.0	0.4
95TH %ILE	-34.9	-29.7	-29.3	-28.1	-8.4	-2.6
<b>Russ 1000V</b>	<b>-26.7</b>	<b>-21.3</b>	<b>-20.2</b>	<b>-17.2</b>	<b>-2.2</b>	<b>1.9</b>

Large Cap Value Universe

## TOTAL PORTFOLIO QUARTERLY PERFORMANCE SUMMARY - 10 YEARS

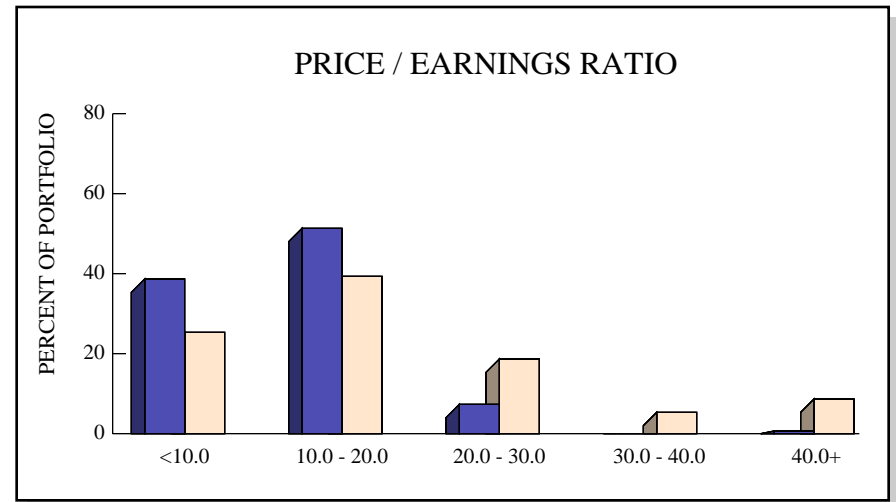
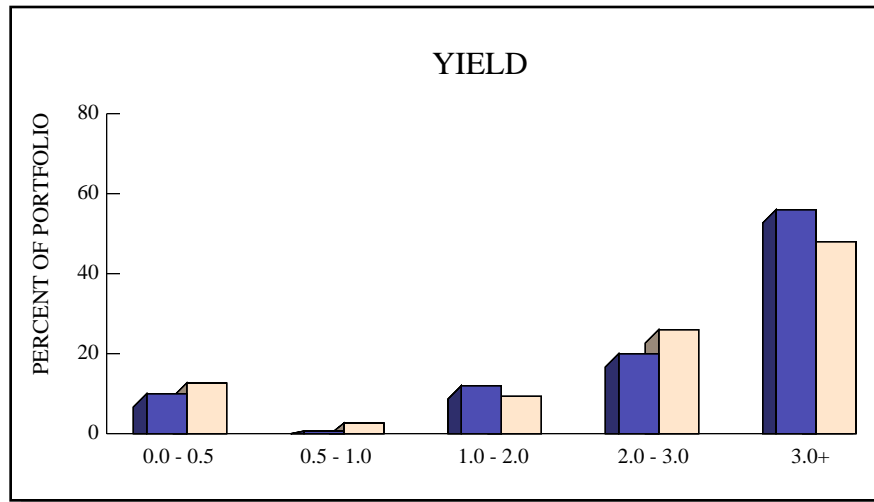
COMPARATIVE BENCHMARK: RUSSELL 1000 VALUE



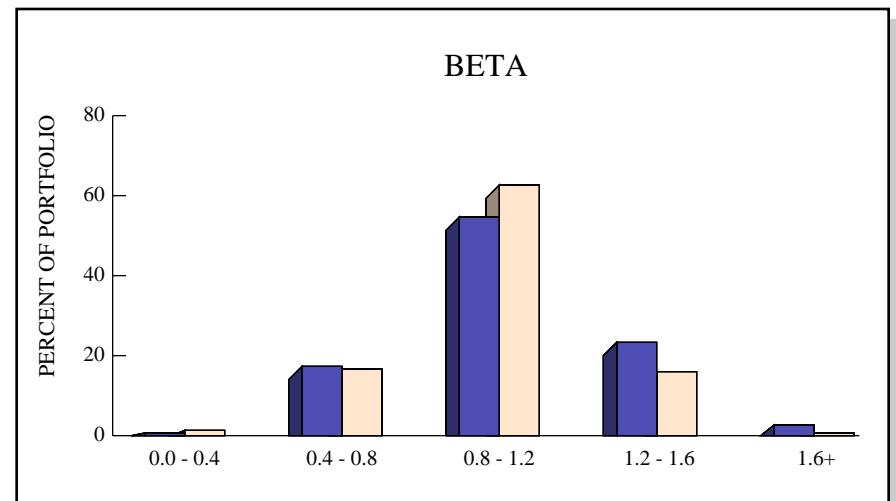
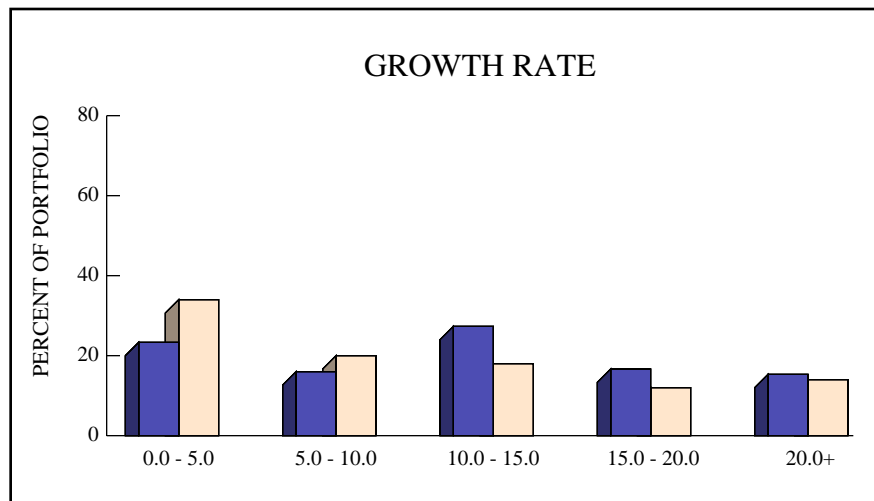
<b>Total Quarters Observed</b>	<b>40</b>
<b>Quarters At or Above the Benchmark</b>	<b>22</b>
<b>Quarters Below the Benchmark</b>	<b>18</b>
<b>Batting Average</b>	<b>.550</b>

RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
6/10	-11.6	-11.2	-0.4
9/10	9.6	10.1	-0.5
12/10	10.4	10.5	-0.1
3/11	8.2	6.5	1.7
6/11	-0.7	-0.5	-0.2
9/11	-17.4	-16.2	-1.2
12/11	14.2	13.1	1.1
3/12	12.2	11.1	1.1
6/12	-5.2	-2.2	-3.0
9/12	6.6	6.5	0.1
12/12	2.3	1.5	0.8
3/13	13.2	12.3	0.9
6/13	5.5	3.2	2.3
9/13	5.6	3.9	1.7
12/13	12.0	10.0	2.0
3/14	4.6	3.0	1.6
6/14	4.9	5.1	-0.2
9/14	0.5	-0.2	0.7
12/14	4.8	5.0	-0.2
3/15	0.8	-0.7	1.5
6/15	-0.9	0.1	-1.0
9/15	-8.9	-8.4	-0.5
12/15	3.8	5.6	-1.8
3/16	2.6	1.6	1.0
6/16	-0.3	4.6	-4.9
9/16	5.7	3.5	2.2
12/16	7.2	6.7	0.5
3/17	4.7	3.3	1.4
6/17	2.4	1.3	1.1
9/17	4.8	3.1	1.7
12/17	6.8	5.3	1.5
3/18	-0.6	-2.8	2.2
6/18	-0.3	1.2	-1.5
9/18	5.4	5.7	-0.3
12/18	-15.2	-11.7	-3.5
3/19	11.2	11.9	-0.7
6/19	2.1	3.8	-1.7
9/19	1.4	1.4	0.0
12/19	9.2	7.4	1.8
3/20	-30.5	-26.7	-3.8

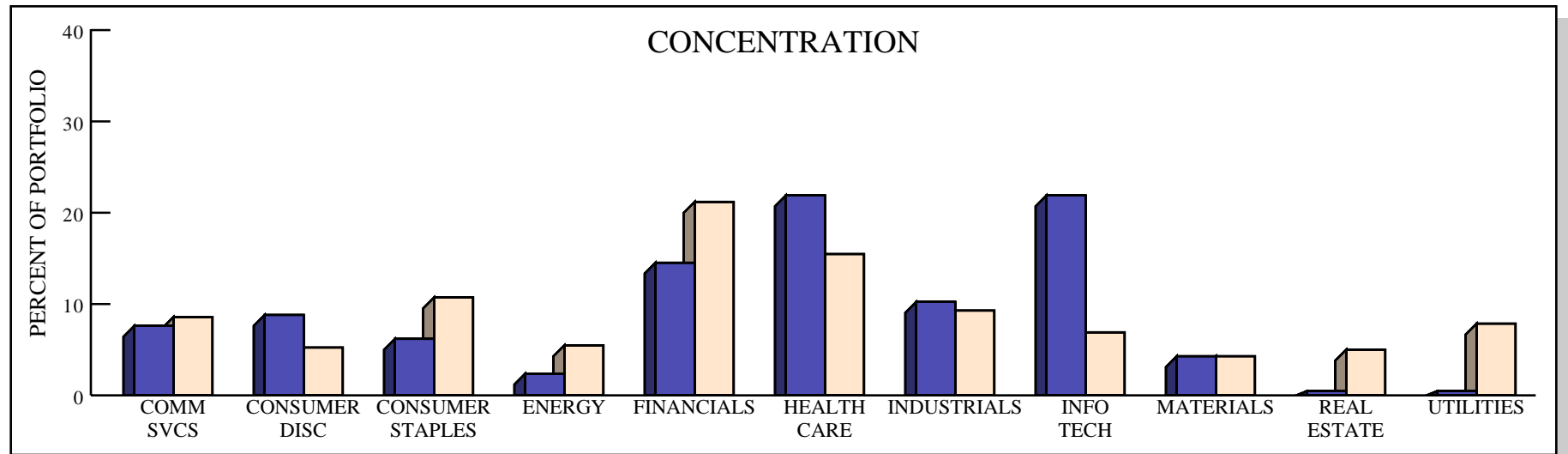
**STOCK CHARACTERISTICS**



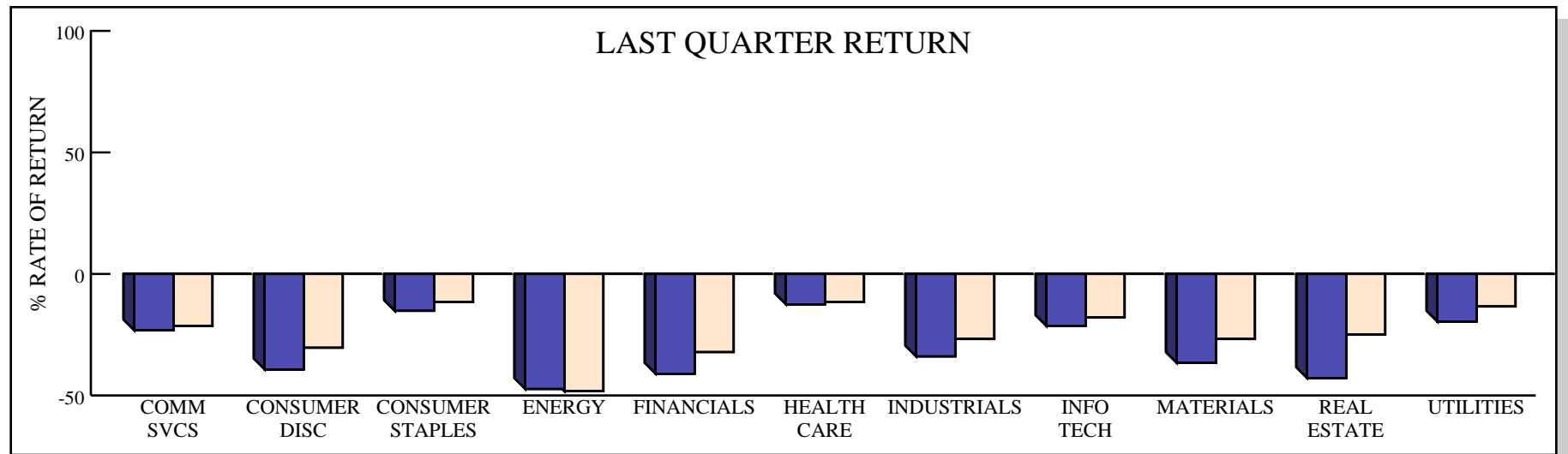
	# HOLDINGS	YIELD	GROWTH	P/E	BETA
PORTFOLIO	144	3.6%	11.5%	12.0	1.04
RUSSELL 1000V	765	3.4%	8.6%	18.3	0.99



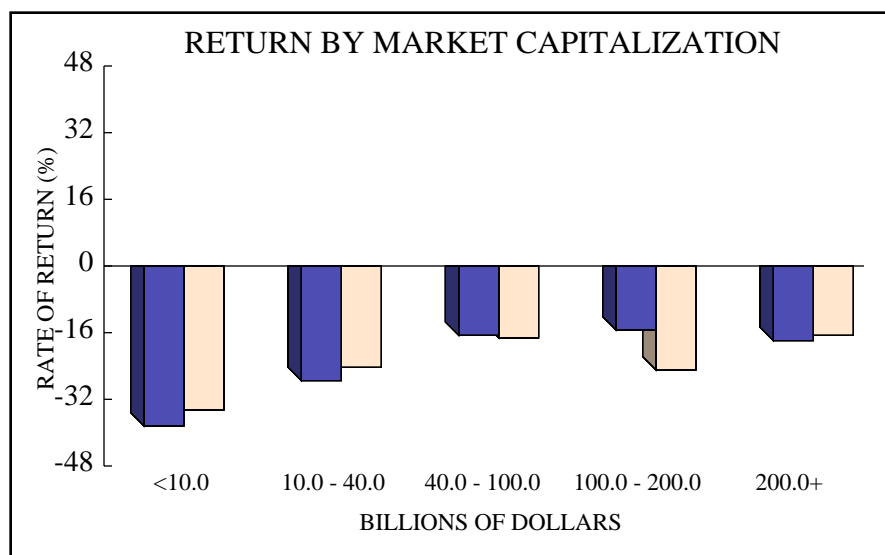
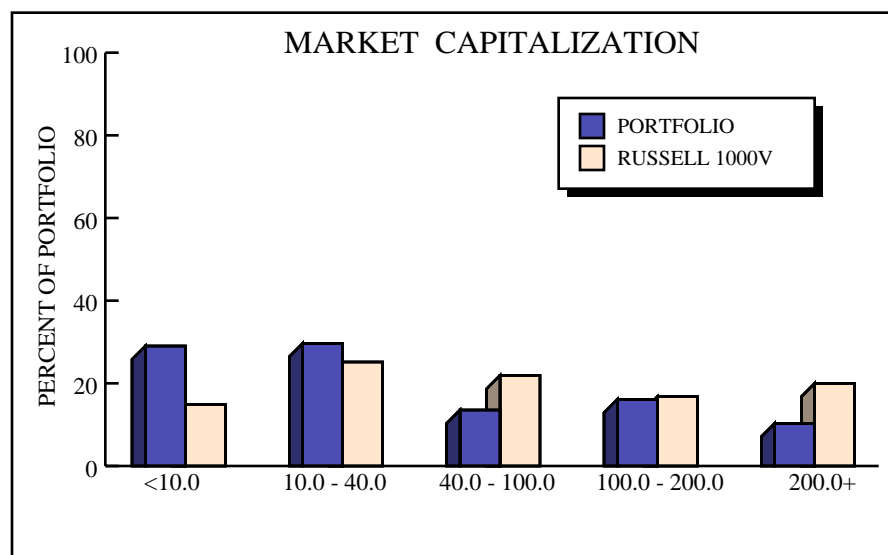
**STOCK INDUSTRY ANALYSIS**



■ PORTFOLIO      ■ RUSSELL 1000V



**TOP TEN HOLDINGS**



**TOP TEN EQUITY HOLDINGS**

RANK	NAME	VALUE	% EQUITY	RETURN	INDUSTRY SECTOR	MKT CAP
1	INTEL CORP	\$ 3,225,552	2.68%	-9.1%	Information Technology	\$ 231.5 B
2	VERIZON COMMUNICATIONS INC	3,218,427	2.67%	-11.6%	Communication Services	222.2 B
3	AMGEN INC	3,020,677	2.51%	-15.3%	Health Care	119.6 B
4	MERCK & CO. INC.	2,992,966	2.49%	-14.7%	Health Care	195.1 B
5	PFIZER INC	2,790,720	2.32%	-15.8%	Health Care	181.1 B
6	ORACLE CORP	2,633,985	2.19%	-8.4%	Information Technology	152.4 B
7	AT&T INC	2,597,265	2.16%	-24.4%	Communication Services	209.4 B
8	JPMORGAN CHASE & CO	2,520,840	2.09%	-35.0%	Financials	276.8 B
9	CISCO SYSTEMS INC	2,468,668	2.05%	-17.4%	Information Technology	166.7 B
10	ABBVIE INC	2,377,128	1.98%	-12.8%	Health Care	112.5 B

PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
LSV ASSET MANAGEMENT - US SMALL CAP VALUE EQUITY  
PERFORMANCE REVIEW  
MARCH 2020



## **INVESTMENT RETURN**

On March 31st, 2020, the Pennsylvania Municipal Retirement System's LSV Asset Management US Small Cap Value Equity portfolio was valued at \$46,342,787, a decrease of \$31,923,039 from the December ending value of \$78,265,826. Last quarter, the account recorded total net withdrawals of \$111,240 in addition to \$31,811,799 in net investment losses. The fund's net investment loss was a result of income receipts totaling \$440,139 and realized and unrealized capital losses totaling \$32,251,938.

## **RELATIVE PERFORMANCE**

### **Total Fund**

During the first quarter, the LSV Asset Management US Small Cap Value Equity portfolio lost 40.7%, which was 5.0% less than the Russell 2000 Value Index's return of -35.7% and ranked in the 90th percentile of the Small Cap Value universe. Over the trailing year, the portfolio returned -34.4%, which was 4.7% less than the benchmark's -29.7% performance, and ranked in the 89th percentile. Since December 2016, the account returned -11.5% per annum and ranked in the 91st percentile. For comparison, the Russell 2000 Value returned an annualized -8.9% over the same time frame.

## **ASSET ALLOCATION**

At the end of the first quarter, small cap equities comprised 98.7% of the total portfolio (\$45.8 million), while cash & equivalents comprised the remaining 1.3% (\$585,447).

## **EQUITY ANALYSIS**

The LSV Small Cap Value portfolio was diversified across all eleven sectors in our analysis. With regard to the Russell 2000 Value Index, the portfolio placed more weight in the Consumer Discretionary, Health Care, Industrials, Information Technology, and Materials sectors. The Financials, Real Estate, and Utilities sectors were underweight.

Mixed allocation effects and decidedly negative selection effects resulted in the portfolio's underperformance against the benchmark. The increased concentration in the Health Care sector was helpful, since that sector performed better than most, but the effect was partially eclipsed by reduced exposure to Utilities, which offered an amount of safety similar to that of the Health Care sector. Unfavorable selection in all but two sectors (Communication Services and Consumer Staples—both representing minor allocations) exacerbated the rapid contraction experienced in the small cap value market.

**EXECUTIVE SUMMARY****PERFORMANCE SUMMARY**

	Qtr / YTD	1 Year	3 Year	5 Year	Since 12/16
<b>Total Portfolio - Gross</b>	-40.7	-34.4	-12.3	----	-11.5
<i>SMALL CAP VALUE RANK</i>	(90)	(89)	(90)	----	(91)
<b>Total Portfolio - Net</b>	-40.8	-34.9	-12.8	----	-12.0
Russell 2000V	-35.7	-29.7	-9.5	-2.4	-8.9
<b>Small Cap Equity - Gross</b>	-41.1	-34.9	-12.5	----	-11.7
<i>SMALL CAP VALUE RANK</i>	(93)	(90)	(91)	----	(92)
Russell 2000V	-35.7	-29.7	-9.5	-2.4	-8.9

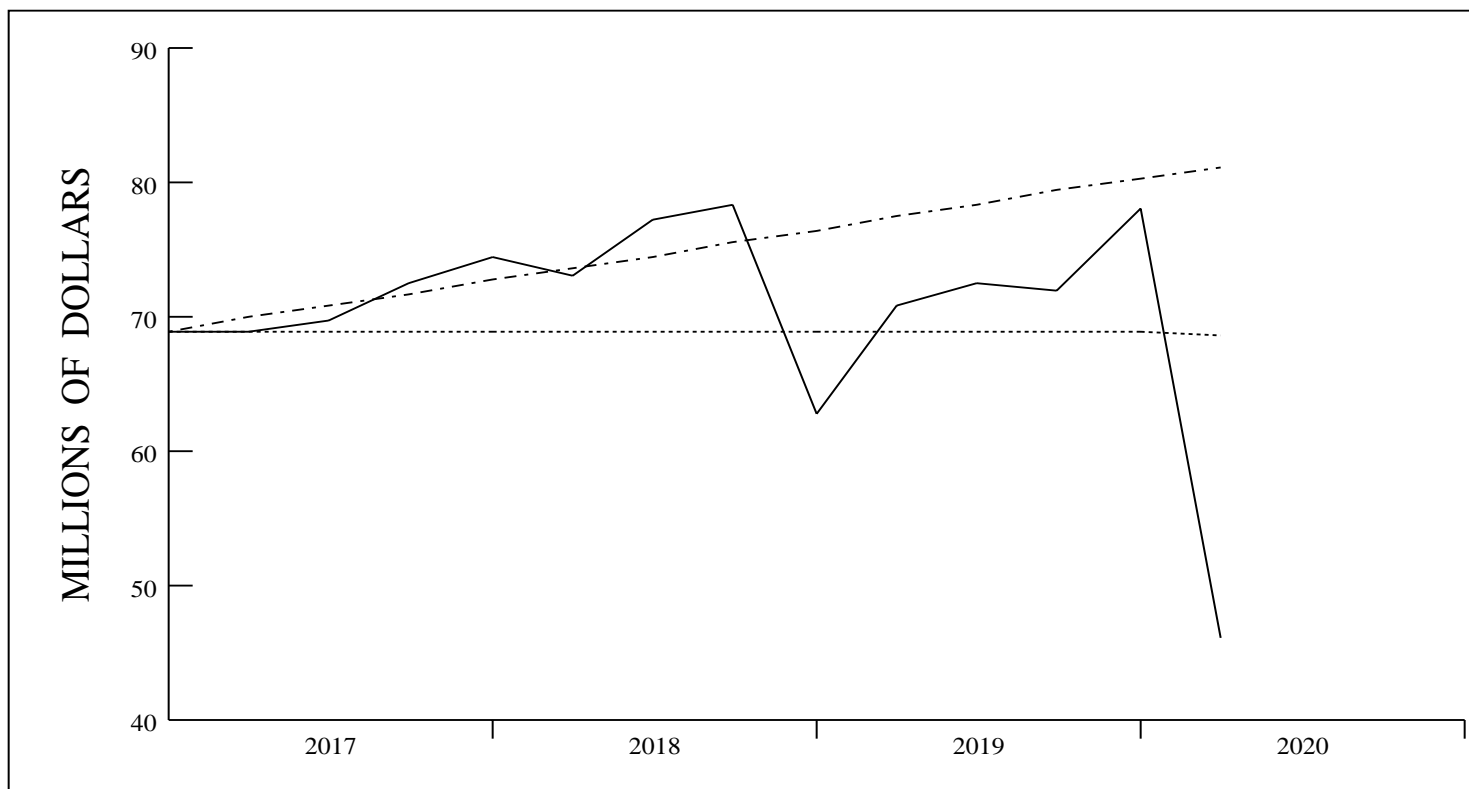
**ASSET ALLOCATION**

Small Cap	98.7%	\$ 45,757,340
Cash	1.3%	585,447
<b>Total Portfolio</b>	<b>100.0%</b>	<b>\$ 46,342,787</b>

**INVESTMENT RETURN**

Market Value 12/2019	\$ 78,265,826
Contribs / Withdrawals	-111,240
Income	440,139
Capital Gains / Losses	- 32,251,938
Market Value 3/2020	\$ 46,342,787

**INVESTMENT GROWTH**

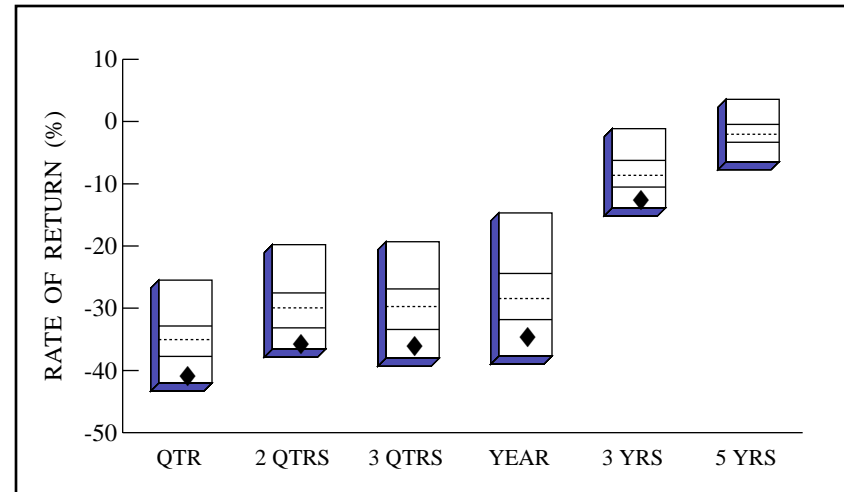
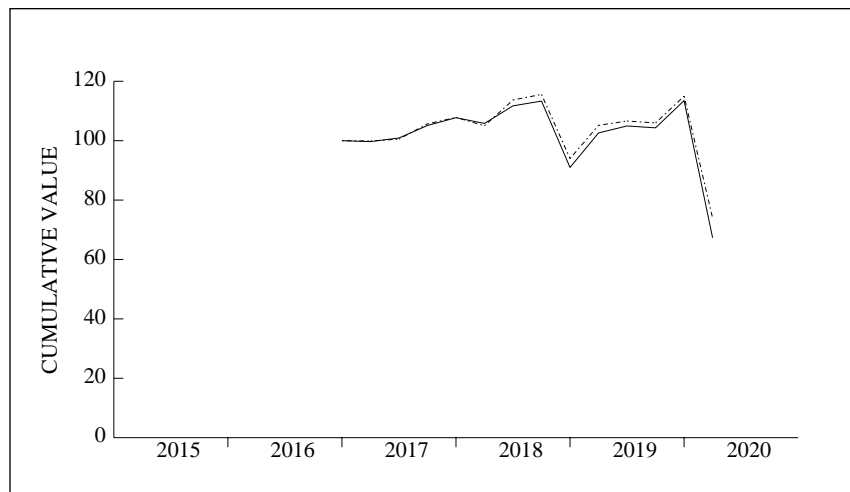


— ACTUAL RETURN  
 - - - 5.25%  
 . . . 0.0%

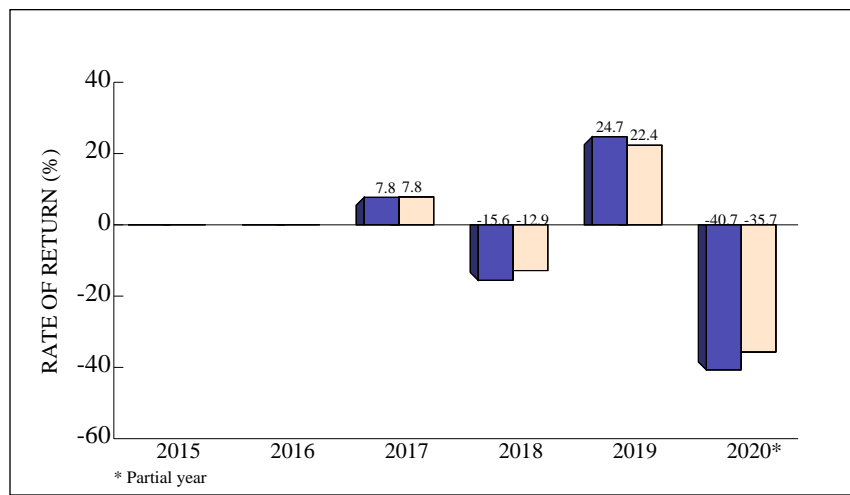
VALUE ASSUMING  
 5.25% RETURN \$ 81,351,425

	LAST QUARTER	PERIOD 12/16 - 3/20
BEGINNING VALUE	\$ 78,265,826	\$ 69,163,490
NET CONTRIBUTIONS	-111,240	-318,368
<u>INVESTMENT RETURN</u>	<u>- 31,811,799</u>	<u>- 22,502,335</u>
ENDING VALUE	\$ 46,342,787	\$ 46,342,787
INCOME	440,139	5,368,936
<u>CAPITAL GAINS (LOSSES)</u>	<u>- 32,251,938</u>	<u>- 27,871,271</u>
INVESTMENT RETURN	- 31,811,799	- 22,502,335

**TOTAL RETURN COMPARISONS**



Small Cap Value Universe

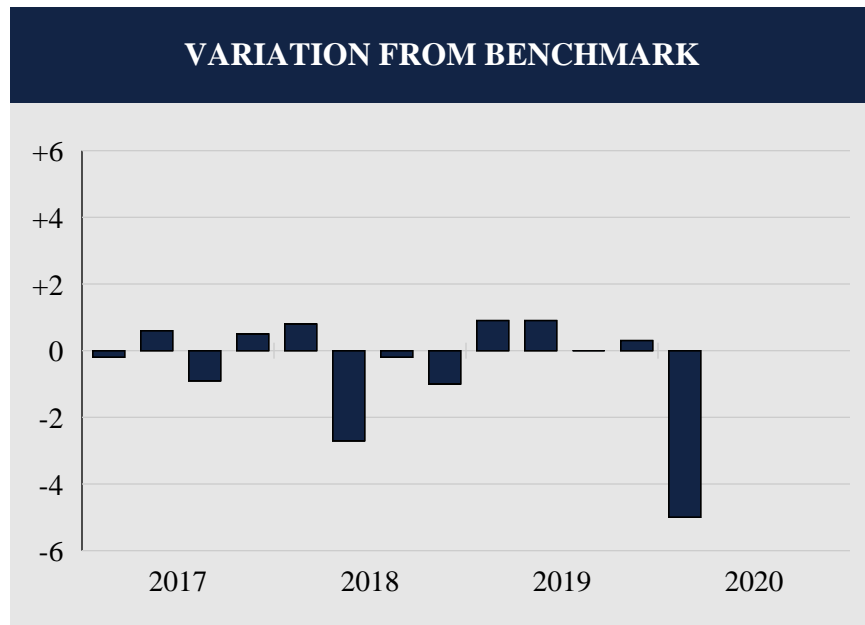


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-40.7	-35.5	-35.9	-34.4	-12.3	---
(RANK)	(90)	(91)	(89)	(89)	(90)	---
5TH %ILE	-25.5	-19.8	-19.3	-14.7	-1.2	3.6
25TH %ILE	-32.9	-27.5	-26.9	-24.4	-6.3	-0.5
MEDIAN	-35.0	-29.9	-29.7	-28.4	-8.6	-2.0
75TH %ILE	-37.7	-33.2	-33.4	-31.8	-10.5	-3.4
95TH %ILE	-42.1	-36.6	-38.1	-37.7	-13.9	-6.5
<b>Russ 2000V</b>	<b>-35.7</b>	<b>-30.2</b>	<b>-30.6</b>	<b>-29.7</b>	<b>-9.5</b>	<b>-2.4</b>

Small Cap Value Universe

### TOTAL PORTFOLIO QUARTERLY PERFORMANCE SUMMARY

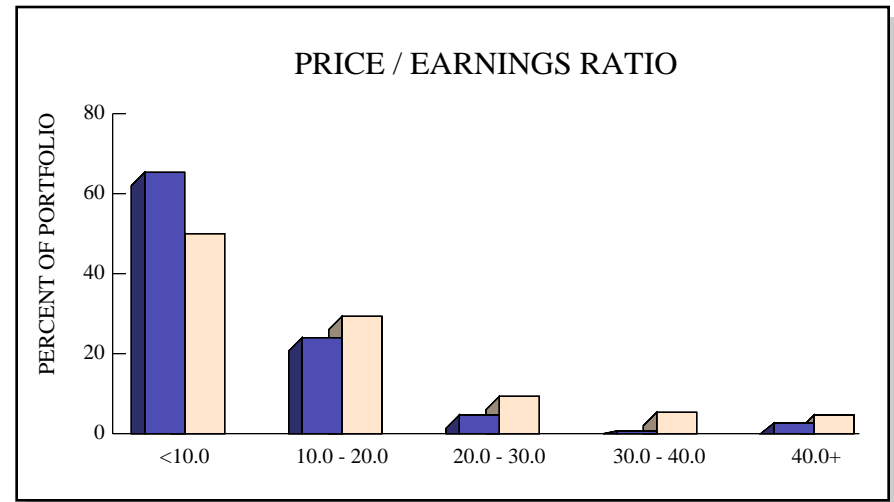
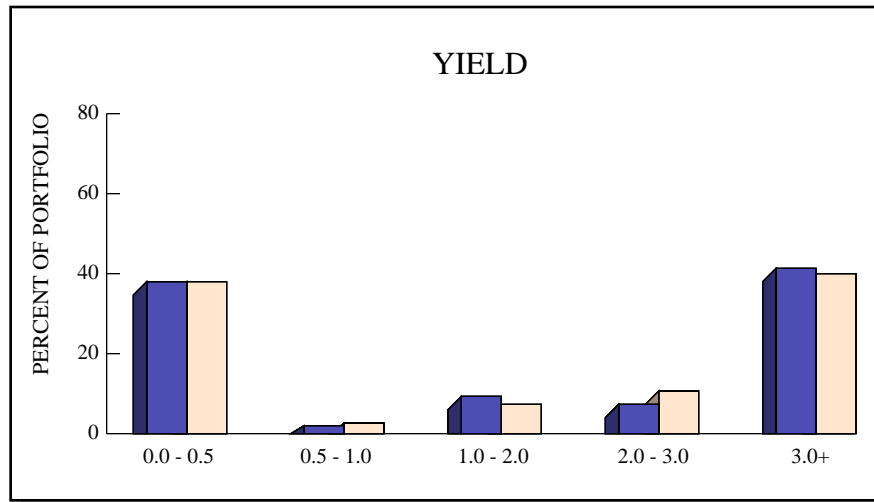
COMPARATIVE BENCHMARK: RUSSELL 2000 VALUE



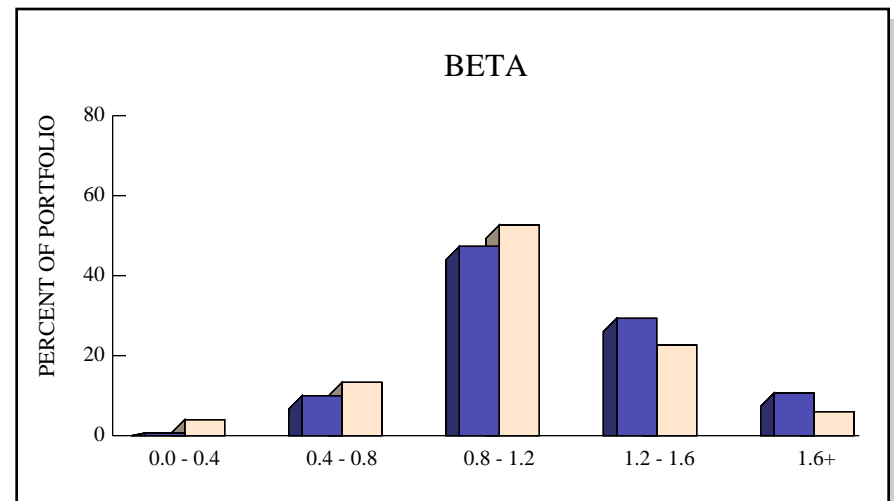
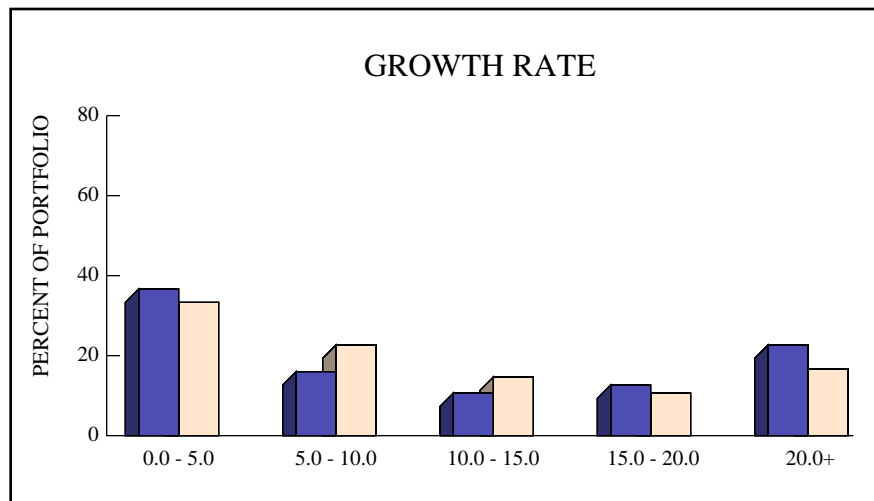
RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
3/17	-0.3	-0.1	-0.2
6/17	1.3	0.7	0.6
9/17	4.2	5.1	-0.9
12/17	2.5	2.0	0.5
3/18	-1.8	-2.6	0.8
6/18	5.6	8.3	-2.7
9/18	1.4	1.6	-0.2
12/18	-19.7	-18.7	-1.0
3/19	12.8	11.9	0.9
6/19	2.3	1.4	0.9
9/19	-0.6	-0.6	0.0
12/19	8.8	8.5	0.3
3/20	-40.7	-35.7	-5.0

<b>Total Quarters Observed</b>	<b>13</b>
<b>Quarters At or Above the Benchmark</b>	<b>7</b>
<b>Quarters Below the Benchmark</b>	<b>6</b>
<b>Batting Average</b>	<b>.538</b>

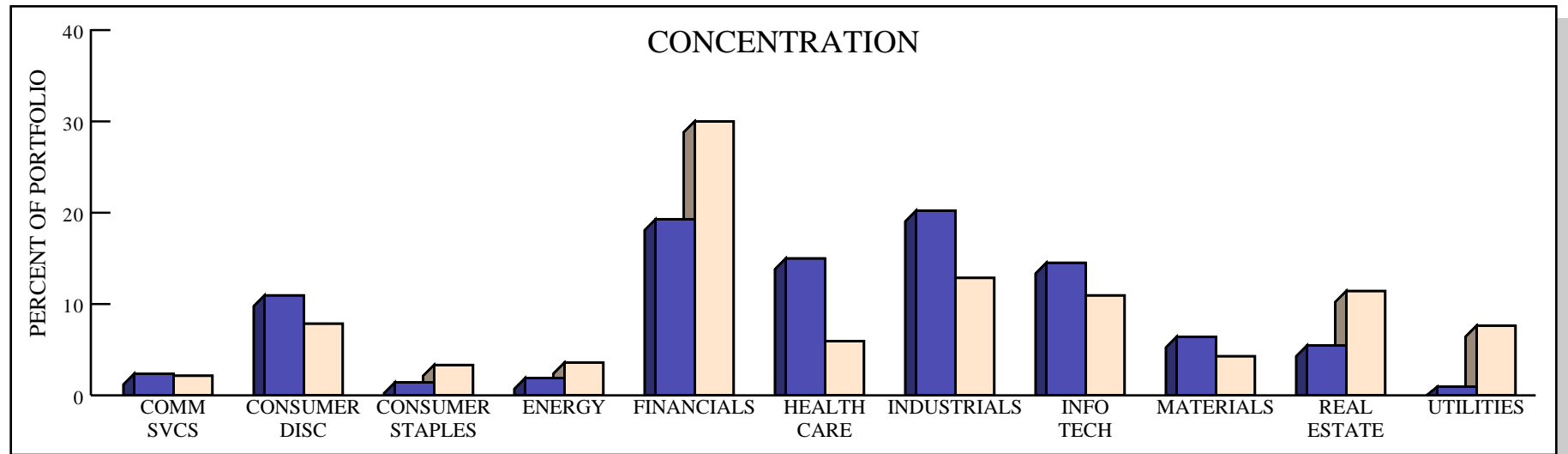
**STOCK CHARACTERISTICS**



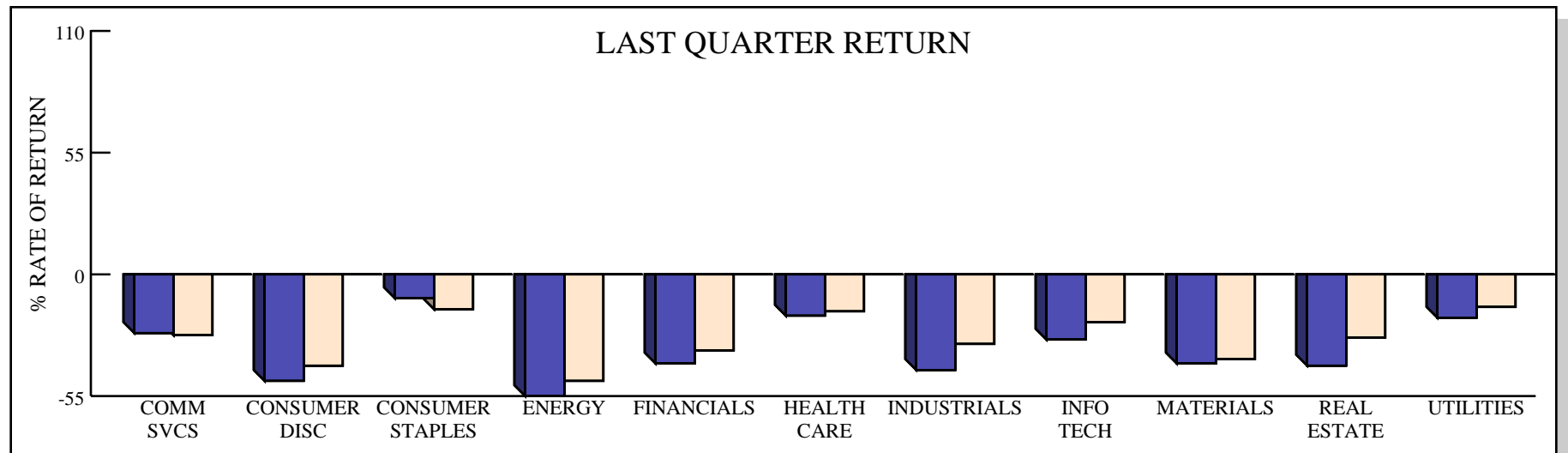
	# HOLDINGS	YIELD	GROWTH	P/E	BETA
PORTFOLIO	209	3.3%	10.9%	9.1	1.17
RUSSELL 2000V	1,391	2.8%	9.7%	12.9	1.04



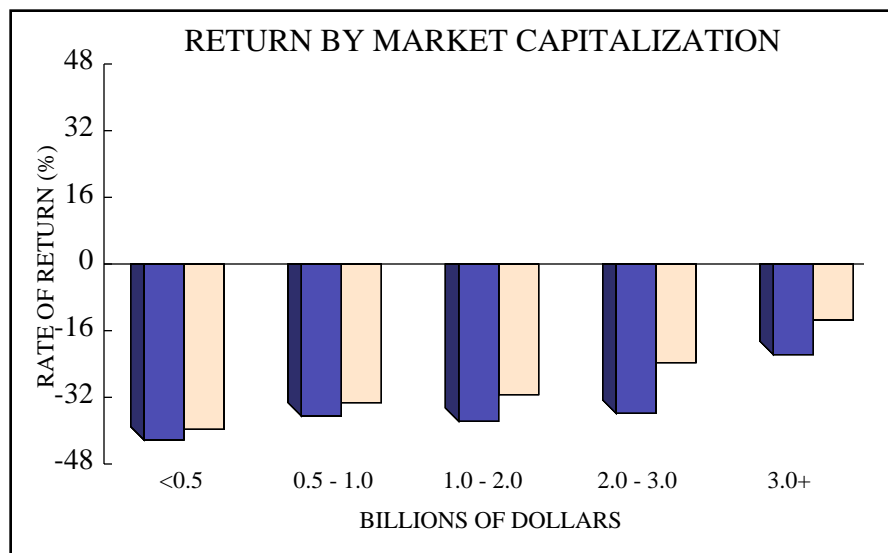
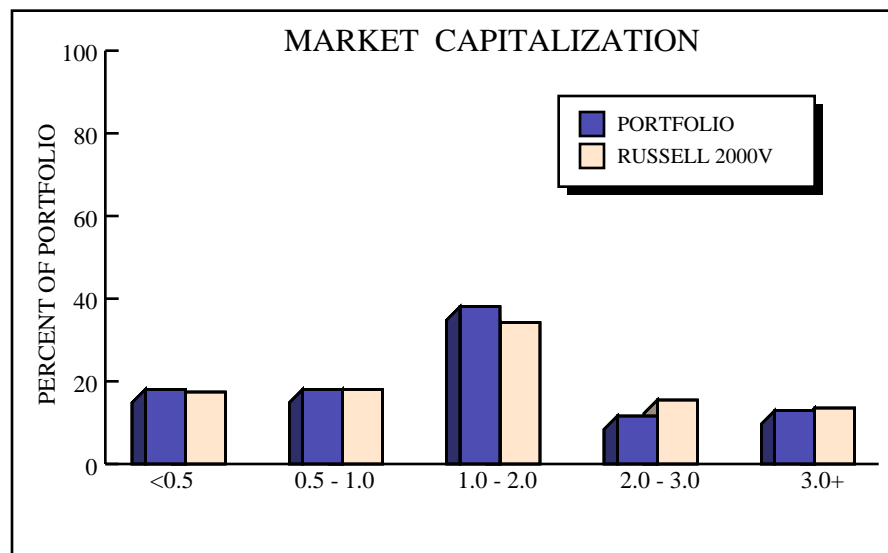
**STOCK INDUSTRY ANALYSIS**



■ PORTFOLIO      ■ RUSSELL 2000V



**TOP TEN HOLDINGS**



**TOP TEN EQUITY HOLDINGS**

RANK	NAME	VALUE	% EQUITY	RETURN	INDUSTRY SECTOR	MKT CAP
1	SELECT MEDICAL HOLDINGS CORP	\$ 685,500	1.50%	-35.7%	Health Care	\$ 2.0 B
2	INNOVIVA INC	633,864	1.39%	-17.0%	Health Care	1.2 B
3	SYKES ENTERPRISES INC	631,896	1.38%	-26.7%	Information Technology	1.1 B
4	RELIANCE STEEL & ALUMINUM	630,648	1.38%	-26.3%	Materials	5.9 B
5	UNITED THERAPEUTICS CORP	616,395	1.35%	7.7%	Health Care	4.2 B
6	CNO FINANCIAL GROUP INC	603,938	1.32%	-31.1%	Financials	1.8 B
7	REGAL BELOIT CORP	572,845	1.25%	-26.1%	Industrials	2.6 B
8	CORCEPT THERAPEUTICS INC	570,720	1.25%	-1.7%	Health Care	1.4 B
9	PRESTIGE CONSUMER HEALTHCARE	553,868	1.21%	-9.4%	Health Care	1.8 B
10	TCF FINANCIAL CORP	552,632	1.21%	-51.2%	Financials	3.5 B



PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
POLEN CAPITAL MANAGEMENT - FOCUS GROWTH  
PERFORMANCE REVIEW  
MARCH 2020

## **INVESTMENT RETURN**

On March 31st, 2020, the Pennsylvania Municipal Retirement System's Polen Capital Management Focus Growth portfolio was valued at \$217,553,364, a decrease of \$32,618,313 from the December ending value of \$250,171,677. Last quarter, the account recorded total net withdrawals of \$242,426 in addition to \$32,375,887 in net investment losses. The fund's net investment loss was a result of income receipts totaling \$371,216 and realized and unrealized capital losses totaling \$32,747,103.

## **RELATIVE PERFORMANCE**

### **Total Fund**

During the first quarter, the Polen Capital Management Focus Growth portfolio lost 13.0%, which was 1.1% greater than the Russell 1000 Growth Index's return of -14.1% and ranked in the 35th percentile of the Large Cap Growth universe. Over the trailing year, the portfolio returned 3.3%, which was 2.4% greater than the benchmark's 0.9% performance, and ranked in the 12th percentile. Since September 2010, the account returned 15.5% per annum and ranked in the 8th percentile. For comparison, the Russell 1000 Growth returned an annualized 13.7% over the same time frame.

## **ASSET ALLOCATION**

At the end of the first quarter, large cap equities comprised 95.2% of the total portfolio (\$207.1 million), while cash & equivalents comprised the remaining 4.8% (\$10.4 million).

## **EQUITY ANALYSIS**

By the end of the first quarter, the Polen portfolio increased its emphasis on the Information Technology sector, which made up more than half of the allocation. The Communication Services and Health Care sectors held more weight than their Russel 1000 Growth Index counterparts. The Consumer Discretionary sector was relatively underweight, while the Financials sector was in line with its index. The remaining six sectors were vacant.

The concentration in Information Technology and Health Care helped the portfolio to slightly curb losses last quarter, as those sectors fared better than most. The portfolio's avoidance of the Industrials sector was also beneficial, since that sector had significant representation in the index and saw steep declines during the quarter. The portfolio also found positive returns in the Financials sector.

**EXECUTIVE SUMMARY****PERFORMANCE SUMMARY**

	Qtr / YTD	1 Year	3 Year	5 Year	Since 09/10
<b>Total Portfolio - Gross</b>	-13.0	3.3	15.5	13.9	15.5
<i>LARGE CAP GROWTH RANK</i>	(35)	(12)	(12)	(4)	(8)
<b>Total Portfolio - Net</b>	-13.1	2.9	15.1	13.4	15.0
Russell 1000G	-14.1	0.9	11.3	10.4	13.7
<b>Large Cap Equity - Gross</b>	-13.2	3.4	16.2	14.4	16.2
<i>LARGE CAP GROWTH RANK</i>	(40)	(11)	(8)	(3)	(4)
Russell 1000G	-14.1	0.9	11.3	10.4	13.7

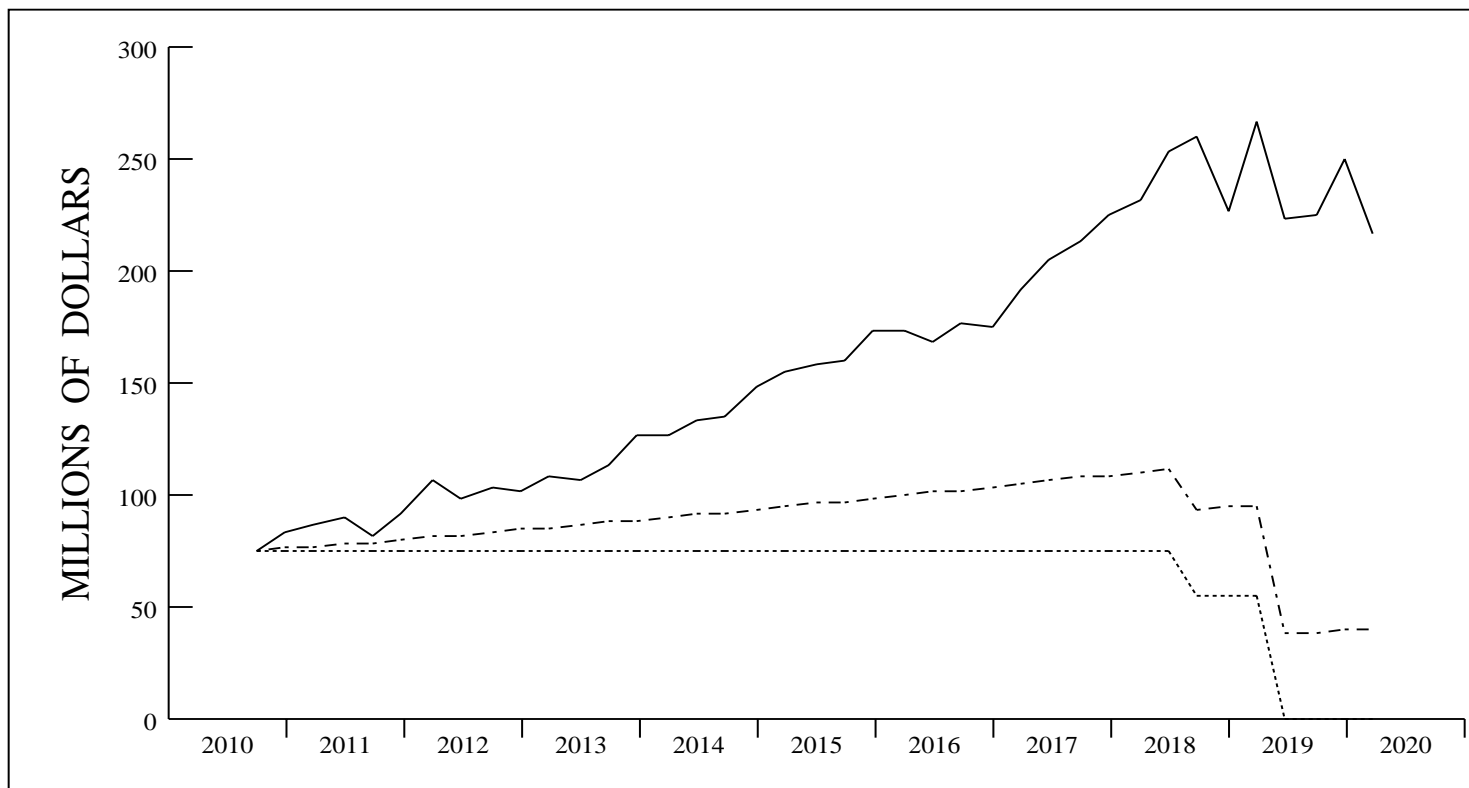
**ASSET ALLOCATION**

Large Cap Equity	95.2%	\$ 207,138,228
Cash	4.8%	10,415,136
<b>Total Portfolio</b>	<b>100.0%</b>	<b>\$ 217,553,364</b>

**INVESTMENT RETURN**

Market Value 12/2019	\$ 250,171,677
Contribs / Withdrawals	-242,426
Income	371,216
Capital Gains / Losses	- 32,747,103
Market Value 3/2020	\$ 217,553,364

**INVESTMENT GROWTH**

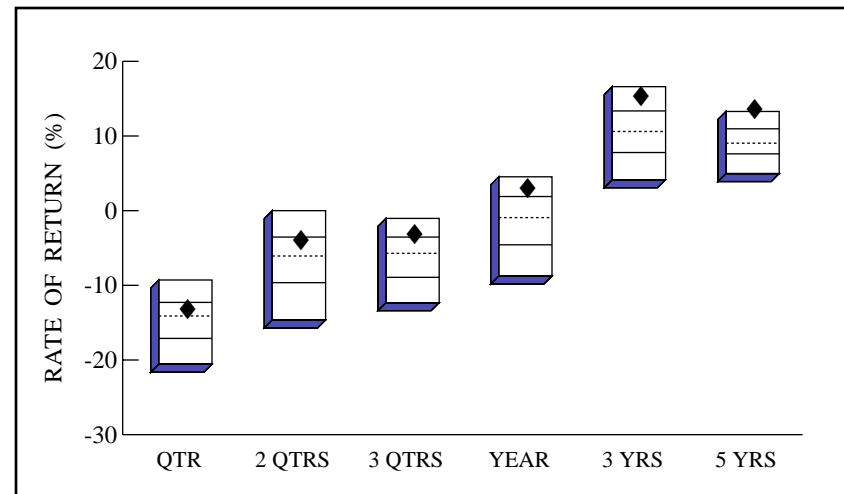
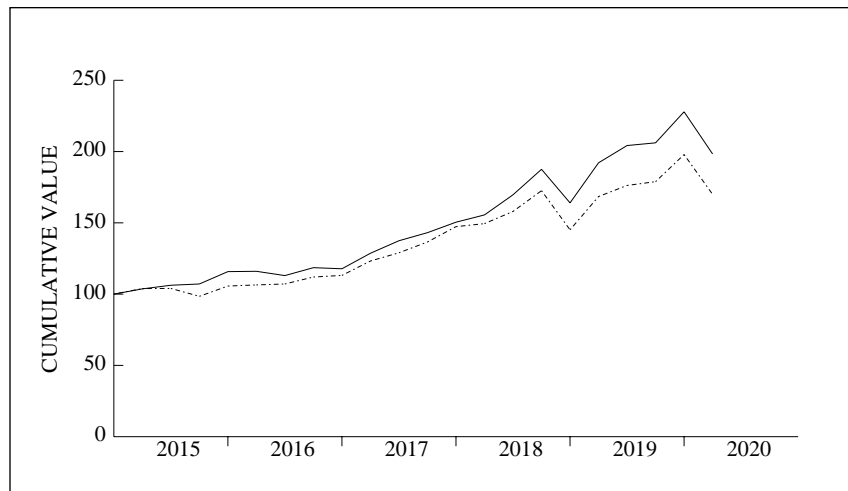


— ACTUAL RETURN  
 - - - 5.25%  
 . . . 0.0%

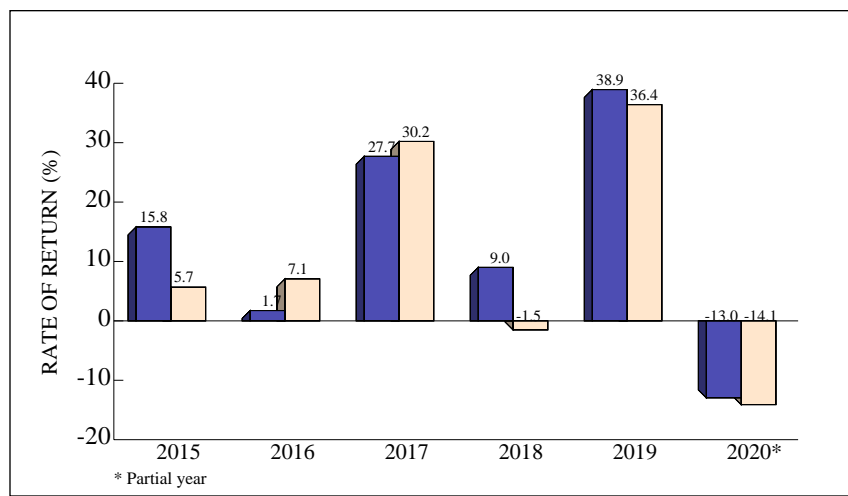
VALUE ASSUMING  
 5.25% RETURN \$ 40,555,231

	LAST QUARTER	PERIOD 9/10 - 3/20
BEGINNING VALUE	\$ 250,171,677	\$ 75,827,096
NET CONTRIBUTIONS	-242,426	- 78,189,858
<u>INVESTMENT RETURN</u>	<u>- 32,375,887</u>	<u>219,916,126</u>
ENDING VALUE	\$ 217,553,364	\$ 217,553,364
INCOME	371,216	14,014,594
<u>CAPITAL GAINS (LOSSES)</u>	<u>- 32,747,103</u>	<u>205,901,532</u>
INVESTMENT RETURN	- 32,375,887	219,916,126

**TOTAL RETURN COMPARISONS**



Large Cap Growth Universe

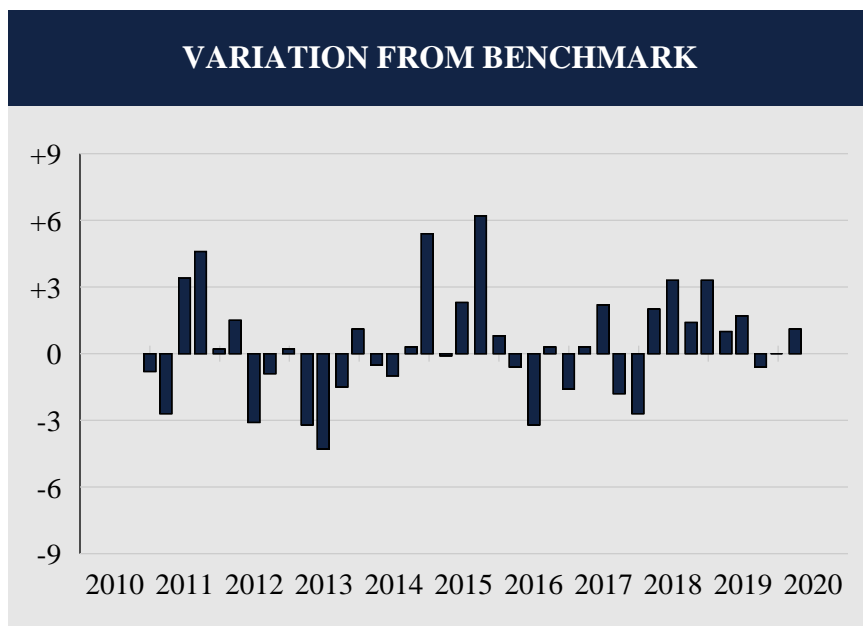


	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED----- 3 YRS	5 YRS
RETURN	-13.0	-3.8	-2.9	3.3	15.5	13.9
(RANK)	(35)	(26)	(17)	(12)	(12)	(4)
5TH %ILE	-9.3	0.0	-1.0	4.6	16.6	13.3
25TH %ILE	-12.3	-3.6	-3.5	1.9	13.4	11.0
MEDIAN	-14.1	-6.1	-5.7	-0.9	10.6	9.1
75TH %ILE	-17.1	-9.7	-8.9	-4.6	7.8	7.6
95TH %ILE	-20.6	-14.6	-12.3	-8.8	4.1	5.0
<b>Russ 1000G</b>	<b>-14.1</b>	<b>-5.0</b>	<b>-3.6</b>	<b>0.9</b>	<b>11.3</b>	<b>10.4</b>

Large Cap Growth Universe

### TOTAL PORTFOLIO QUARTERLY PERFORMANCE SUMMARY

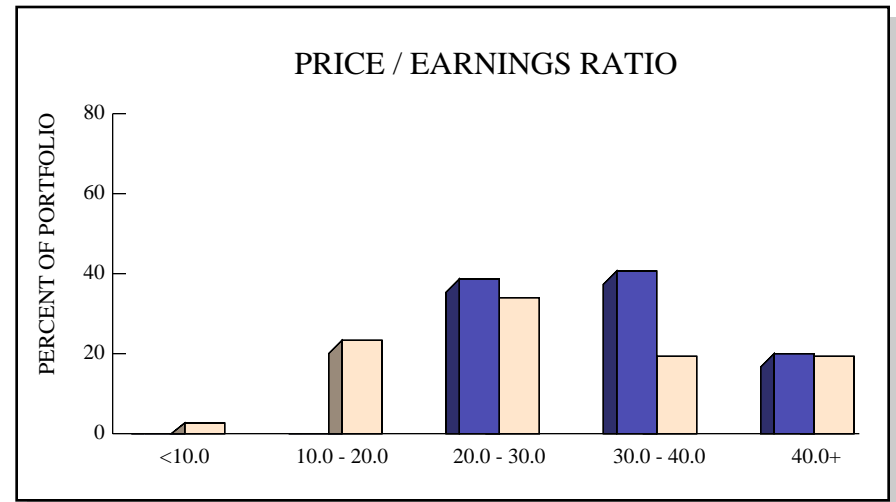
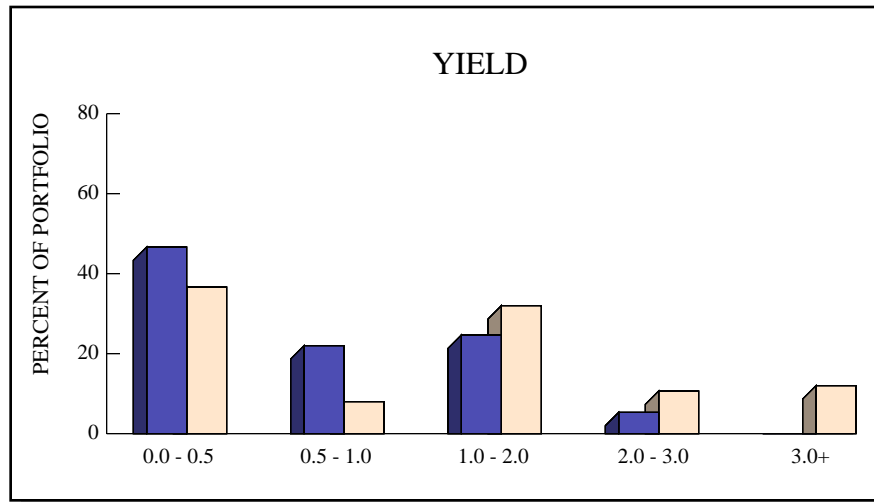
COMPARATIVE BENCHMARK: RUSSELL 1000 GROWTH



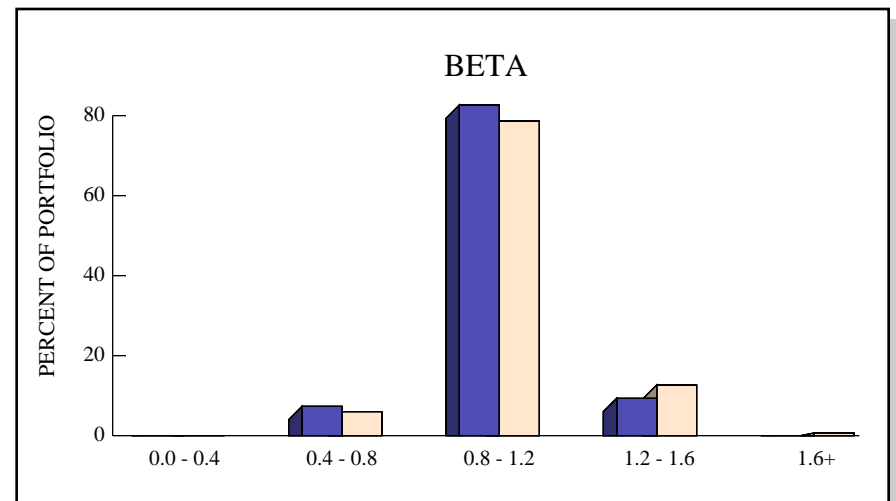
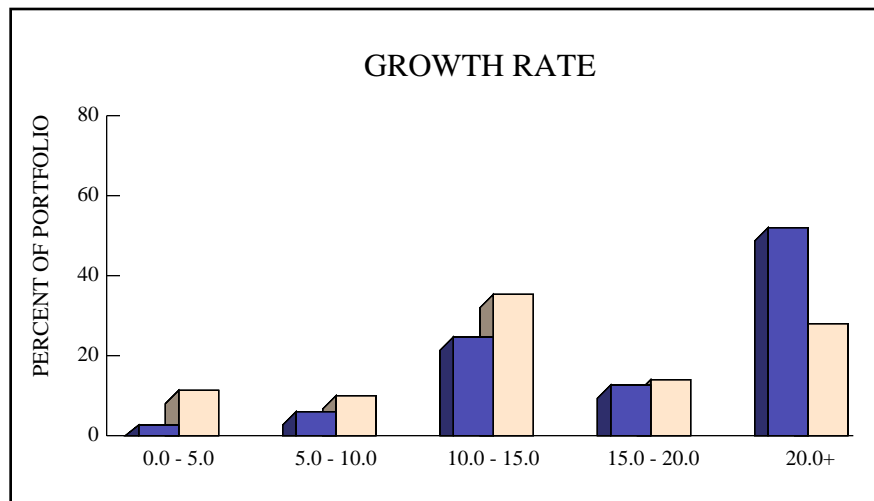
RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
12/10	11.0	11.8	-0.8
3/11	3.3	6.0	-2.7
6/11	4.2	0.8	3.4
9/11	-8.5	-13.1	4.6
12/11	10.8	10.6	0.2
3/12	16.2	14.7	1.5
6/12	-7.1	-4.0	-3.1
9/12	5.2	6.1	-0.9
12/12	-1.1	-1.3	0.2
3/13	6.3	9.5	-3.2
6/13	-2.2	2.1	-4.3
9/13	6.6	8.1	-1.5
12/13	11.5	10.4	1.1
3/14	0.6	1.1	-0.5
6/14	4.1	5.1	-1.0
9/14	1.8	1.5	0.3
12/14	10.2	4.8	5.4
3/15	3.7	3.8	-0.1
6/15	2.4	0.1	2.3
9/15	0.9	-5.3	6.2
12/15	8.1	7.3	0.8
3/16	0.1	0.7	-0.6
6/16	-2.6	0.6	-3.2
9/16	4.9	4.6	0.3
12/16	-0.6	1.0	-1.6
3/17	9.2	8.9	0.3
6/17	6.9	4.7	2.2
9/17	4.1	5.9	-1.8
12/17	5.2	7.9	-2.7
3/18	3.4	1.4	2.0
6/18	9.1	5.8	3.3
9/18	10.6	9.2	1.4
12/18	-12.6	-15.9	3.3
3/19	17.1	16.1	1.0
6/19	6.3	4.6	1.7
9/19	0.9	1.5	-0.6
12/19	10.6	10.6	0.0
3/20	-13.0	-14.1	1.1

<b>Total Quarters Observed</b>	<b>38</b>
<b>Quarters At or Above the Benchmark</b>	<b>22</b>
<b>Quarters Below the Benchmark</b>	<b>16</b>
<b>Batting Average</b>	<b>.579</b>

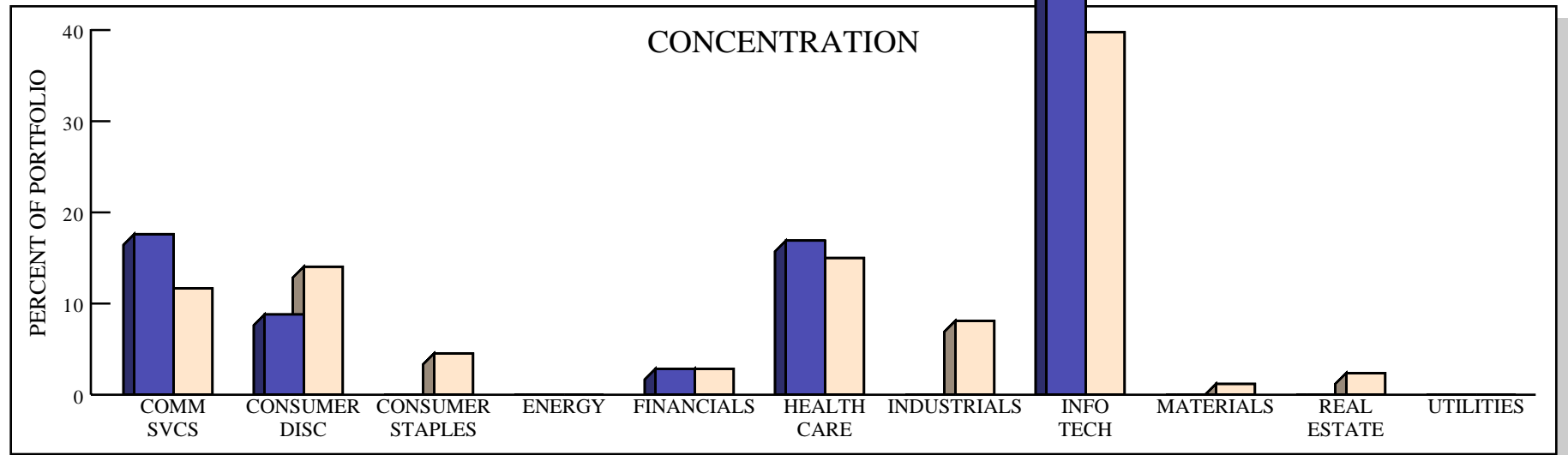
**STOCK CHARACTERISTICS**



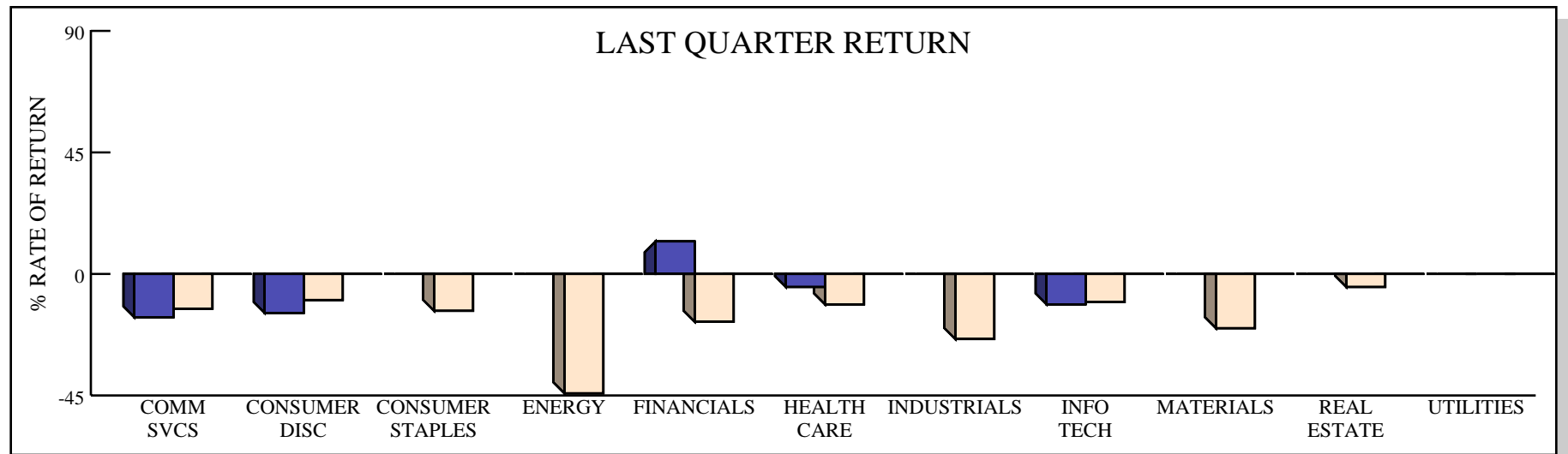
	# HOLDINGS	YIELD	GROWTH	P/E	BETA
PORTFOLIO	22	0.6%	24.6%	34.9	0.98
RUSSELL 1000G	532	1.3%	17.3%	31.4	0.99



**STOCK INDUSTRY ANALYSIS**

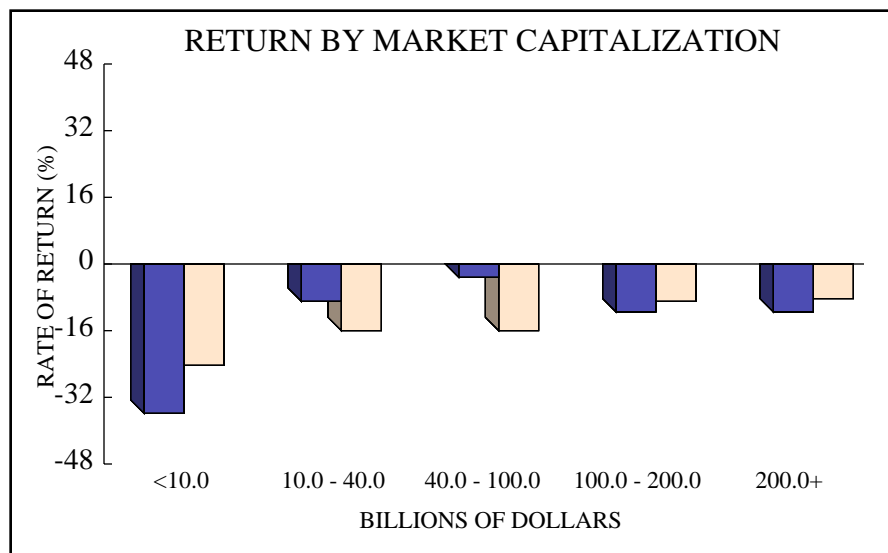
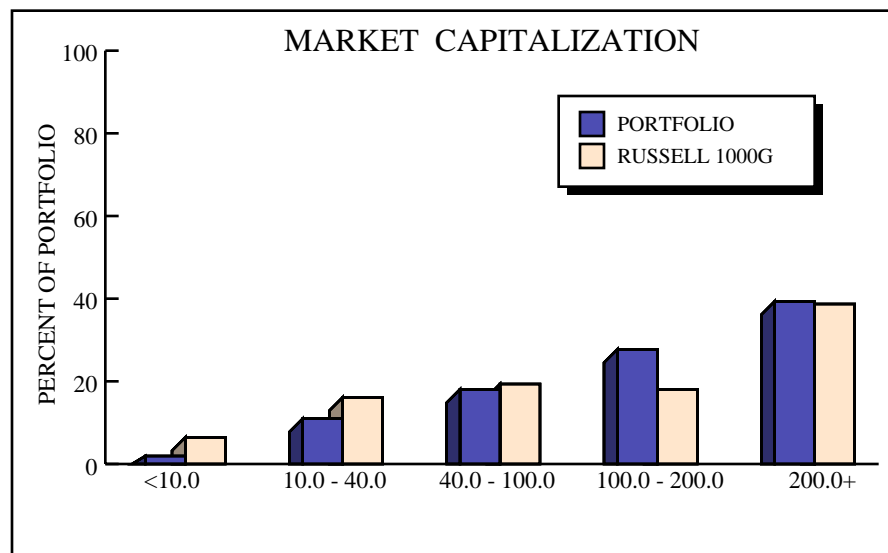


■ PORTFOLIO      ■ RUSSELL 1000G





**TOP TEN HOLDINGS**



**TOP TEN EQUITY HOLDINGS**

RANK	NAME	VALUE	% EQUITY	RETURN	INDUSTRY SECTOR	MKT CAP
1	MICROSOFT CORP	\$ 23,411,893	11.30%	0.3%	Information Technology	\$ 1199.6 B
2	FACEBOOK INC-CLASS A	16,507,029	7.97%	-18.7%	Communication Services	401.3 B
3	ALPHABET INC-CL C	15,267,696	7.37%	-13.0%	Communication Services	396.5 B
4	ADOBE INC	14,756,152	7.12%	-3.5%	Information Technology	153.3 B
5	VISA INC-CLASS A SHARES	12,052,581	5.82%	-14.1%	Information Technology	274.9 B
6	ABBOTT LABORATORIES	12,048,611	5.82%	-8.8%	Health Care	139.2 B
7	MASTERCARD INC - A	10,811,984	5.22%	-19.0%	Information Technology	240.2 B
8	ZOETIS INC	10,730,974	5.18%	-11.0%	Health Care	55.9 B
9	ACCENTURE PLC-CL A	9,432,020	4.55%	-22.2%	Information Technology	104.0 B
10	SERVICENOW INC	8,480,475	4.09%	1.5%	Information Technology	54.4 B

PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
SMITH, GRAHAM & COMPANY - SMALL CAP VALUE  
PERFORMANCE REVIEW  
MARCH 2020

## **INVESTMENT RETURN**

On March 31st, 2020, the Pennsylvania Municipal Retirement System's Smith, Graham & Company Small Cap Value portfolio was valued at \$49,898,253, a decrease of \$29,588,694 from the December ending value of \$79,486,947. Last quarter, the account recorded total net withdrawals of \$133,159 in addition to \$29,455,535 in net investment losses. The fund's net investment loss was a result of income receipts totaling \$214,119 and realized and unrealized capital losses totaling \$29,669,654.

## **RELATIVE PERFORMANCE**

### **Total Fund**

During the first quarter, the Smith, Graham & Company Small Cap Value portfolio lost 37.1%, which was 1.4% less than the Russell 2000 Value Index's return of -35.7% and ranked in the 70th percentile of the Small Cap Value universe. Over the trailing year, the portfolio returned -25.2%, which was 4.5% greater than the benchmark's -29.7% performance, and ranked in the 33rd percentile. Since December 2016, the account returned -9.0% per annum and ranked in the 69th percentile. For comparison, the Russell 2000 Value returned an annualized -8.9% over the same time frame.

## **ASSET ALLOCATION**

At the end of the first quarter, small cap equities comprised 99.5% of the total portfolio (\$49.7 million), while cash & equivalents comprised the remaining 0.5% (\$241,581).

## **EQUITY ANALYSIS**

The Smith, Graham portfolio was invested in ten of the eleven industry sectors in our analysis last quarter. Compared to the Russell 2000 Value Index, the Consumer Discretionary, Health Care, and Information Technology sectors were overweight, while Financials, Real Estate and Utilities were underweight. The Communication Services sector was not represented.

Selection effects were mixed last quarter; half of the invested sectors beat their marks. The portfolio's edge over the index came from increased positions in the Health Care and Information Technology sectors, which had better resiliency than most other sectors over the quarter.

**EXECUTIVE SUMMARY****PERFORMANCE SUMMARY**

	<b>Qtr / YTD</b>	<b>1 Year</b>	<b>3 Year</b>	<b>5 Year</b>	<b>Since 12/16</b>
<b>Total Portfolio - Gross</b>	-37.1	-25.2	-10.3	----	-9.0
<i>SMALL CAP VALUE RANK</i>	(70)	(33)	(73)	----	(69)
<b>Total Portfolio - Net</b>	-37.3	-25.8	-10.9	----	-9.6
Russell 2000V	-35.7	-29.7	-9.5	-2.4	-8.9
<b>Small Cap Equity - Gross</b>	-37.3	-25.3	-10.3	----	-9.0
<i>SMALL CAP VALUE RANK</i>	(71)	(33)	(73)	----	(70)
Russell 2000V	-35.7	-29.7	-9.5	-2.4	-8.9

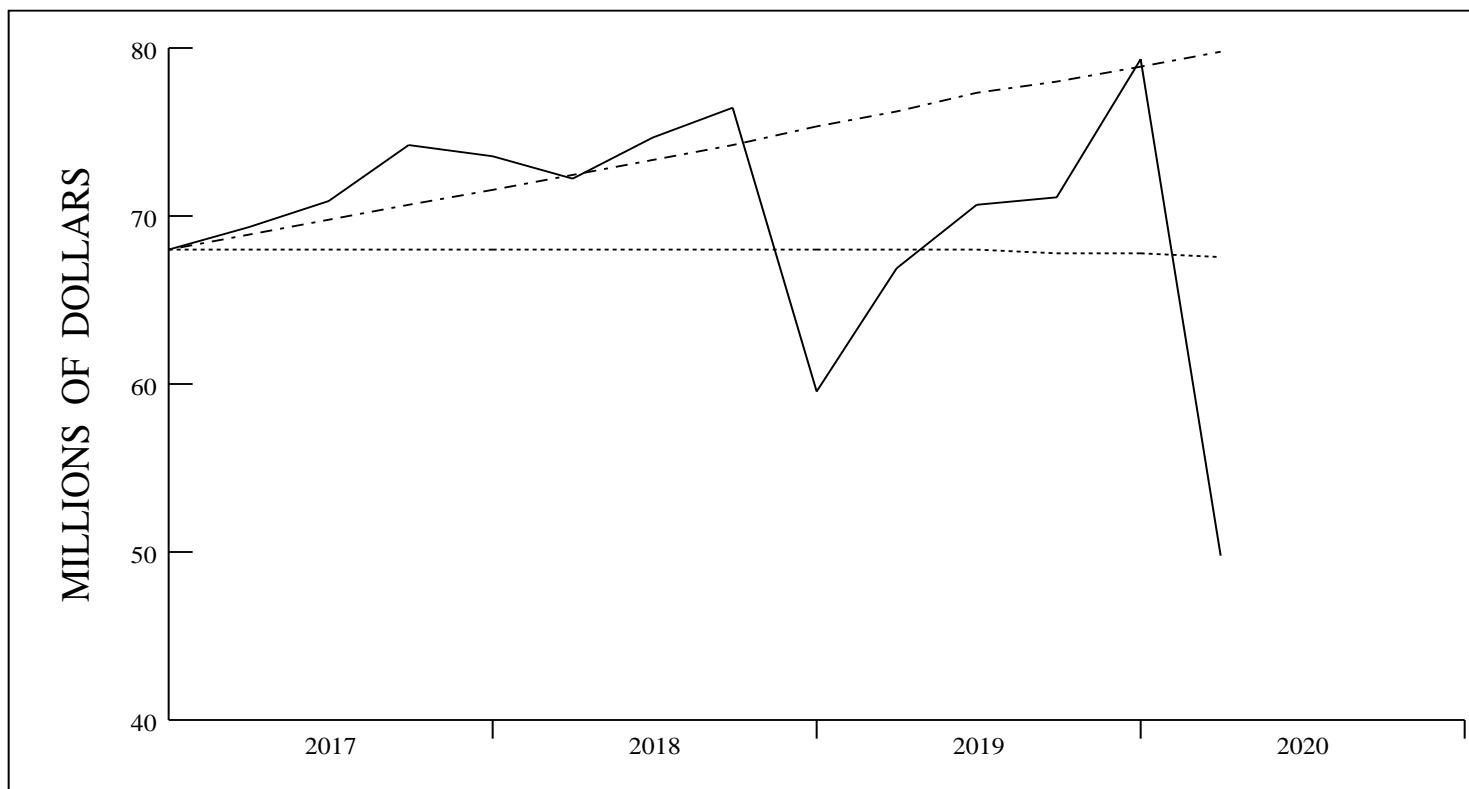
**ASSET ALLOCATION**

Small Cap	99.5%	\$ 49,656,672
Cash	0.5%	241,581
<b>Total Portfolio</b>	<b>100.0%</b>	<b>\$ 49,898,253</b>

**INVESTMENT RETURN**

Market Value 12/2019	\$ 79,486,947
Contribs / Withdrawals	-133,159
Income	214,119
Capital Gains / Losses	- 29,669,654
Market Value 3/2020	\$ 49,898,253

**INVESTMENT GROWTH**

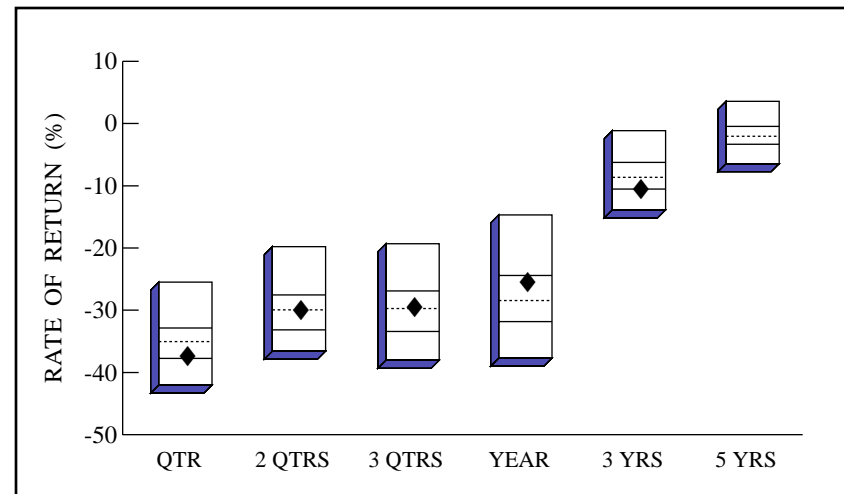
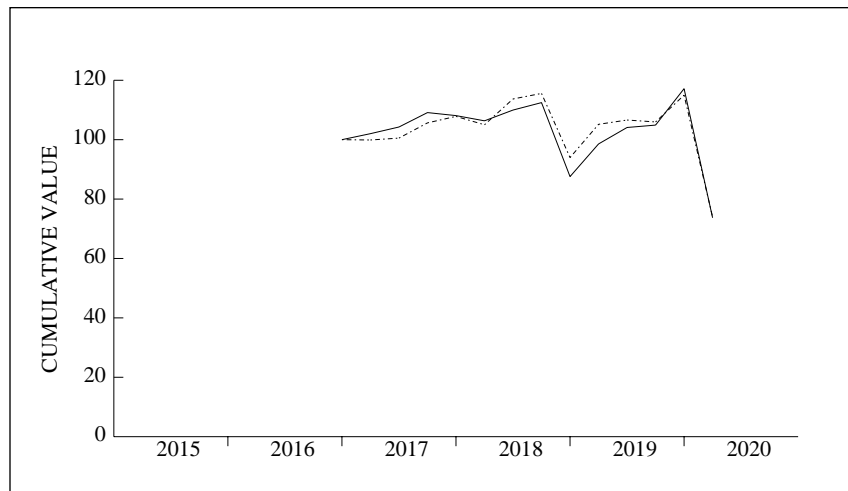


— ACTUAL RETURN  
 - - - 5.25%  
 . . . 0.0%

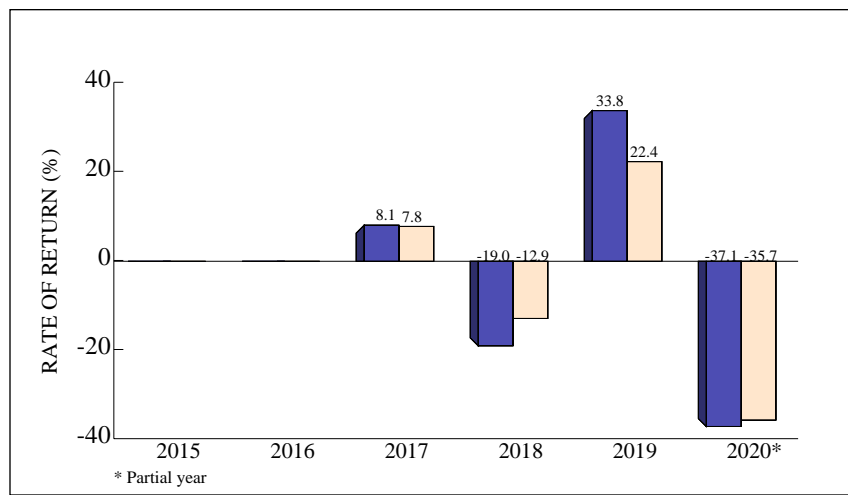
VALUE ASSUMING  
 5.25% RETURN \$ 79,982,078

	LAST QUARTER	PERIOD 12/16 - 3/20
BEGINNING VALUE	\$ 79,486,947	\$ 68,056,392
NET CONTRIBUTIONS	-133,159	-379,557
<u>INVESTMENT RETURN</u>	<u>-29,455,535</u>	<u>-17,778,582</u>
ENDING VALUE	\$ 49,898,253	\$ 49,898,253
INCOME	214,119	3,386,271
<u>CAPITAL GAINS (LOSSES)</u>	<u>-29,669,654</u>	<u>-21,164,853</u>
INVESTMENT RETURN	-29,455,535	-17,778,582

### TOTAL RETURN COMPARISONS



Small Cap Value Universe



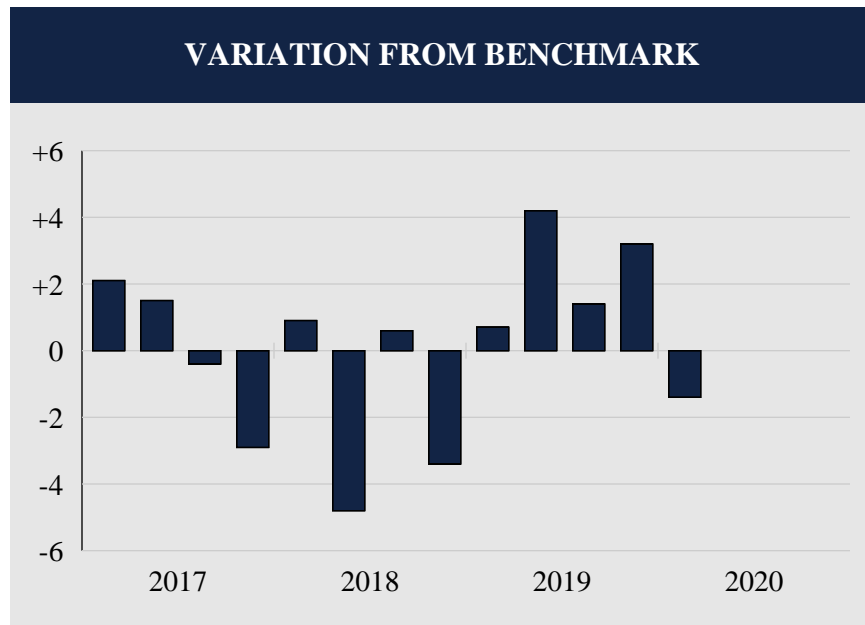
\* Partial year

	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-37.1	-29.7	-29.2	-25.2	-10.3	---
(RANK)	(70)	(50)	(44)	(33)	(73)	---
5TH %ILE	-25.5	-19.8	-19.3	-14.7	-1.2	3.6
25TH %ILE	-32.9	-27.5	-26.9	-24.4	-6.3	-0.5
MEDIAN	-35.0	-29.9	-29.7	-28.4	-8.6	-2.0
75TH %ILE	-37.7	-33.2	-33.4	-31.8	-10.5	-3.4
95TH %ILE	-42.1	-36.6	-38.1	-37.7	-13.9	-6.5
<b>Russ 2000V</b>	<b>-35.7</b>	<b>-30.2</b>	<b>-30.6</b>	<b>-29.7</b>	<b>-9.5</b>	<b>-2.4</b>

Small Cap Value Universe

**TOTAL PORTFOLIO QUARTERLY PERFORMANCE SUMMARY**

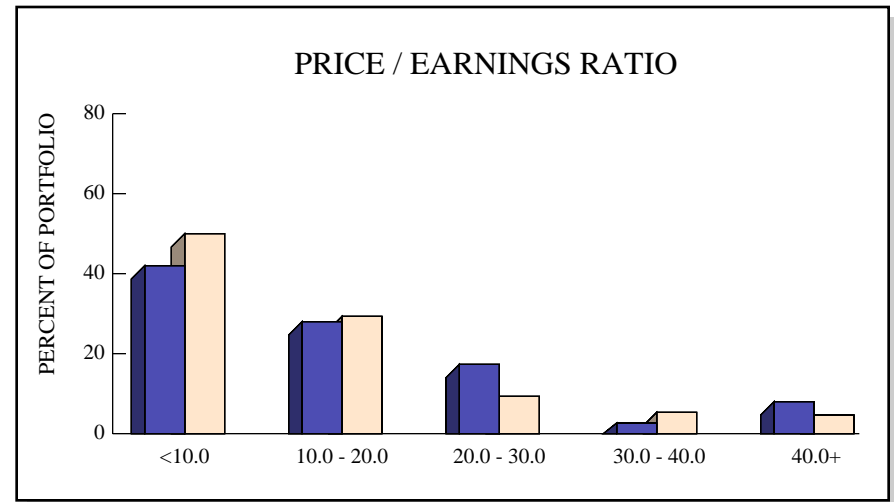
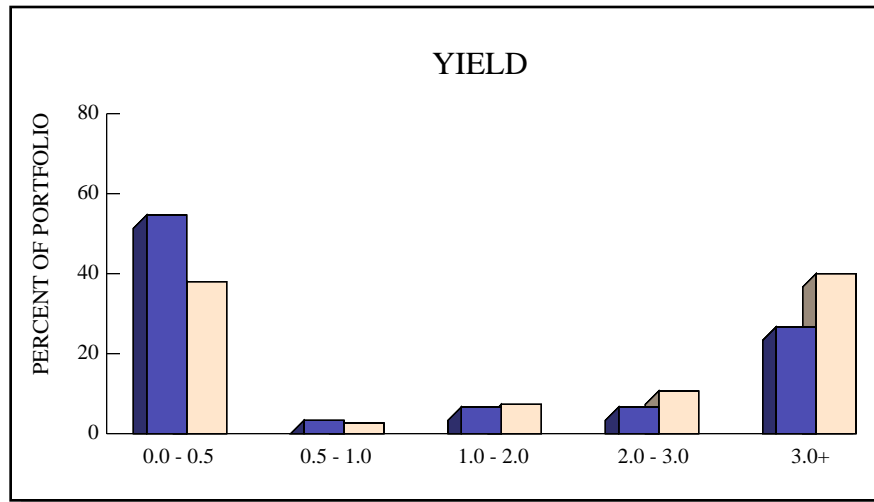
**COMPARATIVE BENCHMARK: RUSSELL 2000 VALUE**



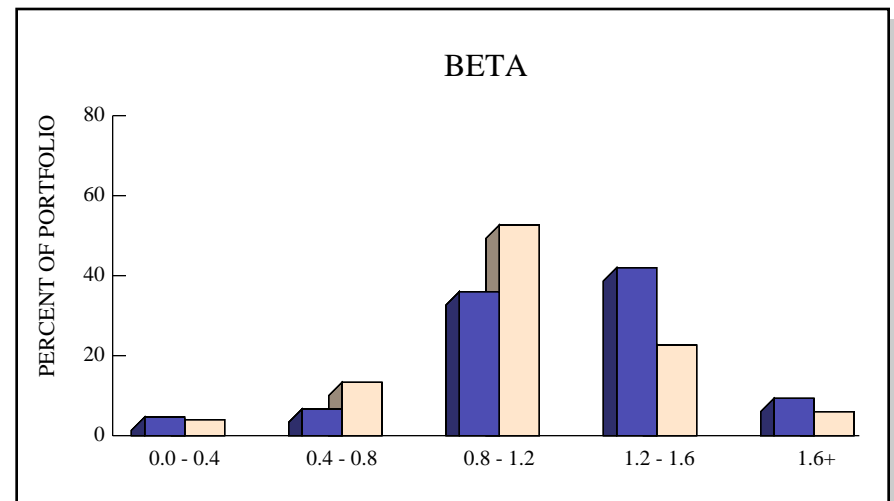
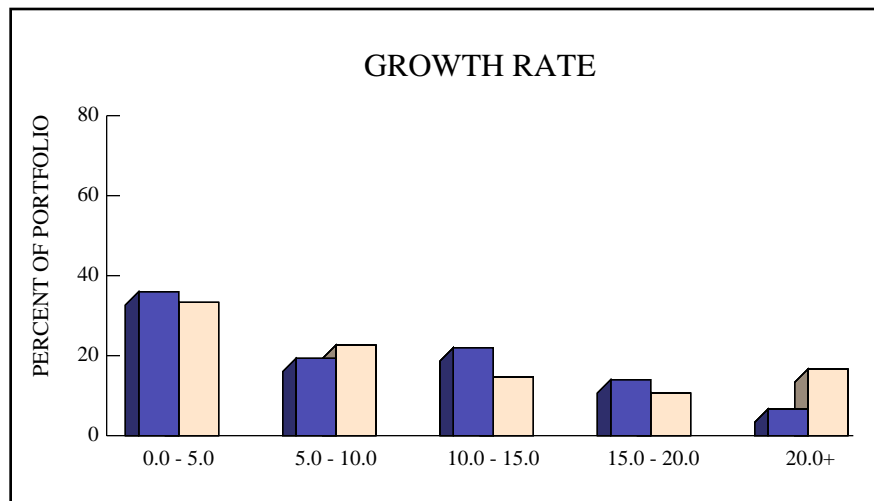
RATES OF RETURN			
Date	Portfolio	Benchmark	Difference
3/17	2.0	-0.1	2.1
6/17	2.2	0.7	1.5
9/17	4.7	5.1	-0.4
12/17	-0.9	2.0	-2.9
3/18	-1.7	-2.6	0.9
6/18	3.5	8.3	-4.8
9/18	2.2	1.6	0.6
12/18	-22.1	-18.7	-3.4
3/19	12.6	11.9	0.7
6/19	5.6	1.4	4.2
9/19	0.8	-0.6	1.4
12/19	11.7	8.5	3.2
3/20	-37.1	-35.7	-1.4

<b>Total Quarters Observed</b>	<b>13</b>
<b>Quarters At or Above the Benchmark</b>	<b>8</b>
<b>Quarters Below the Benchmark</b>	<b>5</b>
<b>Batting Average</b>	<b>.615</b>

**STOCK CHARACTERISTICS**

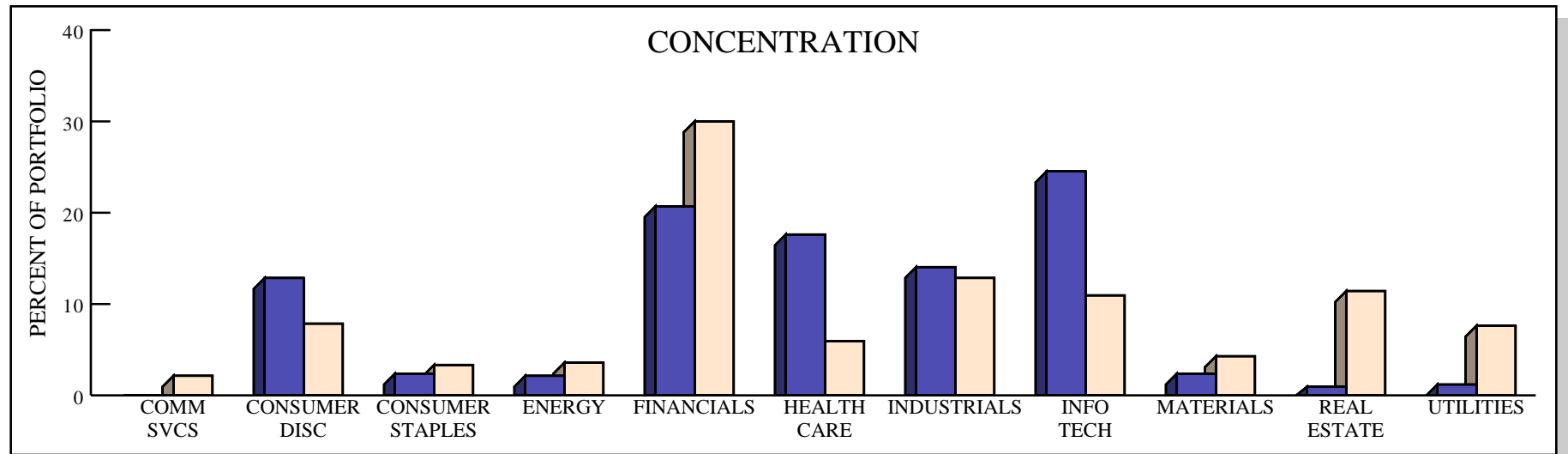


	# HOLDINGS	YIELD	GROWTH	P/E	BETA
PORTFOLIO	64	2.2%	6.5%	14.1	1.16
RUSSELL 2000V	1,391	2.8%	9.7%	12.9	1.04

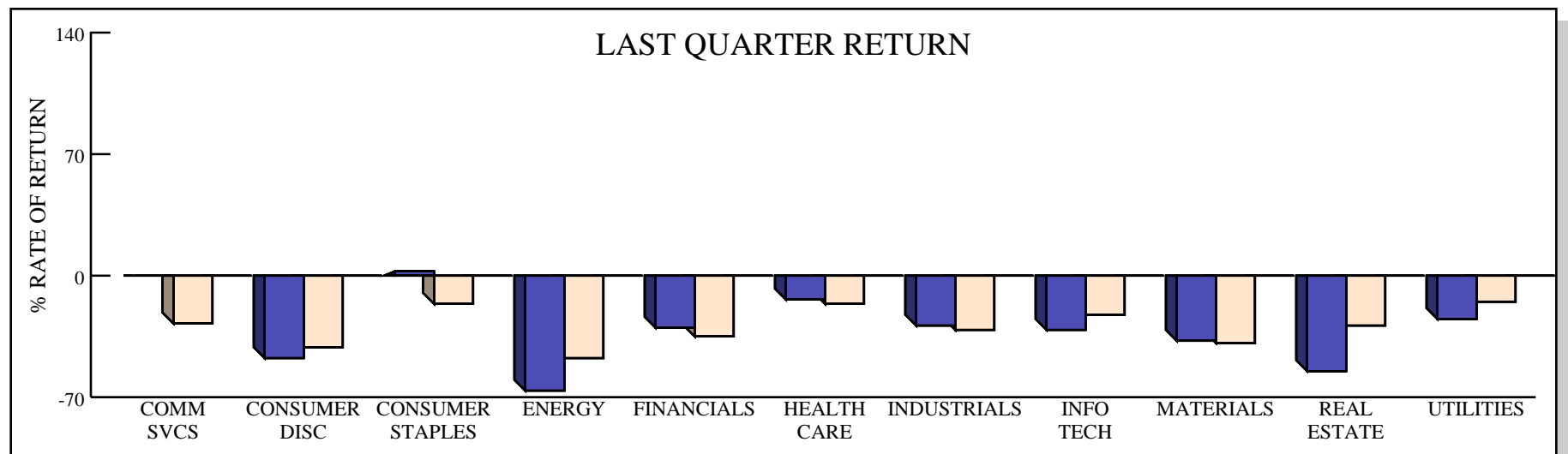




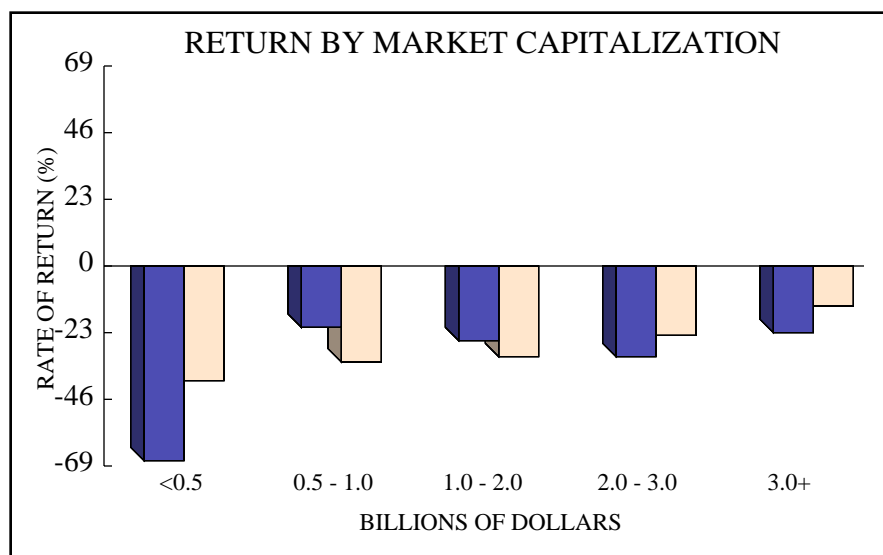
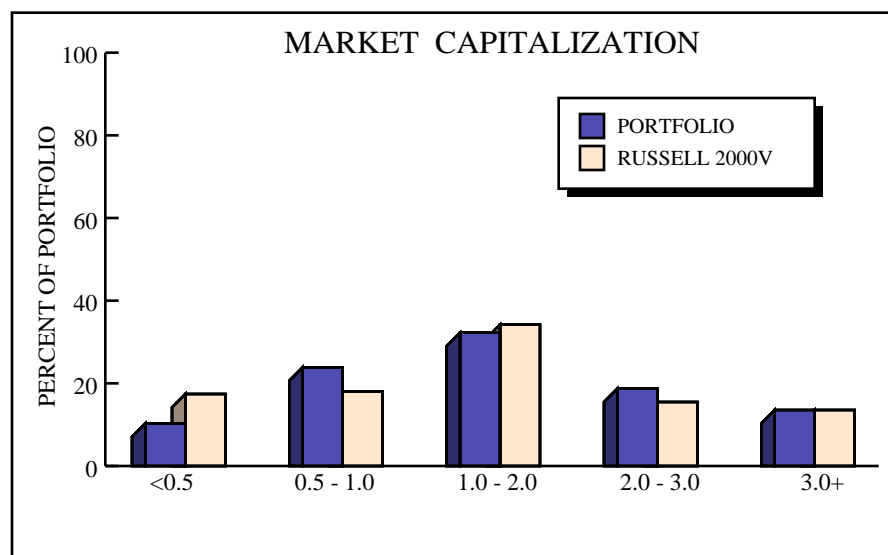
**STOCK INDUSTRY ANALYSIS**



■ PORTFOLIO      ■ RUSSELL 2000V



**TOP TEN HOLDINGS**



**TOP TEN EQUITY HOLDINGS**

RANK	NAME	VALUE	% EQUITY	RETURN	INDUSTRY SECTOR	MKT CAP
1	CIRRUS LOGIC INC	\$ 1,410,717	2.84%	-20.4%	Information Technology	\$ 3.8 B
2	ATLAS AIR WORLDWIDE HOLDINGS	1,357,917	2.73%	-6.9%	Industrials	0.7 B
3	SYNAPTICS INC	1,276,612	2.57%	-12.0%	Information Technology	2.0 B
4	OWENS & MINOR INC	1,266,543	2.55%	77.1%	Health Care	0.6 B
5	B&G FOODS INC	1,258,883	2.54%	3.7%	Consumer Staples	1.2 B
6	AMERISAFE INC	1,223,318	2.46%	-1.9%	Financials	1.2 B
7	INTEGER HOLDINGS CORP	1,199,495	2.42%	-21.9%	Health Care	2.1 B
8	SELECT MEDICAL HOLDINGS CORP	1,195,980	2.41%	-35.7%	Health Care	2.0 B
9	SELECTIVE INSURANCE GROUP	1,180,872	2.38%	-23.5%	Financials	3.0 B
10	GREEN DOT CORP-CLASS A	1,155,600	2.33%	9.0%	Financials	1.3 B

PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
STATE STREET GLOBAL ADVISORS  
PERFORMANCE REVIEW  
MARCH 2020

## **INVESTMENT RETURN**

On March 31st, 2020, the Pennsylvania Municipal Retirement System's State Street Global Advisors portfolio was valued at \$872,685,964, a decrease of \$134,085,049 from the December ending value of \$1,006,771,013. Last quarter, the account recorded no net contributions or withdrawals, while recording a net investment loss for the quarter of \$134,085,049. Since there were no income receipts for the first quarter, net investment losses were the result of capital losses (realized and unrealized).

## **RELATIVE PERFORMANCE**

### **Total Portfolio**

During the first quarter, the State Street Global Advisors portfolio lost 13.3%, which was equal to the Shadow Index's return of -13.3% and ranked in the 40th percentile of the Balanced Fund universe. Over the trailing year, the portfolio returned -6.4%, which was 0.1% less than the benchmark's -6.3% performance, and ranked in the 58th percentile. Since March 1997, the account returned 5.8% per annum. For comparison, the Shadow Index returned an annualized 6.5% over the same time frame.

### **Large Cap Equity**

The large cap equity segment lost 19.6% last quarter, equal to the S&P 500 Index's return of -19.6% and ranked in the 40th percentile of the Large Cap Core universe. Over the trailing twelve months, the large cap equity portfolio returned -7.0%, equal to the benchmark's -7.0% performance, and ranked in the 32nd percentile. Since March 1997, this component returned 7.5% on an annualized basis. For comparison, the S&P 500 returned an annualized 7.5% during the same period.

### **Small Cap Equity**

The small cap equity portfolio returned -30.6% in the first quarter, equal to the Russell 2000 Index's return of -30.6% and ranked in the 49th percentile of the Small Cap universe. Over the trailing twelve-month period, the small cap equity portfolio returned -24.0%; that return was equal to the benchmark's -24.0% return, and ranked in the 50th percentile. Since March 1997, this component returned 6.8% per annum. The Russell 2000 returned an annualized 6.8% over the same time frame.

### **International Equity**

For the first quarter, the international equity segment returned -23.1%, which was 0.8% greater than the MSCI World Ex US Index's return of -23.9% and ranked in the 45th percentile of the International Equity universe. Over the trailing twelve-month period, this segment's return was -14.4%, which was 0.9% above the benchmark's -15.3% return, ranking in the 42nd percentile.

### **Emerging Markets Equity**

The emerging markets equity component returned -23.9% in the first quarter; that return was 0.3% below the Blended Emerging Markets Index's return of -23.6% and ranked in the 45th percentile of the Emerging Markets universe. Over the trailing twelve months, the emerging markets equity portfolio returned -18.0%; that return was 0.6% below the benchmark's -17.4% return, ranking in the 53rd percentile.

## **Fixed Income**

During the first quarter, the fixed income component returned 3.1%, which was equal to the Bloomberg Barclays Aggregate Index's return of 3.1% and ranked in the 30th percentile of the Core Fixed Income universe. Over the trailing twelve months, this segment's return was 8.9%, which was equal to the benchmark's 8.9% performance, and ranked in the 31st percentile. Since March 1997, this component returned 5.3% on an annualized basis. The Bloomberg Barclays Aggregate Index returned an annualized 5.3% over the same period.

## **ASSET ALLOCATION**

At the end of the first quarter, large cap equities comprised 5.6% of the total portfolio (\$48.8 million), while small cap equities totaled 7.3% (\$63.9 million). The account's international equity segment was valued at \$134.0 million, representing 15.4% of the portfolio, while the emerging markets equity component's \$210.5 million totaled 24.1%. The remaining 47.6% was comprised of fixed income (\$415.4 million).

## EXECUTIVE SUMMARY

## PERFORMANCE SUMMARY

	Qtr / YTD	1 Year	3 Year	5 Year	10 Year	Since 03/97
<b>Total Portfolio - Gross</b>	-13.3	-6.4	1.0	1.6	3.3	5.8
<i>BALANCED FUND RANK</i>	(40)	(58)	(76)	(82)	(94)	----
<b>Total Portfolio - Net</b>	-13.3	-6.5	1.0	1.6	3.3	5.8
Shadow Index	-13.3	-6.3	1.2	1.7	3.5	6.5
<b>Large Cap Equity - Gross</b>	-19.6	-7.0	5.1	6.7	10.5	7.5
<i>LARGE CAP CORE RANK</i>	(40)	(32)	(34)	(23)	(41)	----
S&P 500	-19.6	-7.0	5.1	6.7	10.5	7.5
Russell 3000	-20.9	-9.1	4.0	5.8	10.1	7.6
Russell 1000G	-14.1	0.9	11.3	10.4	13.0	7.8
Russell 1000V	-26.7	-17.2	-2.2	1.9	7.7	6.9
<b>Small Cap Equity - Gross</b>	-30.6	-24.0	-4.6	-0.2	7.0	6.8
<i>SMALL CAP RANK</i>	(49)	(50)	(50)	(56)	(65)	----
Russell 2000	-30.6	-24.0	-4.7	-0.3	6.9	6.8
Russell 2000G	-25.8	-18.6	0.1	1.7	8.9	6.2
Russell 2000V	-35.7	-29.7	-9.5	-2.4	4.8	7.0
<b>International Equity - Gross</b>	-23.1	-14.4	-1.7	-0.4	----	----
<i>INTERNATIONAL EQUITY RANK</i>	(45)	(42)	(48)	(54)	----	----
MSCI World Ex US	-23.9	-15.3	-1.9	-0.4	2.9	4.4
S&P BMI Ex US	-23.7	-15.1	-1.8	0.0	3.3	4.9
MSCI EAFE	-22.7	-13.9	-1.3	-0.1	3.2	4.2
<b>Emerging Markets Equity - Gross</b>	-23.9	-18.0	-1.7	-0.4	0.5	----
<i>EMERGING MARKETS RANK</i>	(45)	(53)	(43)	(48)	(84)	----
S&P BMI EMGM	-24.6	-18.2	-1.6	0.1	1.1	----
MSCI Emg Mkts	-23.6	-17.4	-1.3	0.0	1.0	4.9
<b>Fixed Income - Gross</b>	3.1	8.9	4.8	3.4	3.9	5.3
<i>CORE FIXED INCOME RANK</i>	(30)	(31)	(49)	(71)	(84)	----
Aggregate Index	3.1	8.9	4.8	3.4	3.9	5.3
Gov/Credit	3.4	9.8	5.2	3.5	4.1	5.4

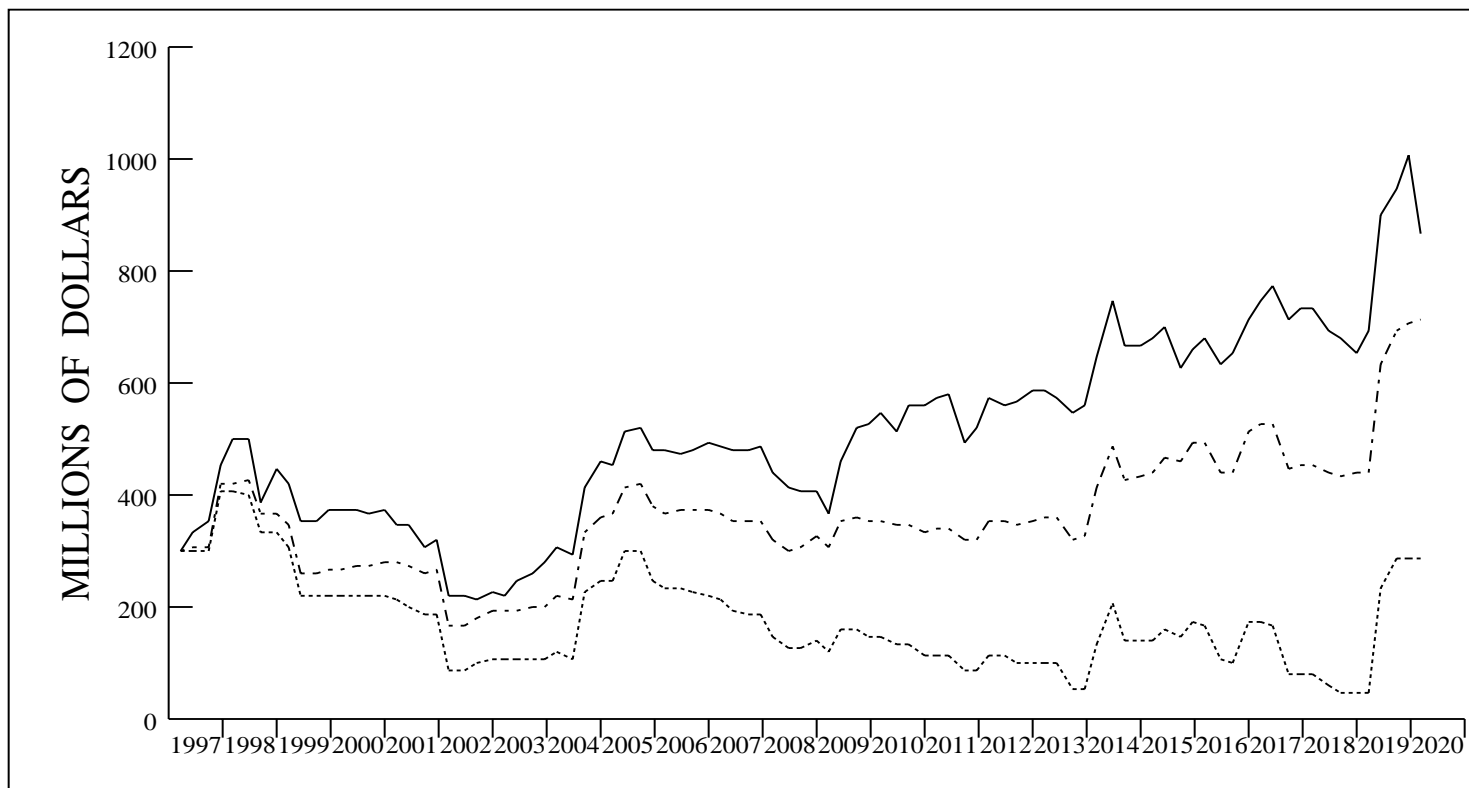
## ASSET ALLOCATION

Large Cap Equity	5.6%	\$ 48,777,270
Small Cap	7.3%	63,941,161
Int'l Equity	15.4%	134,036,562
Emerging Markets	24.1%	210,526,987
Fixed Income	47.6%	415,403,984
<b>Total Portfolio</b>	<b>100.0%</b>	<b>\$ 872,685,964</b>

## INVESTMENT RETURN

Market Value 12/2019	\$ 1,006,771,013
Contribs / Withdrawals	0
Income	0
Capital Gains / Losses	-134,085,049
Market Value 3/2020	\$ 872,685,964

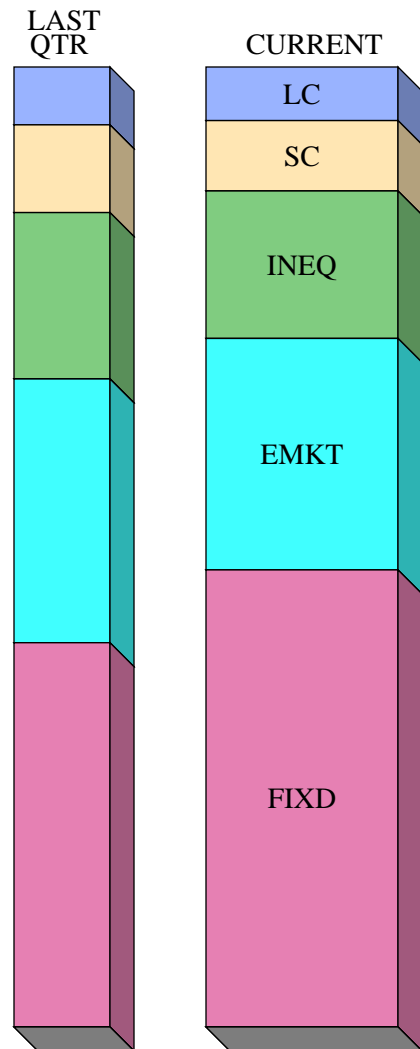
**INVESTMENT GROWTH**



— ACTUAL RETURN  
 - - - 5.25%  
 ..... 0.0%

VALUE ASSUMING  
 5.25% RETURN \$ 718,119,821

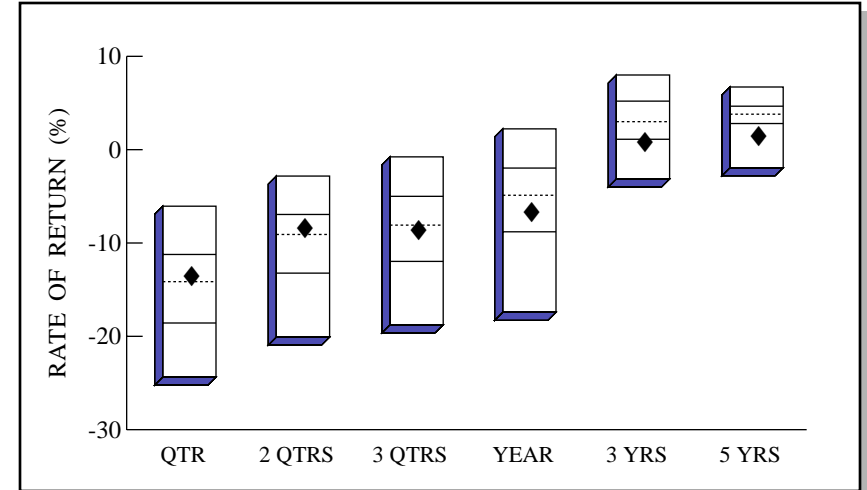
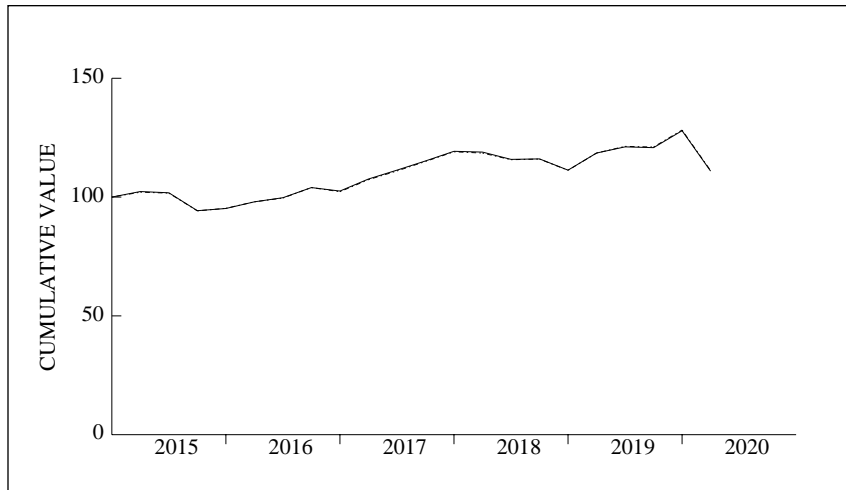
	LAST QUARTER	PERIOD 3/97 - 3/20
BEGINNING VALUE	\$ 1,006,771,013	\$ 304,615,360
NET CONTRIBUTIONS	0	- 17,209,710
<u>INVESTMENT RETURN</u>	<u>-134,085,049</u>	<u>585,280,314</u>
ENDING VALUE	\$ 872,685,964	\$ 872,685,964
INCOME	0	7,438
<u>CAPITAL GAINS (LOSSES)</u>	<u>-134,085,049</u>	<u>585,272,876</u>
INVESTMENT RETURN	-134,085,049	585,280,314



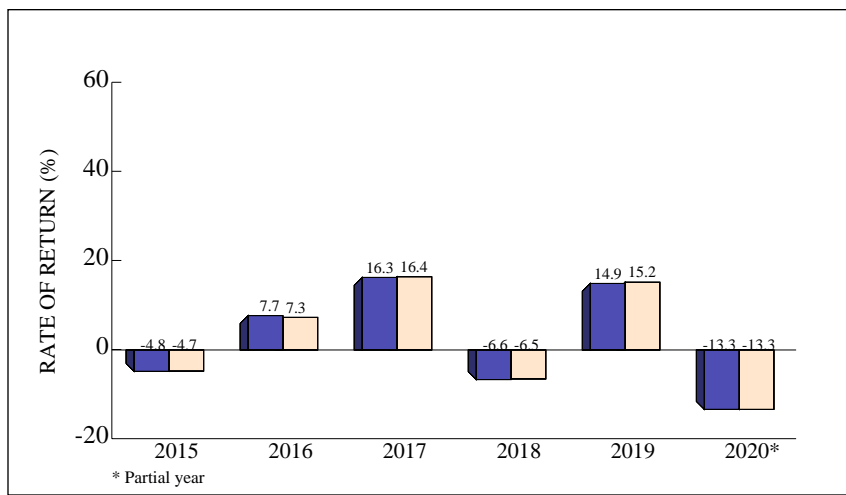
	<u>VALUE</u>	<u>PERCENT</u>
<span style="color: blue;">■</span> LARGE CAP EQUITY	\$ 48, 777, 270	5.6%
<span style="color: orange;">■</span> SMALL CAP EQUITY	63, 941, 161	7.3%
<span style="color: green;">■</span> INTERNATIONAL EQUITY	134, 036, 562	15.4%
<span style="color: cyan;">■</span> EMERGING MARKETS EQUITY	210, 526, 987	24.1%
<span style="color: pink;">■</span> FIXED INCOME	415, 403, 984	47.6%
TOTAL FUND	\$ 872, 685, 964	100.0%



### TOTAL RETURN COMPARISONS



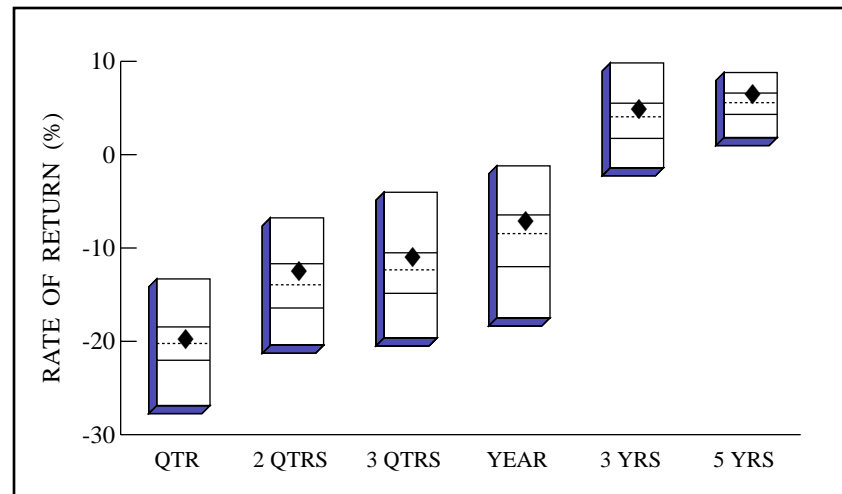
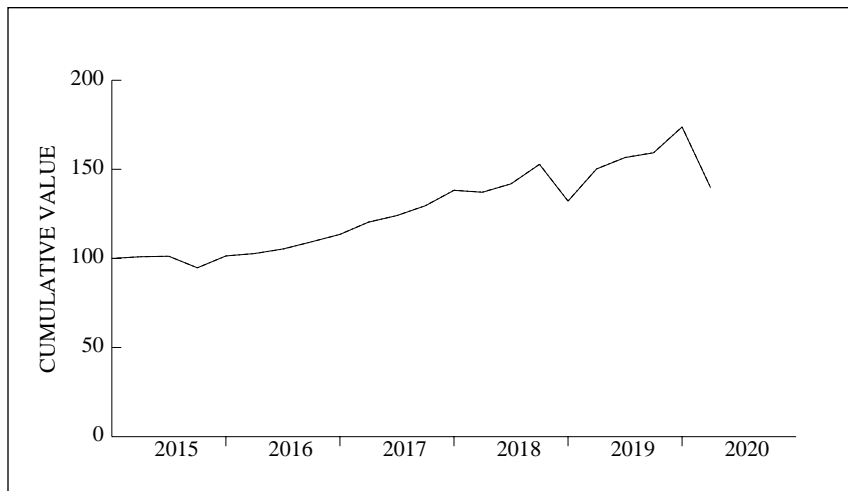
Balanced Fund Universe



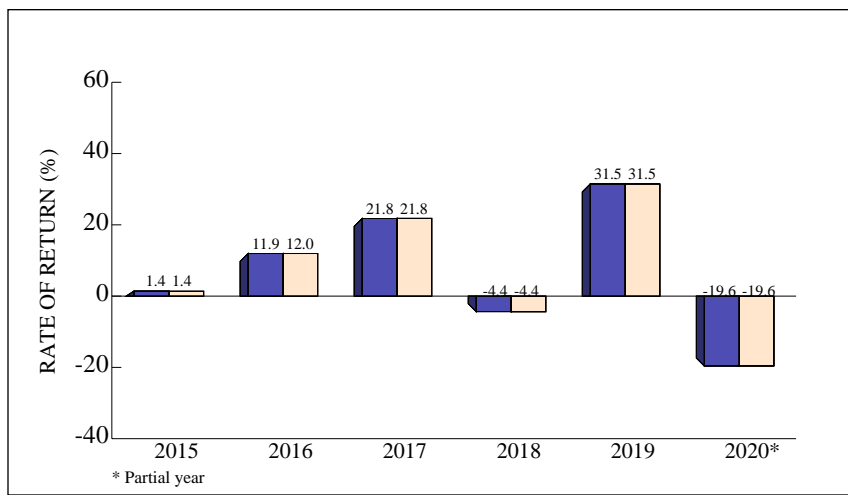
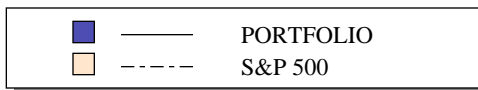
	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-13.3	-8.2	-8.4	-6.4	1.0	1.6
(RANK)	(40)	(34)	(53)	(58)	(76)	(82)
5TH %ILE	-6.1	-2.8	-0.8	2.2	8.0	6.7
25TH %ILE	-11.2	-6.9	-5.0	-2.0	5.2	4.7
MEDIAN	-14.2	-9.1	-8.1	-4.9	3.0	3.8
75TH %ILE	-18.6	-13.2	-12.0	-8.8	1.1	2.8
95TH %ILE	-24.4	-20.1	-18.8	-17.4	-3.1	-1.9
<i>Shadow Idx</i>	<i>-13.3</i>	<i>-8.2</i>	<i>-8.4</i>	<i>-6.3</i>	<i>1.2</i>	<i>1.7</i>

Balanced Fund Universe

### LARGE CAP EQUITY RETURN COMPARISONS



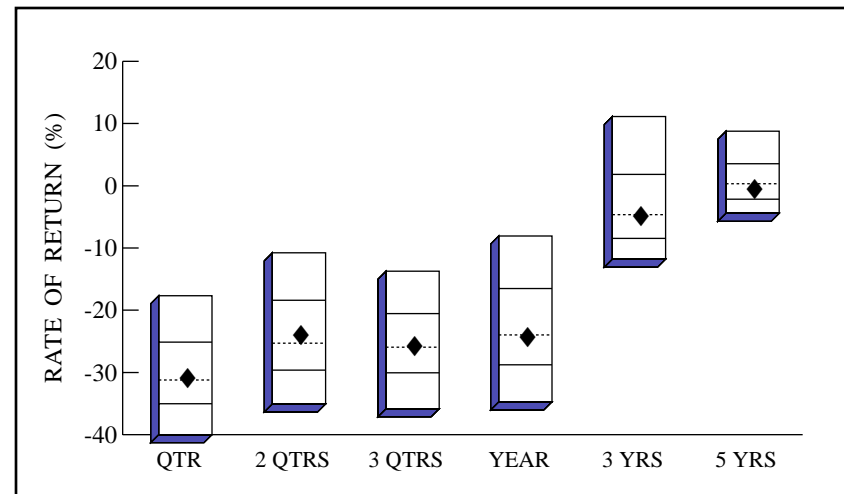
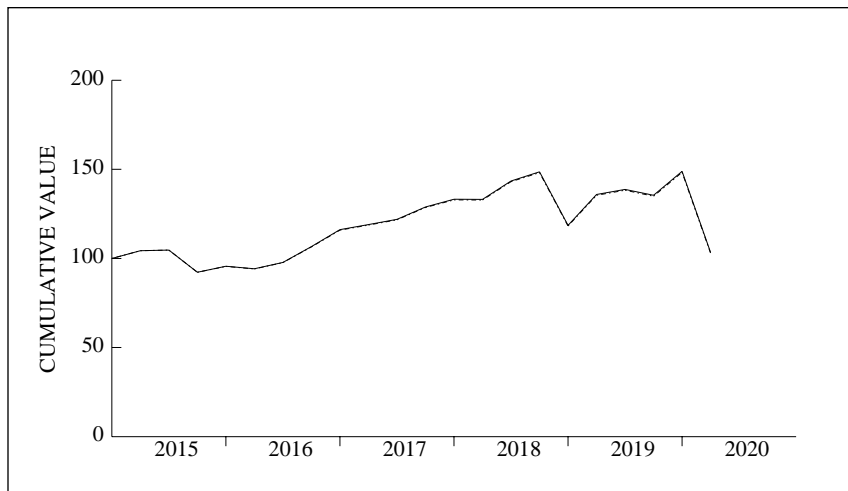
Large Cap Core Universe



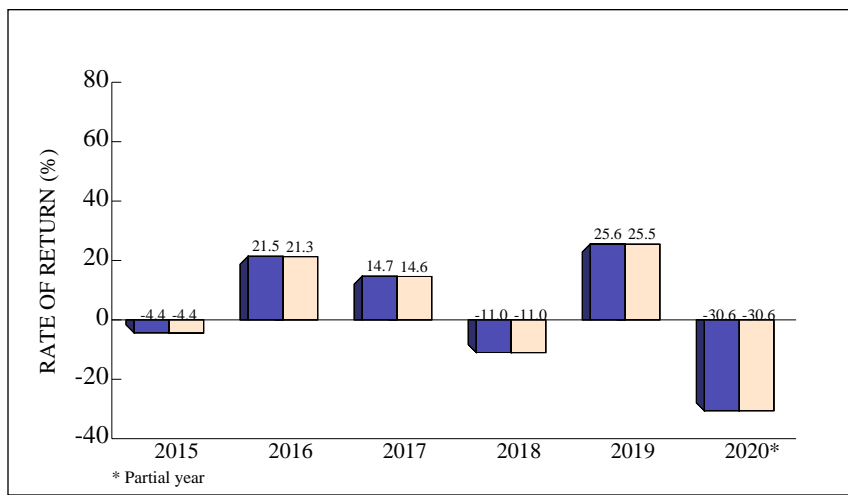
	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED----- 3 YRS	5 YRS
RETURN	-19.6	-12.3	-10.8	-7.0	5.1	6.7
(RANK)	(40)	(33)	(32)	(32)	(34)	(23)
5TH %ILE	-13.3	-6.8	-4.0	-1.2	9.8	8.8
25TH %ILE	-18.5	-11.7	-10.5	-6.5	5.5	6.6
MEDIAN	-20.2	-13.9	-12.4	-8.5	4.1	5.6
75TH %ILE	-22.0	-16.4	-14.9	-12.0	1.8	4.3
95TH %ILE	-26.9	-20.4	-19.6	-17.5	-1.4	1.8
<b>S&amp;P 500</b>	<b>-19.6</b>	<b>-12.3</b>	<b>-10.8</b>	<b>-7.0</b>	<b>5.1</b>	<b>6.7</b>

Large Cap Core Universe

### SMALL CAP EQUITY RETURN COMPARISONS



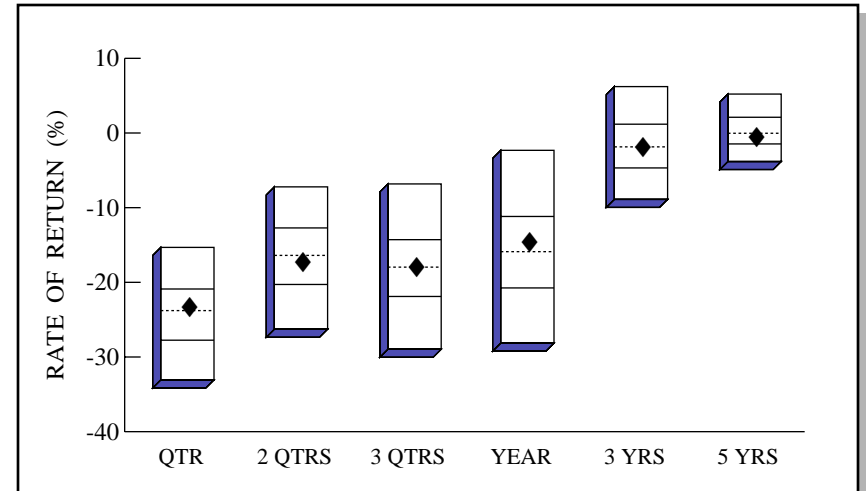
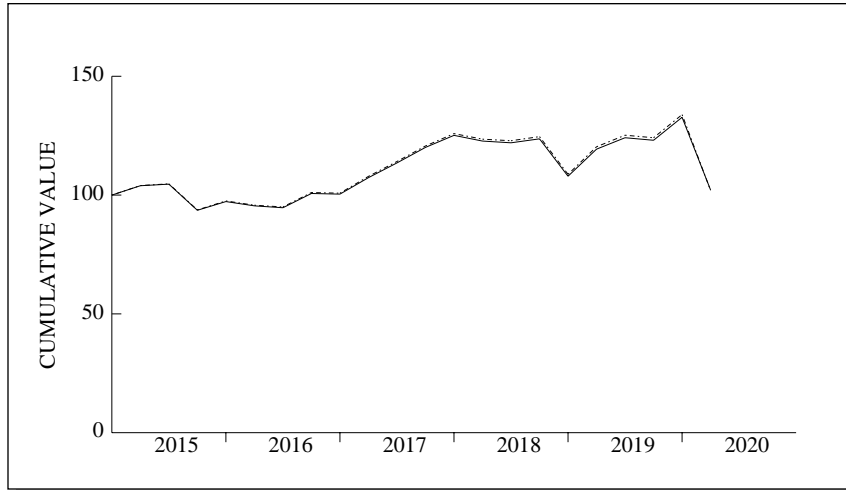
Small Cap Universe



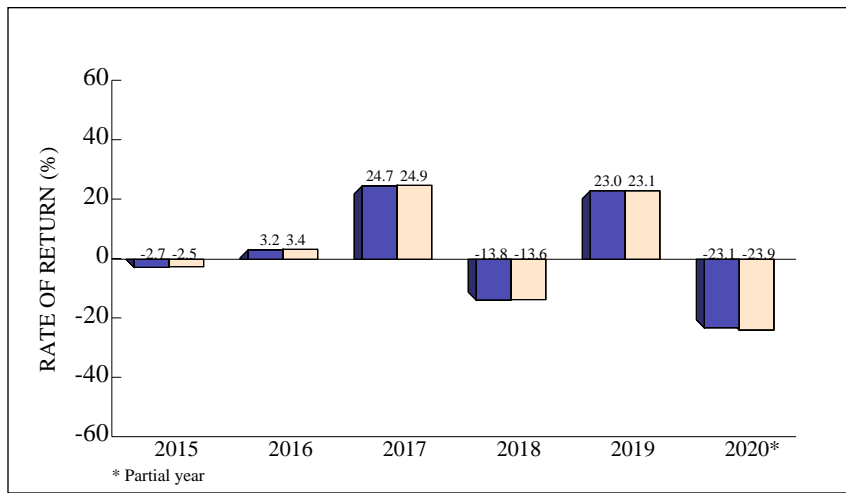
	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-30.6	-23.7	-25.5	-24.0	-4.6	-0.2
(RANK)	(49)	(45)	(49)	(50)	(50)	(56)
5TH %ILE	-17.7	-10.8	-13.7	-8.1	11.1	8.8
25TH %ILE	-25.2	-18.4	-20.5	-16.5	1.8	3.5
MEDIAN	-31.2	-25.3	-25.9	-24.0	-4.7	0.4
75TH %ILE	-35.0	-29.6	-30.1	-28.8	-8.5	-2.2
95TH %ILE	-40.0	-35.1	-35.8	-34.7	-11.8	-4.5
<b>Russ 2000</b>	<b>-30.6</b>	<b>-23.7</b>	<b>-25.6</b>	<b>-24.0</b>	<b>-4.7</b>	<b>-0.3</b>

Small Cap Universe

### INTERNATIONAL EQUITY RETURN COMPARISONS



International Equity Universe

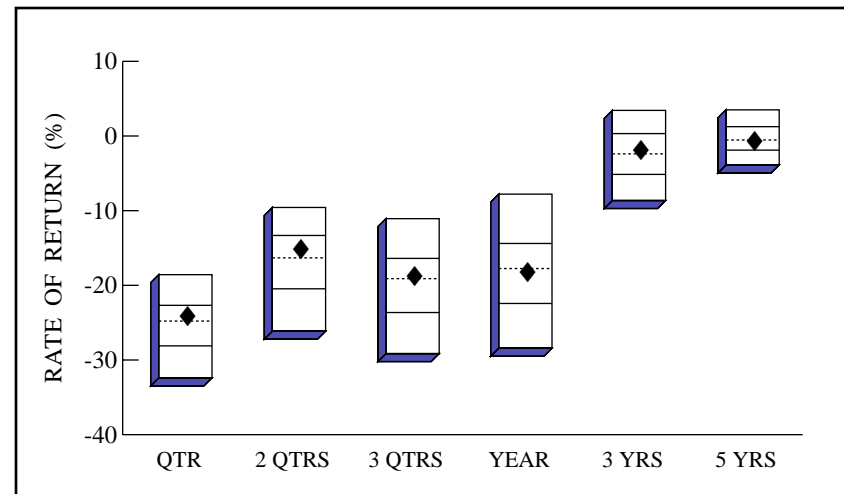
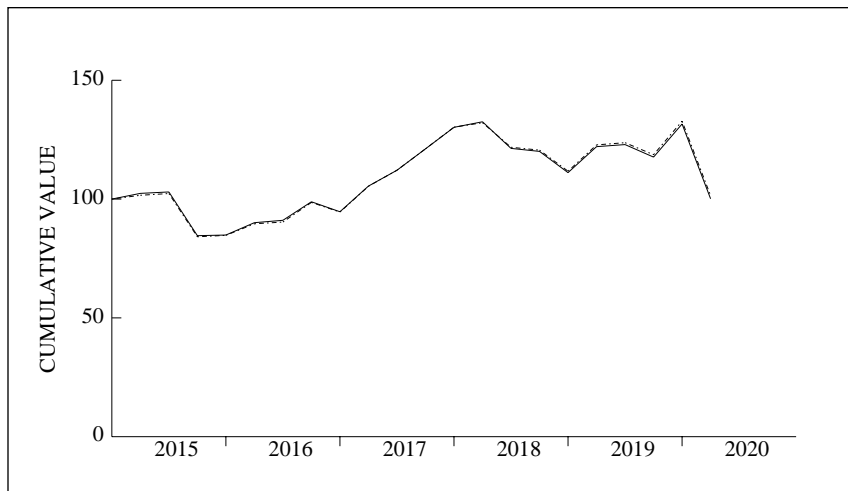


\* Partial year

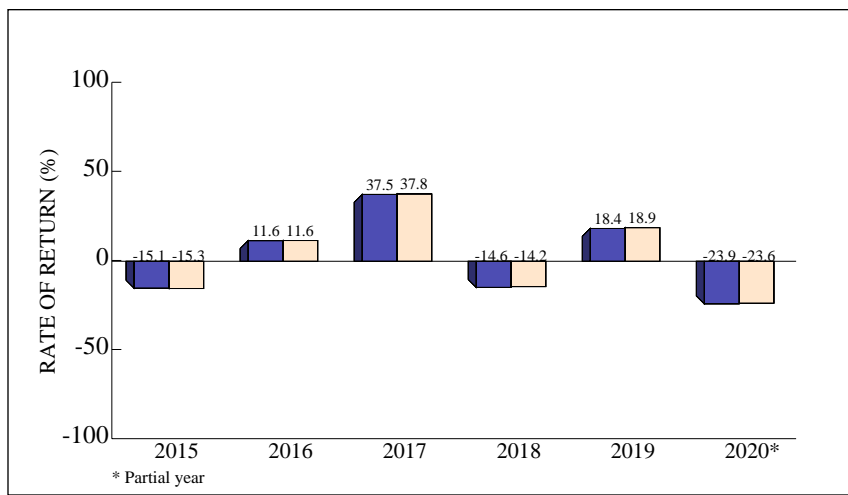
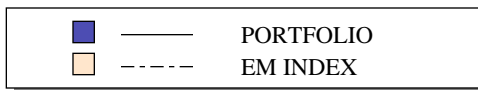
	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-23.1	-17.0	-17.7	-14.4	-1.7	-0.4
(RANK)	(45)	(55)	(47)	(42)	(48)	(54)
5TH %ILE	-15.3	-7.2	-6.8	-2.3	6.2	5.2
25TH %ILE	-20.9	-12.7	-14.3	-11.2	1.2	2.1
MEDIAN	-23.8	-16.4	-18.0	-15.9	-1.9	0.0
75TH %ILE	-27.8	-20.3	-21.9	-20.7	-4.7	-1.5
95TH %ILE	-33.1	-26.3	-29.0	-28.1	-8.9	-3.8
<b>World Ex Us</b>	<b>-23.9</b>	<b>-17.9</b>	<b>-18.6</b>	<b>-15.3</b>	<b>-1.9</b>	<b>-0.4</b>

International Equity Universe

### EMERGING MARKETS EQUITY RETURN COMPARISONS



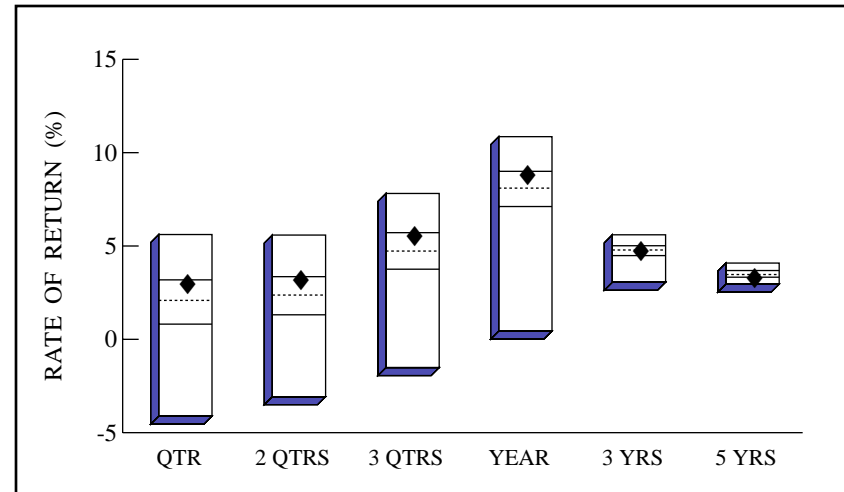
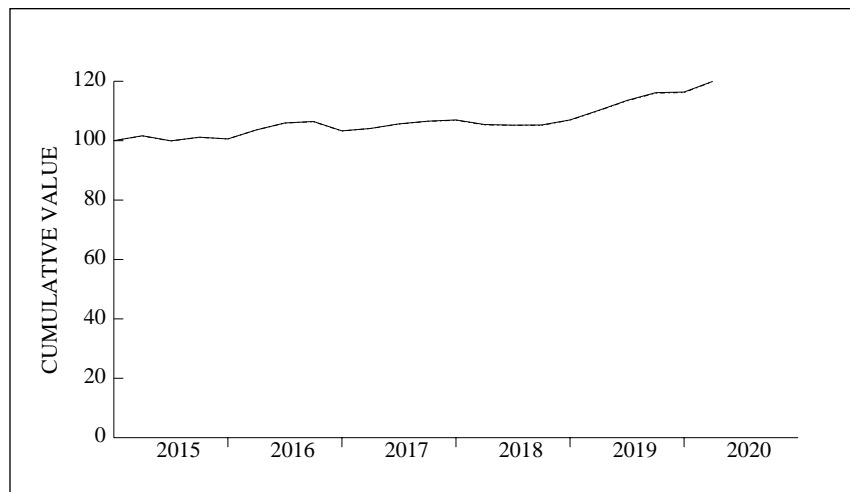
Emerging Markets Universe



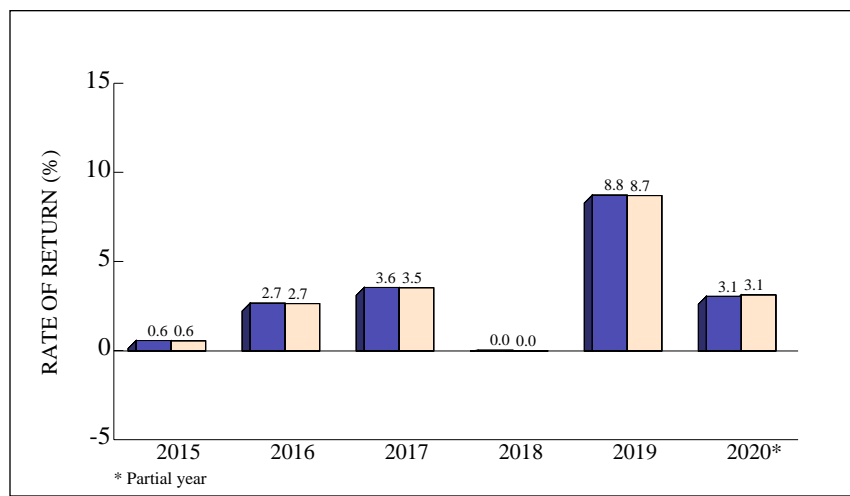
	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	-23.9	-14.9	-18.5	-18.0	-1.7	-0.4
(RANK)	(45)	(40)	(46)	(53)	(43)	(48)
5TH %ILE	-18.6	-9.6	-11.1	-7.8	3.4	3.5
25TH %ILE	-22.7	-13.3	-16.4	-14.4	0.3	1.2
MEDIAN	-24.8	-16.3	-19.1	-17.8	-2.4	-0.5
75TH %ILE	-28.1	-20.5	-23.6	-22.4	-5.2	-1.9
95TH %ILE	-32.4	-26.2	-29.1	-28.4	-8.6	-3.9
<b>EM Index</b>	<b>-23.6</b>	<b>-14.5</b>	<b>-18.0</b>	<b>-17.4</b>	<b>-1.3</b>	<b>0.0</b>

Emerging Markets Universe

### FIXED INCOME RETURN COMPARISONS



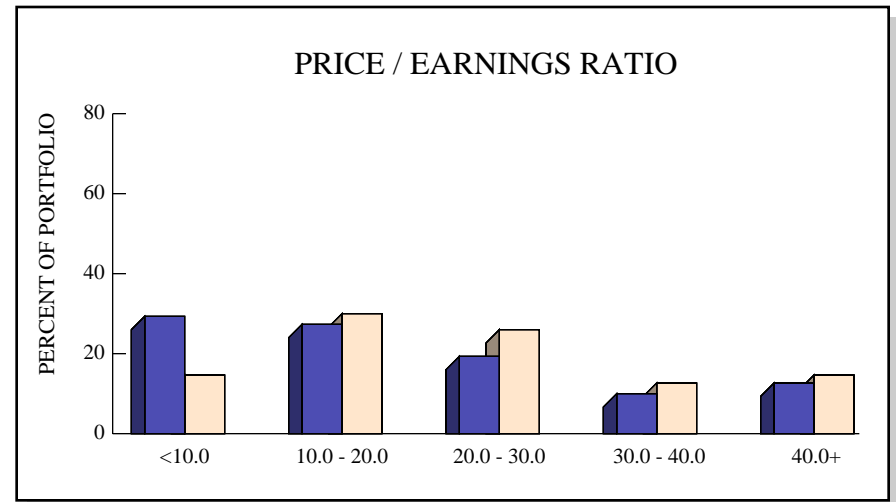
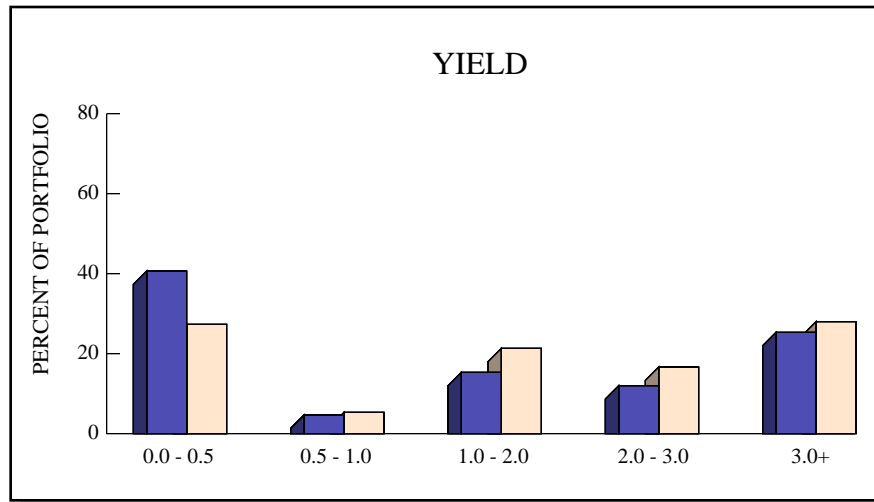
Core Fixed Income Universe



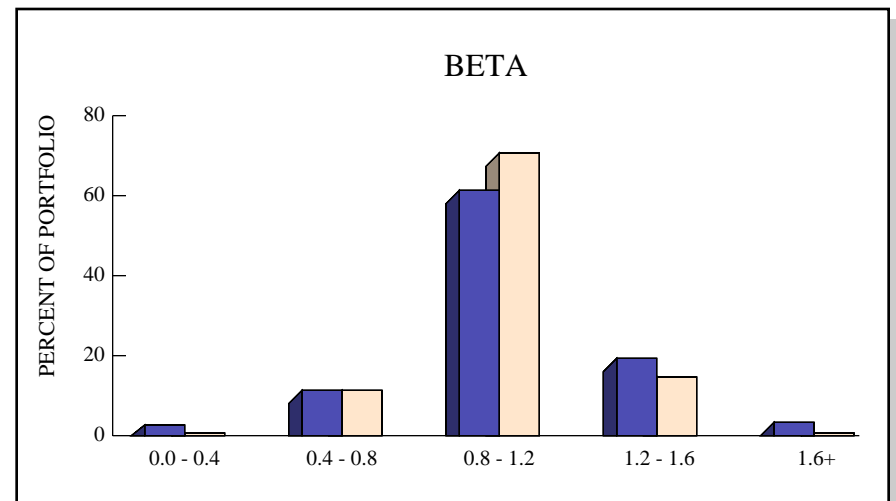
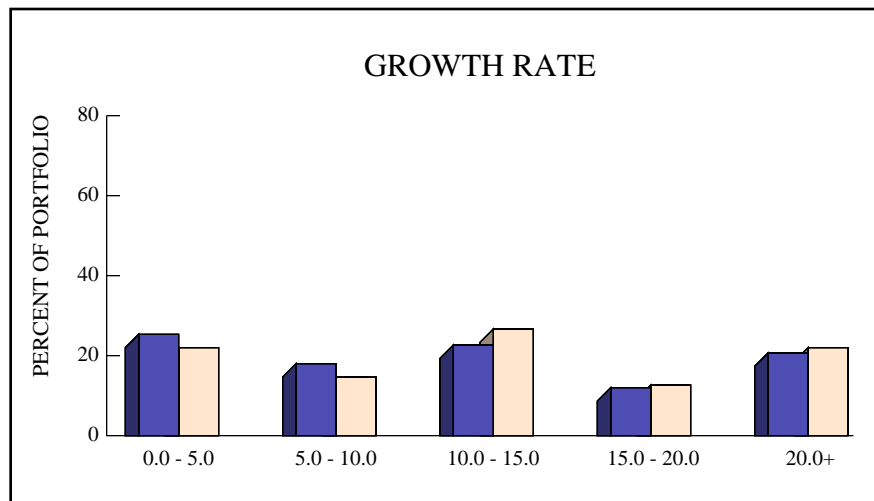
	QTR	2 QTRS	3 QTRS	YEAR	-----ANNUALIZED-----	
					3 YRS	5 YRS
RETURN	3.1	3.3	5.6	8.9	4.8	3.4
(RANK)	(30)	(29)	(30)	(31)	(49)	(71)
5TH %ILE	5.6	5.6	7.8	10.9	5.6	4.1
25TH %ILE	3.2	3.4	5.7	9.0	5.0	3.7
MEDIAN	2.1	2.4	4.7	8.1	4.8	3.5
75TH %ILE	0.8	1.3	3.8	7.1	4.5	3.3
95TH %ILE	-4.1	-3.1	-1.5	0.4	3.1	3.0
<b>Agg</b>	<b>3.1</b>	<b>3.3</b>	<b>5.7</b>	<b>8.9</b>	<b>4.8</b>	<b>3.4</b>

Core Fixed Income Universe

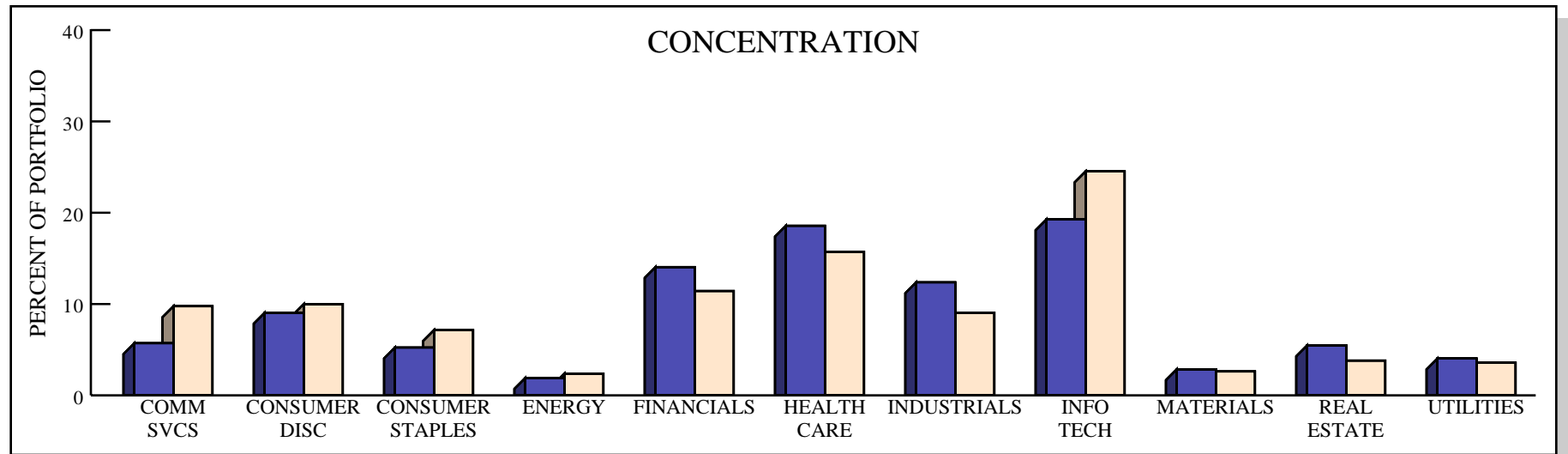
**STOCK CHARACTERISTICS**



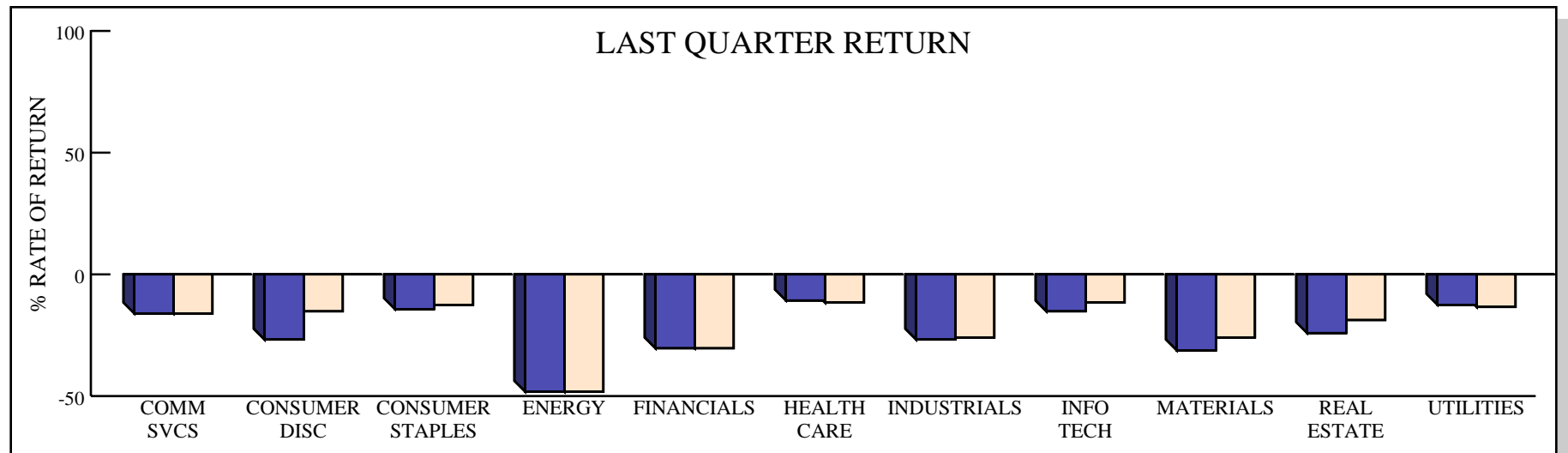
	# HOLDINGS	YIELD	GROWTH	P/E	BETA
PORTFOLIO	2,484	2.0%	12.3%	19.6	1.02
RUSSELL 3000	2,976	2.2%	13.2%	24.9	0.99



**STOCK INDUSTRY ANALYSIS**

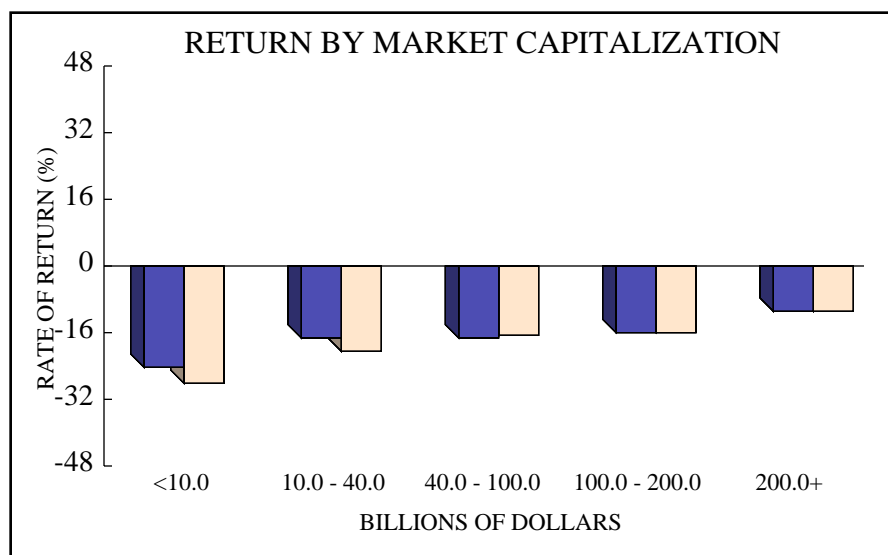
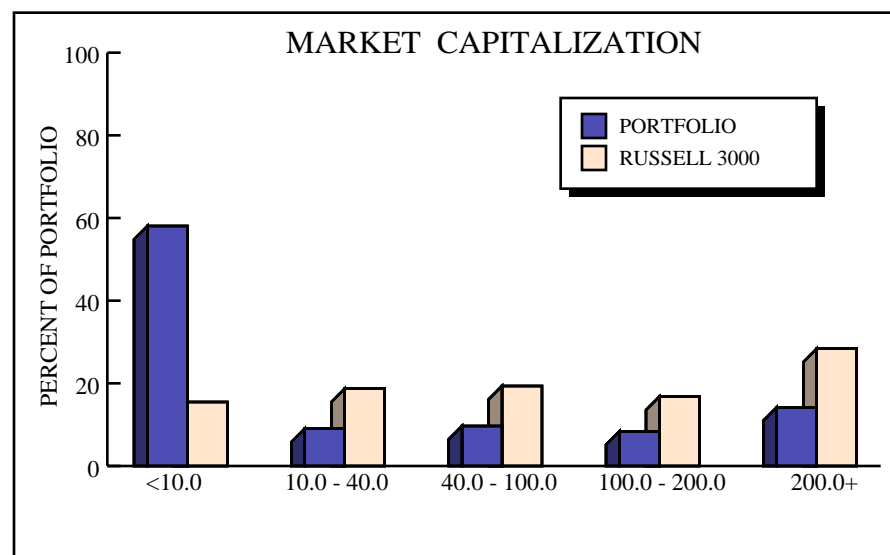


■ PORTFOLIO      ■ RUSSELL 3000





**TOP TEN HOLDINGS**

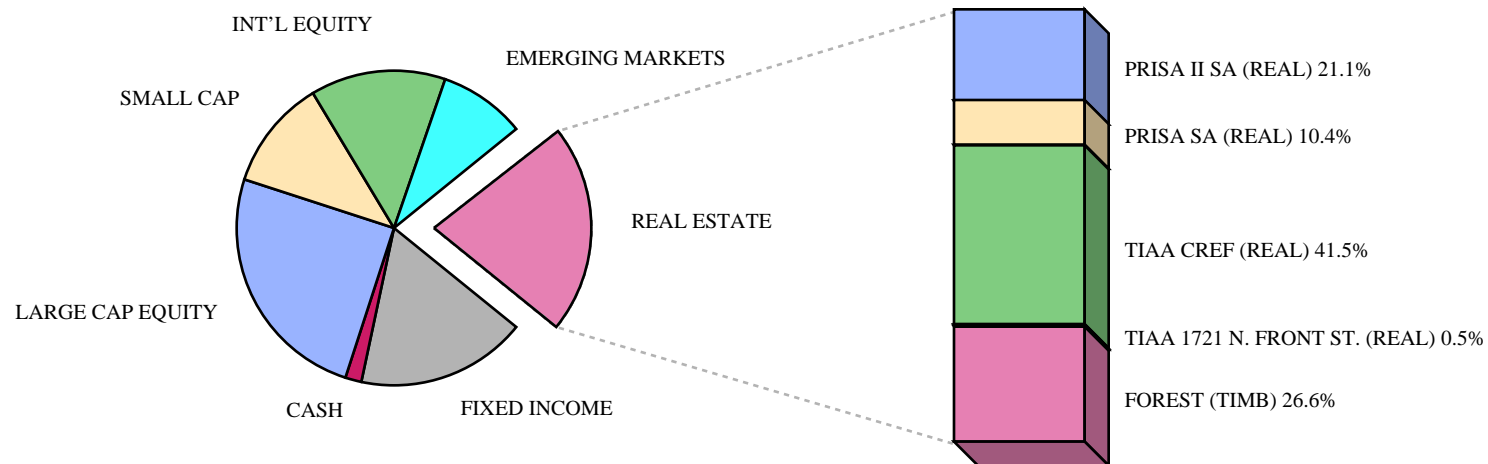


**TOP TEN EQUITY HOLDINGS**

RANK	NAME	VALUE	% EQUITY	RETURN	INDUSTRY SECTOR	MKT CAP
1	MICROSOFT CORP	\$ 2,739,265	2.43%	0.3%	Information Technology	\$ 1199.6 B
2	APPLE INC	2,418,044	2.15%	-13.2%	Information Technology	1112.6 B
3	AMAZON.COM INC	1,848,335	1.64%	5.5%	Consumer Discretionary	970.6 B
4	FACEBOOK INC-CLASS A	913,897	.81%	-18.7%	Communication Services	401.3 B
5	BERKSHIRE HATHAWAY INC-CL B	814,142	.72%	-19.3%	Financials	252.7 B
6	ALPHABET INC-CL A	792,450	.70%	-13.3%	Communication Services	348.5 B
7	ALPHABET INC-CL C	790,711	.70%	-13.0%	Communication Services	396.5 B
8	JOHNSON & JOHNSON	785,731	.70%	-9.5%	Health Care	345.7 B
9	JPMORGAN CHASE & CO	642,904	.57%	-35.0%	Financials	276.8 B
10	VISA INC-CLASS A SHARES	627,885	.56%	-14.1%	Information Technology	274.9 B

PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
REAL ESTATE  
PERFORMANCE REVIEW  
MARCH 2020

**REAL ESTATE MANAGER SUMMARY**

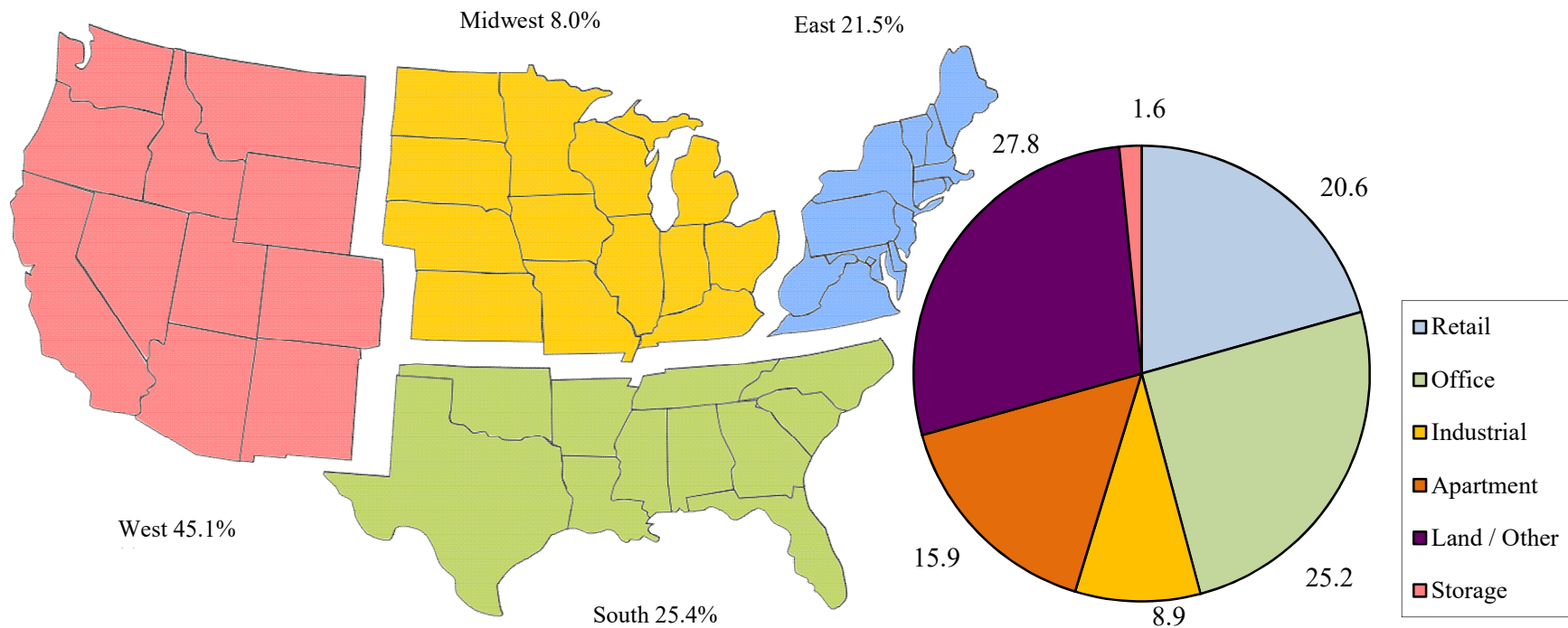


MANAGER	(UNIVERSE)	COMPONENT RETURNS AND RANKINGS					MARKET VALUE
		QTR	YTD	1 YEAR	3 YEARS	5 YEARS	
PRISA II SA		1.3 ---	1.3 ---	6.8 ---	8.4 ---	10.1 ---	\$106,418,646
PRISA SA		1.7 ---	1.7 ---	6.2 ---	7.6 ---	9.0 ---	\$52,416,298
TIAA CREF		1.4 ---	1.4 ---	8.3 ---	8.4 ---	9.0 ---	\$209,194,966
<i>NCREIF NFI-ODCE Index</i>		<i>1.0 ---</i>	<i>1.0 ---</i>	<i>4.9 ---</i>	<i>6.8 ---</i>	<i>8.5 ---</i>	---
TIAA 1721 N. FRONT ST.		0.7 ---	0.7 ---	5.2 ---	3.4 ---	---	\$2,315,169
<i>NCREIF Property Index</i>		<i>0.7 ---</i>	<i>0.7 ---</i>	<i>5.3 ---</i>	<i>6.4 ---</i>	<i>7.6 ---</i>	---
FOREST		0.4 ---	0.4 ---	-4.9 ---	2.4 ---	4.0 ---	\$134,303,095
<i>NCREIF Timber Index</i>		<i>0.1 ---</i>	<i>0.1 ---</i>	<i>1.3 ---</i>	<i>2.5 ---</i>	<i>2.8 ---</i>	---
<b>TOTAL</b>		<b>1.1 ---</b>	<b>1.1 ---</b>	<b>4.0 ---</b>	<b>6.5 ---</b>	<b>7.6 ---</b>	<b>\$504,648,174</b>
<i>NCREIF Property Index</i>		<i>0.7 ---</i>	<i>0.7 ---</i>	<i>5.3 ---</i>	<i>6.4 ---</i>	<i>7.6 ---</i>	---

### PMRS Real Estate Commitment

As of March 31st, the Pennsylvania Municipal Retirement System's aggregate real estate portfolio was valued at \$504,648,174, representing 21.4% of the total System's assets. TIAA distributed \$1,446,377 in January. For reference, the NCREIF Property Index returned 0.7% in the first quarter. Over the trailing year, that index returned 5.3%, and an annualized 7.6% for the last five years. Over the same time frames, the Bloomberg Barclays Aggregate Index returned 3.1%, 8.9%, and an annualized 3.4%, respectively.

### Property Type/Geographical Distribution



## **PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM REAL ESTATE MANAGERS**

### **PRISA SA**

PRISA is an open-end, commingled, broadly diversified, core real estate equity fund invested in completed, income producing and well-leased properties.

#### **Investment Return**

On March 31st, 2020, the Pennsylvania Municipal Retirement System's Prudential PRISA SA portfolio was valued at \$52,416,298, representing an increase of \$732,628 from the December quarter's ending value of \$51,683,670. Last quarter, the Fund posted withdrawals totaling \$125,453, which partially offset the portfolio's net investment return of \$858,081. Since there were no income receipts for the first quarter, the portfolio's net investment return figure was the product of net realized and unrealized capital gains totaling \$858,081.

#### **Property Type/Geographical Distribution**

The office sector made up 35.9% of the PRISA SA portfolio. Industrial and retail properties made up 17.5% and 14.3% respectively. Apartments comprised 24.8% of the portfolio's value, storage was 6.1%, and the remaining 1.4% was in other sectors or vacant land.

Geographically, PRISA's portfolio was mostly situated in the East and West, whose percentages were 38.1% and 36.0%. Another 18.3% of the portfolio was situated in the South, while the remaining 7.6% resided in the Midwest.

#### **Account Performance**

During the first quarter, the Prudential PRISA SA account returned 1.7%, which was 0.7% above the NCREIF NFI-ODCE Index's return of 1.0%. Over the trailing year, the portfolio returned 6.2%, which was 1.3% above the benchmark's 4.9% return. Since December 1990, the Prudential PRISA SA portfolio returned 7.9% per annum, while the NCREIF NFI-ODCE Index returned an annualized 7.5% over the same time frame.

## **PRISA II**

### **Investment Return**

As of March 31st, 2020, the Pennsylvania Municipal Retirement System's Prudential PRISA II SA portfolio was valued at \$106,418,646, which represented an increase of \$1,102,695 from the December quarter's ending value of \$105,315,951. Last quarter, the portfolio recorded a net withdrawal of \$290,750, which offset the fund's net investment return of \$1,393,445. In the absence of income receipts for the quarter, the portfolio's net investment return was the product of \$1,393,445 in realized and unrealized capital gains.

### **Property Type/Geographical Distribution**

PRISA II, like PRISA, situates the largest component of its portfolio in office properties: 36.2% in this case. Retail and apartments also comprised significant portions, with the former at 18.3%, and the latter at 32.6%. Storage made up 4.5%. Investment in land was 4.8%, and industrial properties represented 3.6%.

Geographically, 32.5% of this portfolio was situated in the West, 41.8% resided in the East, while 23.3% was in the South. The remaining 2.3% was located in the Midwest.

### **Account Performance**

In the first quarter, the Prudential PRISA II SA account gained 1.3%, which was 0.3% greater than the NCREIF NFI-ODCE Index's return of 1.0%. Over the trailing twelve-month period, the account returned 6.8%, which was 1.9% greater than the benchmark's 4.9% performance. Since June 2007, the Prudential PRISA II SA portfolio returned 4.9% annualized, while the NCREIF NFI-ODCE Index returned an annualized 5.6% over the same time frame.

## **FOREST INVESTMENT ADVISORS**

The Forest Investment Advisors account is a discretionary account invested in land holdings mostly in the South, with lesser representation in the East and West.

### **Investment Return**

As of March 31st, 2020, the Pennsylvania Municipal Retirement System's Forest Investment Associates Keystone Forest Investments portfolio was valued at \$134,303,095, representing a \$495,977 increase over the December quarter's ending value of \$133,807,118. Over the last three months, the Fund posted no net contributions or withdrawals, making the entire increase in value the result of \$495,977 in net investment returns. Since there were no income receipts during the first quarter, the portfolio's net investment return figure was the product of net realized and unrealized capital gains totaling \$495,977.

### **Property Type/Geographical Distribution**

The Forest fund held 47.3% of its assets in the South, 22.3% in the East, and 30.5% in the West. The Forest Investment Advisors account was solely invested in Timberland.

Forest held investments in Bear Island (Virginia), Fitz-Weller (New York), Carter-Pasture (Texas), Dupont (Georgia), Bennetts Creek (North Carolina), Black River (South Carolina), Coquille (Oregon), Bucktails (Pennsylvania), and North River (Washington).

### **Account Performance**

For the first quarter, the Forest Investment Associates Keystone Forest Investments portfolio gained 0.4%, which was 0.3% greater than the NCREIF Timber Index's return of 0.1%. Over the trailing twelve-month period, the account returned -4.9%, which was 6.2% below the benchmark's 1.3% return. Since March 1999, the Forest Investment Associates Keystone Forest Investments portfolio returned 4.8% on an annualized basis, while the NCREIF Timber Index returned an annualized 6.0% over the same period.

## **TIAA-CREF**

TIAA CREF is a discretionary account with investments in office, retail, industrial, and multi-family properties. The account holds eight properties: The Shoppes at Monarch Lakes is a retail shopping center in Miramar, Florida, and Des Peres Corner, another retail shopping center, is located in Des Peres, Missouri. The SR Ranch Shopping Center and Copley Corporate Center are located in San Diego, California. Industrial properties include Republic Distribution Center in Pasadena, Texas and the 526 Rt. 46 property is located in Teterboro, New Jersey. Stream Uptown is an apartment building in Seattle, Washington. The portfolio's most recent acquisition, the Fairway Center, is located in Connecticut.

TIAA CREF is a non-leveraged investment, whereas portfolios in the NCREIF NFD-ODCE index do utilize leverage.

### **Investment Return**

On March 31st, 2020, the Pennsylvania Municipal Retirement System's TIAA CREF portfolio was valued at \$209,194,966, representing an increase of \$866,881 from the December quarter's ending value of \$208,328,085. Last quarter, the Fund posted withdrawals totaling \$1,446,377, which offset the portfolio's net investment return of \$2,313,258. Since there were no income receipts for the first quarter, the portfolio's net investment return figure was the product of net realized and unrealized capital gains totaling \$2,313,258.

### **Property Type/Geographical Distribution**

As of the quarter end, the TIAA CREF portfolio was situated mostly in the West, which comprised 63.6%. The Midwest represented 16.1%, while the South made up 14.5% and the remaining 5.7% was in the East.

Retail space was the largest sector, making up 36.9%. Offices comprised 32.3%, while 15.6% was in apartments and 15.2% was industrial.

### **Account Performance**

During the first quarter, the TIAA CREF account returned 1.4%, which was 0.4% above the NCREIF NFI-ODCE Index's return of 1.0%. Over the trailing year, the portfolio returned 8.3%, which was 3.4% above the benchmark's 4.9% return. Since June 2008, the TIAA CREF portfolio returned 4.0% per annum, while the NCREIF NFI-ODCE Index returned an annualized 5.4% over the same time frame.



## **TIAA NORTH FRONT STREET**

The office building at 1721 N. Front St. in Harrisburg, PA was purchased in 2016.

### **Investment Return**

As of March 31st, 2020, the Pennsylvania Municipal Retirement System's TIAA CREF 1721 North Front Street portfolio was valued at \$2,315,169, which represented an increase of \$2,757 from the December quarter's ending value of \$2,312,412. Last quarter, the portfolio recorded no net contributions or withdrawals, making the entire increase in value the result of \$2,757 in net investment returns.

### **Account Performance**

For the first quarter, the TIAA CREF 1721 North Front Street account returned 0.7%, which was equal to the NCREIF Property Index's return of 0.7%. Over the trailing twelve-month period, the account returned 5.2%, which was 0.1% less than the benchmark's 5.3% performance. Since June 2016, the portfolio returned 0.7% annualized, while the NCREIF Property Index returned an annualized 6.5% over the same period.

**Real Estate Investor Report**  
**TIAA CREF (Excluding N. Front Street)**

**Net IRR Since Inception** **6.92%**  
**Market Value** **\$** **209,194,966** **As of**  
**3/31/2020**

<u>Year</u>	<u>Capital Calls</u>	<u>Distributions</u>	<u>Fees</u>
2008	\$ 34,330,250	\$ -	\$ 244,006
2009	\$ -	\$ 1,168,000	\$ 319,220
2010	\$ 50,300,736	\$ -	\$ 422,549
2011	\$ 23,903,720	\$ 406,336	\$ 690,494
2012	\$ -	\$ 3,600,000	\$ 892,330
2013	\$ 15,642,440	\$ 6,240,000	\$ 972,519
2014	\$ 47,594,800	\$ 28,000,000	\$ 1,210,923
2015	\$ -	\$ 24,000,000	\$ 1,493,589
2016	\$ 26,333,676	\$ 6,308,805	\$ 1,604,408
2017	\$ -	\$ 8,062,624	\$ 1,709,860
2018	\$ -	\$ 7,721,531	\$ 1,756,438
2019	\$ -	\$ 7,209,262	\$ 1,813,349
2020	\$ -	\$ 1,446,377	\$ 468,690
<b>Total</b>	<b>\$ 198,105,622</b>	<b>\$ 94,162,935</b>	<b>\$ 13,598,375</b>

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM**  
**PRELIMINARY GROSS OF FEES PERFORMANCE AS OF APRIL 2020**

<b>Portfolio</b>	<b>QTD</b>	<b>YTD</b>	<b>Market Value</b>
<b>Total Portfolio</b>	<b>7.3</b>	<b>-9.1</b>	<b>\$2,521,371,080</b>
<i>Total Portfolio Shadow Index</i>	<i>6.8</i>	<i>-9.0</i>	<i>----</i>
State Street Global Advisors	6.2	-7.9	\$1,025,104,106
<i>SSgA Shadow Index</i>	<i>5.8</i>	<i>-8.3</i>	<i>----</i>
State Street Global Advisors S&P Conservative Index	12.8	-9.3	\$105,889,852
<i>S&amp;P 500</i>	<i>12.8</i>	<i>-9.3</i>	<i>----</i>
Polen Capital Management Focus Growth	14.4	-0.4	\$248,839,686
<i>Russell 1000 Growth</i>	<i>14.8</i>	<i>-1.4</i>	<i>----</i>
Eagle Capital Management Equity	12.4	-14.3	\$139,509,787
<i>Russell 1000 Value</i>	<i>11.2</i>	<i>-18.5</i>	<i>----</i>
<i>Russell 1000</i>	<i>13.2</i>	<i>-9.7</i>	<i>----</i>
LSV Asset Management US Large Cap Value	13.0	-21.5	\$136,966,279
<i>Russell 1000 Value</i>	<i>11.2</i>	<i>-18.5</i>	<i>----</i>
State Street Global Advisors Russell 2000 Index Fund	13.7	-21.1	\$125,385,007
<i>Russell 2000</i>	<i>13.7</i>	<i>-21.1</i>	<i>----</i>
AMI Asset Management Small Cap Growth Equity	16.7	-11.6	\$33,008,492
<i>Russell 2000 Growth</i>	<i>14.9</i>	<i>-14.7</i>	<i>----</i>
Copeland Small Cap Dividend Growth	9.0	-19.9	\$38,305,550
<i>Russell 2000 Growth</i>	<i>14.9</i>	<i>-14.7</i>	<i>----</i>
Emerald Advisors Diversified Small Cap Growth	15.8	-12.8	\$60,997,153
<i>Russell 2000 Growth</i>	<i>14.9</i>	<i>-14.7</i>	<i>----</i>
LSV Asset Management US Small Cap Value Equity	15.7	-31.4	\$53,512,463
<i>Russell 2000 Value</i>	<i>12.3</i>	<i>-27.7</i>	<i>----</i>
Smith, Graham & Company Small Cap Value	14.3	-28.1	\$56,894,270
<i>Russell 2000 Value</i>	<i>12.3</i>	<i>-27.7</i>	<i>----</i>
HGK Asset Management HGK International Equity	7.7	-18.4	\$110,389,991
<i>S&amp;P BMI Developed Ex US Index</i>	<i>7.8</i>	<i>-17.7</i>	<i>----</i>
Hardman Johnston International Equity	10.6	-12.9	\$110,386,880
<i>S&amp;P BMI Developed Ex US Index</i>	<i>7.8</i>	<i>-17.7</i>	<i>----</i>
State Street Global Advisors World Ex-US	7.0	-17.7	\$143,455,582
<i>MSCI World Ex US</i>	<i>6.8</i>	<i>-18.7</i>	<i>----</i>
State Street Global Advisors Emerging Markets Index	9.0	-17.0	\$229,490,585
<i>Blended Emerging Markets Index</i>	<i>9.2</i>	<i>-16.6</i>	<i>----</i>
Prudential PRISA SA	----	1.7	\$52,416,298
<i>NCREIF NFI-ODCE Index</i>	<i>----</i>	<i>1.0</i>	<i>----</i>
Prudential PRISA II SA	----	1.3	\$106,418,646
<i>NCREIF NFI-ODCE Index</i>	<i>----</i>	<i>1.0</i>	<i>----</i>
TIAA CREF	----	1.4	\$207,540,987
<i>NCREIF NFI-ODCE Index</i>	<i>----</i>	<i>1.0</i>	<i>----</i>
TIAA CREF 1721 North Front Street	----	0.7	\$2,315,169
<i>NCREIF Property Index</i>	<i>----</i>	<i>0.7</i>	<i>----</i>
Forest Investment Associates	----	0.4	\$134,303,095
<i>NCREIF Timber Index</i>	<i>----</i>	<i>0.1</i>	<i>----</i>
State Street Global Advisors Bond Market	1.8	4.9	\$420,883,080
<i>Bloomberg Barclays Aggregate Index</i>	<i>1.8</i>	<i>5.0</i>	<i>----</i>
Abel Noser	----	----	\$4,483
Federated	----	----	\$24,302
BNY Cash	----	----	\$443,658
STIP Cash	----	----	\$3,445,079

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
ALLOCATIONS & TARGETS AS OF APRIL 2020**

<b>Manager</b>	<b>Target</b>	<b>Market Value</b>	<b>%</b>	<b>+ / -</b>	<b>Market Value Ex-cash</b>	<b>%</b>	<b>+ / -</b>
<b>Total Portfolio</b>	<b>-</b>	<b>\$2,521,371,080</b>	<b>100%</b>		<b>\$2,521,371,080</b>	<b>100%</b>	
<b>Large Cap</b>	<b>25</b>	<b>631,229,906</b>	<b>25.0</b>	<b>0.0</b>	<b>612,965,099</b>	<b>24.3</b>	<b>-0.7</b>
Eagle		139,509,787	5.5		132,983,910	5.3	
Federated		24,302	0.0		4,240	0.0	
LSV Large Cap		136,966,279	5.4		135,748,464	5.4	
Polen		248,839,686	9.9		238,338,633	9.5	
SSgA S&P 500		105,889,852	4.2		105,889,852	4.2	
William Blair		0	0.0		0	0.0	
<b>Small Cap</b>	<b>15</b>	<b>368,102,935</b>	<b>14.6</b>	<b>-0.4</b>	<b>363,178,314</b>	<b>14.4</b>	<b>-0.6</b>
AMI		33,008,492	1.3		31,861,709	1.3	
Copeland		38,305,550	1.5		36,720,117	1.5	
Emerald		60,997,153	2.4		59,183,974	2.3	
LSV Small Cap		53,512,463	2.1		53,287,830	2.1	
Smith, Graham & Co		56,894,270	2.3		56,739,677	2.3	
SSgA Russell 2000		125,385,007	5.0		125,385,007	5.0	
<b>International Equity</b>	<b>15</b>	<b>364,777,159</b>	<b>14.5</b>	<b>-0.5</b>	<b>350,215,923</b>	<b>13.9</b>	<b>-1.1</b>
GlobeFlex		4,224	0.0		4,224	0.0	
HGK		110,389,991	4.4		107,163,140	4.3	
Jarislowsky Fraser		519,853	0.0		296,836	0.0	
Johnston		110,386,880	4.4		99,275,512	3.9	
Mercator		17,701	0.0		17,701	0.0	
SSgA International		143,455,582	5.7		143,455,582	5.7	
WHV		2,928	0.0		2,928	0.0	
<b>Emerging Markets</b>	<b>10</b>	<b>229,490,585</b>	<b>9.1</b>	<b>-0.9</b>	<b>229,490,585</b>	<b>9.1</b>	<b>-0.9</b>
SSgA Emerging Mkts		229,490,585	9.1		229,490,585	9.1	
<b>Real Assets</b>	<b>20</b>	<b>502,994,195</b>	<b>19.9</b>	<b>-0.1</b>	<b>502,994,195</b>	<b>19.9</b>	<b>-0.1</b>
Forest		134,303,095	5.3		134,303,095	5.3	
PRISA I		52,416,298	2.1		52,416,298	2.1	
PRISA II		106,418,646	4.2		106,418,646	4.2	
TIAA N. Front St.		2,315,169	0.1		2,315,169	0.1	
TIAA CREF		207,540,987	8.2		207,540,987	8.2	
<b>Fixed Income</b>	<b>15</b>	<b>420,883,080</b>	<b>16.7</b>	<b>1.7</b>	<b>420,883,080</b>	<b>16.7</b>	<b>1.7</b>
SSgA BC Aggregate		420,883,080	16.7		420,883,080	16.7	
<b>Cash &amp; Equivalents</b>	<b>0</b>	<b>3,893,220</b>	<b>0.2</b>	<b>0.2</b>	<b>41,643,884</b>	<b>1.7</b>	<b>1.7</b>
Abel Noser (Transition)		4,483	0.0		0	0.0	
BNY Cash		443,658	0.0		443,658	0.0	
STIP Cash		3,445,079	0.1		3,445,079	0.1	
Manager Cash		n/a	-		37,755,147	1.5	

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM**  
**PRELIMINARY GROSS OF FEES PERFORMANCE AS OF MAY 2020**

<b>Portfolio</b>	<b>QTD</b>	<b>YTD</b>	<b>Market Value</b>
<b>Total Portfolio</b>	<b>11.1</b>	<b>-6.0</b>	<b>\$2,602,339,225</b>
<i>Total Portfolio Shadow Index</i>	<i>9.9</i>	<i>-6.4</i>	<i>----</i>
State Street Global Advisors	8.8	-5.7	\$1,044,579,119
<i>SSgA Shadow Index</i>	<i>8.2</i>	<i>-6.3</i>	<i>----</i>
State Street Global Advisors S&P Conservative Index	18.2	-5.0	\$110,926,724
<i>S&amp;P 500</i>	<i>18.2</i>	<i>-5.0</i>	<i>----</i>
Polen Capital Management Focus Growth	24.0	7.9	\$214,544,610
<i>Russell 1000 Growth</i>	<i>22.5</i>	<i>5.2</i>	<i>----</i>
William Blair Large Cap Growth	----	----	\$53,448,797
<i>Russell 1000 Growth</i>	<i>22.5</i>	<i>5.2</i>	<i>----</i>
Eagle Capital Management Equity	17.3	-10.6	\$145,594,617
<i>Russell 1000 Value</i>	<i>15.1</i>	<i>-15.7</i>	<i>----</i>
<i>Russell 1000</i>	<i>19.2</i>	<i>-4.9</i>	<i>----</i>
LSV Asset Management US Large Cap Value	18.1	-17.9	\$143,228,123
<i>Russell 1000 Value</i>	<i>15.1</i>	<i>-15.7</i>	<i>----</i>
State Street Global Advisors Russell 2000 Index Fund	21.1	-15.9	\$133,543,762
<i>Russell 2000</i>	<i>21.1</i>	<i>-16.0</i>	<i>----</i>
AMI Asset Management Small Cap Growth Equity	27.4	-3.6	\$36,026,540
<i>Russell 2000 Growth</i>	<i>25.8</i>	<i>-6.7</i>	<i>----</i>
Copeland Small Cap Dividend Growth	15.4	-15.2	\$40,562,029
<i>Russell 2000 Growth</i>	<i>25.8</i>	<i>-6.7</i>	<i>----</i>
Emerald Advisors Diversified Small Cap Growth	29.0	-2.9	\$67,936,737
<i>Russell 2000 Growth</i>	<i>25.8</i>	<i>-6.7</i>	<i>----</i>
LSV Asset Management US Small Cap Value Equity	20.5	-28.5	\$55,748,901
<i>Russell 2000 Value</i>	<i>15.6</i>	<i>-25.7</i>	<i>----</i>
Smith, Graham & Company Small Cap Value	22.8	-22.8	\$61,118,009
<i>Russell 2000 Value</i>	<i>15.6</i>	<i>-25.7</i>	<i>----</i>
HGK Asset Management HGK International Equity	14.3	-13.3	\$117,202,838
<i>S&amp;P BMI Developed Ex US Index</i>	<i>12.9</i>	<i>-13.8</i>	<i>----</i>
Hardman Johnston International Equity	16.2	-8.6	\$115,922,302
<i>S&amp;P BMI Developed Ex US Index</i>	<i>12.9</i>	<i>-13.8</i>	<i>----</i>
State Street Global Advisors World Ex-US	11.6	-14.1	\$149,651,266
<i>MSCI World Ex US</i>	<i>11.0</i>	<i>-15.5</i>	<i>----</i>
State Street Global Advisors Emerging Markets Index	10.5	-15.9	\$232,674,045
<i>Blended Emerging Markets Index</i>	<i>10.0</i>	<i>-15.9</i>	<i>----</i>
Prudential PRISA SA	----	1.7	\$52,416,298
<i>NCREIF NFI-ODCE Index</i>	<i>----</i>	<i>1.0</i>	<i>----</i>
Prudential PRISA II SA	----	1.3	\$106,418,646
<i>NCREIF NFI-ODCE Index</i>	<i>----</i>	<i>1.0</i>	<i>----</i>
TIAA CREF	----	1.4	\$209,194,966
<i>NCREIF NFI-ODCE Index</i>	<i>----</i>	<i>1.0</i>	<i>----</i>
TIAA CREF 1721 North Front Street	----	0.7	\$2,302,158
<i>NCREIF Property Index</i>	<i>----</i>	<i>0.7</i>	<i>----</i>
Forest Investment Associates	----	0.4	\$134,303,095
<i>NCREIF Timber Index</i>	<i>----</i>	<i>0.1</i>	<i>----</i>
State Street Global Advisors Bond Market	2.3	5.5	\$417,783,322
<i>Bloomberg Barclays Aggregate Index</i>	<i>2.3</i>	<i>5.5</i>	<i>----</i>
Abel Noser	----	----	\$8,726
Federated	----	----	\$2
BNY Cash	----	----	\$403,988
STIP Cash	----	----	\$2,706,895

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM  
ALLOCATIONS & TARGETS AS OF MAY 2020**

<b>Manager</b>	<b>Target</b>	<b>Market Value</b>	<b>%</b>	<b>+ / -</b>	<b>Market Value Ex-cash</b>	<b>%</b>	<b>+ / -</b>
<b>Total Portfolio</b>	<b>-</b>	<b>\$2,602,339,225</b>	<b>100%</b>		<b>\$2,602,339,225</b>	<b>100%</b>	
<b>Large Cap</b>	<b>25</b>	<b>667,742,873</b>	<b>25.7</b>	<b>0.7</b>	<b>653,611,730</b>	<b>25.1</b>	<b>0.1</b>
Eagle		145,594,617	5.6		140,248,108	5.4	
Federated		2	0.0		0	0.0	
LSV Large Cap		143,228,123	5.5		142,230,041	5.5	
Polen		214,544,610	8.2		206,957,868	8.0	
SSgA S&P 500		110,926,724	4.3		110,926,724	4.3	
William Blair		53,448,797	2.1		53,248,989	2.0	
<b>Small Cap</b>	<b>15</b>	<b>394,935,978</b>	<b>15.2</b>	<b>0.2</b>	<b>390,604,539</b>	<b>15.0</b>	<b>0.0</b>
AMI		36,026,540	1.4		35,033,379	1.3	
Copeland		40,562,029	1.6		39,825,267	1.5	
Emerald		67,936,737	2.6		66,052,747	2.5	
LSV Small Cap		55,748,901	2.1		55,258,886	2.1	
Smith, Graham & Co		61,118,009	2.3		60,890,498	2.3	
SSgA Russell 2000		133,543,762	5.1		133,543,762	5.1	
<b>International Equity</b>	<b>15</b>	<b>383,102,214</b>	<b>14.7</b>	<b>-0.3</b>	<b>369,796,807</b>	<b>14.2</b>	<b>-0.8</b>
GlobeFlex		4,266	0.0		4,266	0.0	
HGK		117,202,838	4.5		112,591,603	4.3	
Jarislowsky Fraser		300,592	0.0		300,570	0.0	
Johnston		115,922,302	4.5		107,228,152	4.1	
Mercator		17,977	0.0		17,977	0.0	
SSgA International		149,651,266	5.8		149,651,266	5.8	
WHV		2,973	0.0		2,973	0.0	
<b>Emerging Markets</b>	<b>10</b>	<b>232,674,045</b>	<b>8.9</b>	<b>-1.1</b>	<b>232,674,045</b>	<b>8.9</b>	<b>-1.1</b>
SSgA Emerging Mkts		232,674,045	8.9		232,674,045	8.9	
<b>Real Assets</b>	<b>20</b>	<b>502,981,184</b>	<b>19.3</b>	<b>-0.7</b>	<b>502,981,184</b>	<b>19.3</b>	<b>-0.7</b>
Forest		134,303,095	5.2		134,303,095	5.2	
PRISA I		52,416,298	2.0		52,416,298	2.0	
PRISA II		106,418,646	4.1		106,418,646	4.1	
TIAA N. Front St.		2,302,158	0.1		2,302,158	0.1	
TIAA CREF		207,540,987	8.0		207,540,987	8.0	
<b>Fixed Income</b>	<b>15</b>	<b>417,783,322</b>	<b>16.1</b>	<b>1.1</b>	<b>417,783,322</b>	<b>16.1</b>	<b>1.1</b>
SSgA BC Aggregate		417,783,322	16.1		417,783,322	16.1	
<b>Cash &amp; Equivalents</b>	<b>0</b>	<b>3,119,609</b>	<b>0.1</b>	<b>0.1</b>	<b>34,887,598</b>	<b>1.3</b>	<b>1.3</b>
Abel Noser (Transition)		8,726	0.0		0	0.0	
BNY Cash		403,988	0.0		403,988	0.0	
STIP Cash		2,706,895	0.1		2,706,895	0.1	
Manager Cash		n/a	-		31,776,715	1.2	

# PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM

## PRELIMINARY GROSS OF FEES PERFORMANCE AS OF JUNE 2020

Portfolio (Gross of Fees)	QTR	YTD	1 Year	3 Years	5 Years	10 Years	Since 12/85
<b>Total Portfolio</b>	<b>13.9</b>	<b>-3.6</b>	<b>2.9</b>	<b>6.6</b>	<b>6.7</b>	<b>9.0</b>	<b>8.6</b>
<i>Total Portfolio Shadow Index</i>	<i>12.4</i>	<i>-4.3</i>	<i>2.0</i>	<i>5.4</i>	<i>5.9</i>	<i>8.6</i>	<i>9.0</i>
<b>Large Cap Equity</b>	<b>23.1</b>	<b>-2.1</b>	<b>8.5</b>	<b>13.3</b>	<b>12.0</b>	<b>14.9</b>	<b>11.0</b>
<i>S&amp;P 500</i>	<i>20.5</i>	<i>-3.1</i>	<i>7.5</i>	<i>10.7</i>	<i>10.7</i>	<i>14.0</i>	<i>10.6</i>
<b>Small Cap Equity</b>	<b>26.1</b>	<b>-14.5</b>	<b>-8.5</b>	<b>1.7</b>	<b>3.5</b>	<b>10.8</b>	<b>---</b>
<i>Russell 2000</i>	<i>25.4</i>	<i>-13.0</i>	<i>-6.7</i>	<i>2.0</i>	<i>4.3</i>	<i>10.5</i>	<i>8.9</i>
<b>International Equity</b>	<b>20.4</b>	<b>-7.7</b>	<b>1.8</b>	<b>4.7</b>	<b>5.5</b>	<b>8.3</b>	<b>---</b>
<i>Blended International Index</i>	<i>15.1</i>	<i>-11.1</i>	<i>-4.7</i>	<i>1.3</i>	<i>2.5</i>	<i>6.2</i>	<i>---</i>
<i>S&amp;P BMI Developed Ex US Index</i>	<i>16.8</i>	<i>-10.8</i>	<i>-4.0</i>	<i>1.3</i>	<i>2.9</i>	<i>6.4</i>	<i>---</i>
<i>MSCI World Ex US</i>	<i>14.6</i>	<i>-12.7</i>	<i>-6.7</i>	<i>0.8</i>	<i>2.2</i>	<i>5.8</i>	<i>6.8</i>
<i>MSCI EAFE</i>	<i>15.1</i>	<i>-11.1</i>	<i>-4.7</i>	<i>1.3</i>	<i>2.5</i>	<i>6.2</i>	<i>7.3</i>
<b>Emerging Markets Equity</b>	<b>19.0</b>	<b>-9.4</b>	<b>-3.0</b>	<b>2.1</b>	<b>3.0</b>	<b>3.2</b>	<b>---</b>
<i>Blended Emerging Markets Index</i>	<i>18.2</i>	<i>-9.7</i>	<i>-3.0</i>	<i>2.3</i>	<i>3.2</i>	<i>3.6</i>	<i>---</i>
<i>S&amp;P BMI Emerging Markets Index</i>	<i>19.3</i>	<i>-10.0</i>	<i>-3.8</i>	<i>2.7</i>	<i>3.2</i>	<i>3.8</i>	<i>---</i>
<i>MSCI Emerging Markets</i>	<i>18.2</i>	<i>-9.7</i>	<i>-3.0</i>	<i>2.3</i>	<i>3.2</i>	<i>3.6</i>	<i>---</i>
<b>Real Estate</b>	<b>---</b>	<b>1.1</b>	<b>2.8</b>	<b>6.0</b>	<b>7.2</b>	<b>8.6</b>	<b>6.9</b>
<i>NCREIF Property Index</i>	<i>---</i>	<i>0.7</i>	<i>3.7</i>	<i>5.8</i>	<i>7.0</i>	<i>9.8</i>	<i>7.7</i>
<i>Bloomberg Barclays Aggregate Index</i>	<i>2.9</i>	<i>6.1</i>	<i>8.7</i>	<i>5.3</i>	<i>4.3</i>	<i>3.8</i>	<i>6.5</i>
<b>Fixed Income</b>	<b>3.0</b>	<b>6.2</b>	<b>8.8</b>	<b>5.4</b>	<b>4.3</b>	<b>3.8</b>	<b>6.5</b>
<i>Bloomberg Barclays Aggregate Index</i>	<i>2.9</i>	<i>6.1</i>	<i>8.7</i>	<i>5.3</i>	<i>4.3</i>	<i>3.8</i>	<i>6.5</i>

### INVESTMENT RETURN

Market Value March 2020	\$2,358,476,552
Contributions / Withdrawals	-\$24,645,811
Income	\$3,937,669
Capital Gains / Losses	\$322,386,229
Market Value June 2020	\$2,660,154,639

# PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM

## PRELIMINARY NET OF FEES PERFORMANCE AS OF JUNE 2020

Portfolio (Net of Fees)	QTR	YTD	1 Year	3 Years	5 Years	10 Years	Since 12/85
<b>Total Portfolio</b>	<b>13.8</b>	<b>-3.8</b>	<b>2.5</b>	<b>6.1</b>	<b>6.2</b>	<b>8.6</b>	<b>---</b>
<i>Total Portfolio Shadow Index</i>	<i>12.4</i>	<i>-4.3</i>	<i>2.0</i>	<i>5.4</i>	<i>5.9</i>	<i>8.6</i>	<i>9.0</i>
<b>Large Cap Equity</b>	<b>22.9</b>	<b>-2.4</b>	<b>8.0</b>	<b>12.7</b>	<b>11.5</b>	<b>14.5</b>	<b>10.8</b>
<i>S&amp;P 500</i>	<i>20.5</i>	<i>-3.1</i>	<i>7.5</i>	<i>10.7</i>	<i>10.7</i>	<i>14.0</i>	<i>10.6</i>
<b>Small Cap Equity</b>	<b>26.0</b>	<b>-14.8</b>	<b>-9.0</b>	<b>1.1</b>	<b>2.9</b>	<b>10.3</b>	<b>---</b>
<i>Russell 2000</i>	<i>25.4</i>	<i>-13.0</i>	<i>-6.7</i>	<i>2.0</i>	<i>4.3</i>	<i>10.5</i>	<i>8.9</i>
<b>International Equity</b>	<b>20.3</b>	<b>-7.9</b>	<b>1.4</b>	<b>4.2</b>	<b>5.0</b>	<b>7.8</b>	<b>---</b>
<i>Blended International Index</i>	<i>15.1</i>	<i>-11.1</i>	<i>-4.7</i>	<i>1.3</i>	<i>2.5</i>	<i>6.2</i>	<i>---</i>
<i>S&amp;P BMI Developed Ex US Index</i>	<i>16.8</i>	<i>-10.8</i>	<i>-4.0</i>	<i>1.3</i>	<i>2.9</i>	<i>6.4</i>	<i>---</i>
<i>MSCI World Ex US</i>	<i>14.6</i>	<i>-12.7</i>	<i>-6.7</i>	<i>0.8</i>	<i>2.2</i>	<i>5.8</i>	<i>6.8</i>
<i>MSCI EAFE</i>	<i>15.1</i>	<i>-11.1</i>	<i>-4.7</i>	<i>1.3</i>	<i>2.5</i>	<i>6.2</i>	<i>7.3</i>
<b>Emerging Markets Equity</b>	<b>19.0</b>	<b>-9.5</b>	<b>-3.1</b>	<b>2.0</b>	<b>2.9</b>	<b>3.1</b>	<b>---</b>
<i>Blended Emerging Markets Index</i>	<i>18.2</i>	<i>-9.7</i>	<i>-3.0</i>	<i>2.3</i>	<i>3.2</i>	<i>3.6</i>	<i>---</i>
<i>S&amp;P BMI Emerging Markets Index</i>	<i>19.3</i>	<i>-10.0</i>	<i>-3.8</i>	<i>2.7</i>	<i>3.2</i>	<i>3.8</i>	<i>---</i>
<i>MSCI Emerging Markets</i>	<i>18.2</i>	<i>-9.7</i>	<i>-3.0</i>	<i>2.3</i>	<i>3.2</i>	<i>3.6</i>	<i>---</i>
<b>Real Estate</b>	<b>---</b>	<b>0.9</b>	<b>2.1</b>	<b>5.1</b>	<b>6.3</b>	<b>7.6</b>	<b>6.5</b>
<i>NCREIF Property Index</i>	<i>---</i>	<i>0.7</i>	<i>3.7</i>	<i>5.8</i>	<i>7.0</i>	<i>9.8</i>	<i>7.7</i>
<i>Bloomberg Barclays Aggregate Index</i>	<i>2.9</i>	<i>6.1</i>	<i>8.7</i>	<i>5.3</i>	<i>4.3</i>	<i>3.8</i>	<i>6.5</i>
<b>Fixed Income</b>	<b>3.0</b>	<b>6.1</b>	<b>8.7</b>	<b>5.3</b>	<b>4.3</b>	<b>3.8</b>	<b>6.5</b>
<i>Bloomberg Barclays Aggregate Index</i>	<i>2.9</i>	<i>6.1</i>	<i>8.7</i>	<i>5.3</i>	<i>4.3</i>	<i>3.8</i>	<i>6.5</i>

### INVESTMENT RETURN

Market Value March 2020	\$2,358,476,552
Contributions / Withdrawals	-\$24,645,811
Income	\$3,937,669
Capital Gains / Losses	\$322,386,229
Market Value June 2020	\$2,660,154,639



# PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM

## PRELIMINARY GROSS OF FEES MANAGER PERFORMANCE AS OF JUNE 2020

Portfolio (Gross of Fees)	QTR	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
<b>Total Portfolio</b>	<b>13.9</b>	<b>-3.6</b>	<b>2.9</b>	<b>6.6</b>	<b>6.7</b>	<b>9.0</b>	<b>8.6 12/85</b>
<i>Total Portfolio Shadow Index</i>	<i>12.4</i>	<i>-4.3</i>	<i>2.0</i>	<i>5.4</i>	<i>5.9</i>	<i>8.6</i>	<i>8.9 12/85</i>
State Street Global Advisors	12.1	-2.8	2.7	3.8	4.1	4.8	6.3 03/97
<i>SSgA Shadow Index</i>	<i>11.4</i>	<i>-3.4</i>	<i>2.1</i>	<i>3.7</i>	<i>4.0</i>	<i>5.0</i>	<i>7.0 03/97</i>
State Street Global Advisors S&P Conservative Index	20.5	-3.1	7.5	10.7	10.7	14.0	8.3 03/97
<i>S&amp;P 500</i>	<i>20.5</i>	<i>-3.1</i>	<i>7.5</i>	<i>10.7</i>	<i>10.7</i>	<i>14.0</i>	<i>8.3 03/97</i>
Polen Capital Management Focus Growth	29.7	12.9	26.0	23.2	19.4	----	18.1 09/10
<i>Russell 1000 Growth</i>	<i>27.8</i>	<i>9.8</i>	<i>23.3</i>	<i>19.0</i>	<i>15.9</i>	<i>17.2</i>	<i>16.2 09/10</i>
Eagle Capital Management Equity	19.4	-9.0	0.1	9.3	----	----	12.7 03/16
<i>Russell 1000 Value</i>	<i>14.3</i>	<i>-16.3</i>	<i>-8.9</i>	<i>1.8</i>	<i>4.6</i>	<i>10.4</i>	<i>5.9 03/16</i>
<i>Russell 1000</i>	<i>21.8</i>	<i>-2.8</i>	<i>7.5</i>	<i>10.6</i>	<i>10.5</i>	<i>14.0</i>	<i>12.3 03/16</i>
LSV Asset Management US Large Cap Value	18.7	-17.5	-8.6	1.0	3.9	10.8	7.4 03/04
<i>Russell 1000 Value</i>	<i>14.3</i>	<i>-16.3</i>	<i>-8.9</i>	<i>1.8</i>	<i>4.6</i>	<i>10.4</i>	<i>6.7 03/04</i>
State Street Global Advisors Russell 2000 Index Fund	25.4	-13.0	-6.6	2.0	4.4	10.6	7.7 03/97
<i>Russell 2000</i>	<i>25.4</i>	<i>-13.0</i>	<i>-6.7</i>	<i>2.0</i>	<i>4.3</i>	<i>10.5</i>	<i>7.8 03/97</i>
AMI Asset Management Small Cap Growth Equity	32.4	0.2	0.0	----	----	----	1.4 09/17
<i>Russell 2000 Growth</i>	<i>30.6</i>	<i>-3.1</i>	<i>3.5</i>	<i>7.8</i>	<i>6.8</i>	<i>12.9</i>	<i>6.2 09/17</i>
Copeland Capital Management Small Cap Dividend Growth	16.1	-14.7	-8.1	----	----	----	3.9 09/17
<i>Russell 2000 Growth</i>	<i>30.6</i>	<i>-3.1</i>	<i>3.5</i>	<i>7.8</i>	<i>6.8</i>	<i>12.9</i>	<i>6.2 09/17</i>
Emerald Advisors Diversified Small Cap Growth	32.6	-0.1	4.5	10.7	8.3	16.1	11.1 09/98
<i>Russell 2000 Growth</i>	<i>30.6</i>	<i>-3.1</i>	<i>3.5</i>	<i>7.8</i>	<i>6.8</i>	<i>12.9</i>	<i>7.7 09/98</i>
LSV Asset Management US Small Cap Value Equity	22.3	-27.4	-21.5	-6.6	----	----	-5.4 12/16
<i>Russell 2000 Value</i>	<i>18.9</i>	<i>-23.5</i>	<i>-17.5</i>	<i>-4.4</i>	<i>1.2</i>	<i>7.8</i>	<i>-3.6 12/16</i>
Smith, Graham & Company Small Cap Value	26.7	-20.3	-10.3	-3.6	----	----	-1.9 12/16
<i>Russell 2000 Value</i>	<i>18.9</i>	<i>-23.5</i>	<i>-17.5</i>	<i>-4.4</i>	<i>1.2</i>	<i>7.8</i>	<i>-3.6 12/16</i>
HGK Asset Management HGK International Equity	19.2	-9.6	2.0	3.7	5.2	----	8.6 03/12
<i>S&amp;P BMI Developed Ex US Index</i>	<i>16.8</i>	<i>-10.8</i>	<i>-4.0</i>	<i>1.3</i>	<i>2.9</i>	<i>6.4</i>	<i>5.0 03/12</i>
Hardman Johnston International Equity	25.6	-1.1	10.9	9.5	9.1	----	9.5 03/12
<i>S&amp;P BMI Developed Ex US Index</i>	<i>16.8</i>	<i>-10.8</i>	<i>-4.0</i>	<i>1.3</i>	<i>2.9</i>	<i>6.4</i>	<i>5.0 03/12</i>
State Street Global Advisors World Ex-US	15.5	-11.2	-5.0	1.3	2.4	----	4.6 03/12
<i>MSCI World Ex US</i>	<i>14.6</i>	<i>-12.7</i>	<i>-6.7</i>	<i>0.8</i>	<i>2.2</i>	<i>5.8</i>	<i>4.6 03/12</i>
State Street Global Advisors Emerging Markets Index	19.0	-9.4	-3.0	2.1	3.0	3.2	7.4 12/08
<i>Blended Emerging Markets Index</i>	<i>18.2</i>	<i>-9.7</i>	<i>-3.0</i>	<i>2.3</i>	<i>3.2</i>	<i>3.6</i>	<i>8.3 12/08</i>
Prudential PRISA SA	----	1.7	4.6	7.0	8.3	11.5	7.8 12/90
<i>NCREIF NFI-ODCE Index</i>	<i>----</i>	<i>1.0</i>	<i>3.8</i>	<i>6.2</i>	<i>7.6</i>	<i>11.0</i>	<i>7.4 12/90</i>
Prudential PRISA II SA	----	1.3	5.3	7.5	9.3	13.3	4.8 06/07
<i>NCREIF NFI-ODCE Index</i>	<i>----</i>	<i>1.0</i>	<i>3.8</i>	<i>6.2</i>	<i>7.6</i>	<i>11.0</i>	<i>5.5 06/07</i>
TIAA CREF	----	1.4	6.6	7.7	8.5	8.9	3.9 06/08
<i>NCREIF NFI-ODCE Index</i>	<i>----</i>	<i>1.0</i>	<i>3.8</i>	<i>6.2</i>	<i>7.6</i>	<i>11.0</i>	<i>5.3 06/08</i>
TIAA CREF 1721 North Front Street	----	0.7	3.9	4.2	----	----	0.7 06/16
<i>NCREIF Property Index</i>	<i>----</i>	<i>0.7</i>	<i>3.7</i>	<i>5.8</i>	<i>7.0</i>	<i>9.8</i>	<i>6.1 06/16</i>
Forest Investment Associates	----	0.4	-5.2	2.2	3.9	4.4	4.7 03/99
<i>NCREIF Timber Index</i>	<i>----</i>	<i>0.1</i>	<i>0.3</i>	<i>2.2</i>	<i>2.7</i>	<i>4.4</i>	<i>6.0 03/99</i>
State Street Global Advisors Bond Market	3.0	6.2	8.8	5.4	4.3	3.8	5.4 03/97
<i>Bloomberg Barclays Aggregate Index</i>	<i>2.9</i>	<i>6.1</i>	<i>8.7</i>	<i>5.3</i>	<i>4.3</i>	<i>3.8</i>	<i>5.4 03/97</i>

# PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM

## PRELIMINARY NET OF FEES MANAGER PERFORMANCE AS OF JUNE 2020

Portfolio (Net of Fees)	QTR	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
<b>Total Portfolio</b>	<b>13.8</b>	<b>-3.8</b>	<b>2.5</b>	<b>6.1</b>	<b>6.2</b>	<b>8.6</b>	<b>--- 12/85</b>
<i>Total Portfolio Shadow Index</i>	<i>12.4</i>	<i>-4.3</i>	<i>2.0</i>	<i>5.4</i>	<i>5.9</i>	<i>8.6</i>	<i>8.9 12/85</i>
State Street Global Advisors	12.1	-2.8	2.6	3.7	4.0	4.8	6.3 03/97
<i>SSgA Shadow Index</i>	<i>11.4</i>	<i>-3.4</i>	<i>2.1</i>	<i>3.7</i>	<i>4.0</i>	<i>5.0</i>	<i>7.0 03/97</i>
State Street Global Advisors S&P Conservative Index	20.5	-3.1	7.4	10.7	10.7	13.9	8.3 03/97
<i>S&amp;P 500</i>	<i>20.5</i>	<i>-3.1</i>	<i>7.5</i>	<i>10.7</i>	<i>10.7</i>	<i>14.0</i>	<i>8.3 03/97</i>
Polen Capital Management Focus Growth	29.6	12.7	25.5	22.8	18.9	---	17.6 09/10
<i>Russell 1000 Growth</i>	<i>27.8</i>	<i>9.8</i>	<i>23.3</i>	<i>19.0</i>	<i>15.9</i>	<i>17.2</i>	<i>16.2 09/10</i>
Eagle Capital Management Equity	19.1	-9.4	-0.6	8.4	---	---	11.9 03/16
<i>Russell 1000 Value</i>	<i>14.3</i>	<i>-16.3</i>	<i>-8.9</i>	<i>1.8</i>	<i>4.6</i>	<i>10.4</i>	<i>5.9 03/16</i>
<i>Russell 1000</i>	<i>21.8</i>	<i>-2.8</i>	<i>7.5</i>	<i>10.6</i>	<i>10.5</i>	<i>14.0</i>	<i>12.3 03/16</i>
LSV Asset Management US Large Cap Value	18.6	-17.7	-9.0	0.6	3.4	10.4	6.9 03/04
<i>Russell 1000 Value</i>	<i>14.3</i>	<i>-16.3</i>	<i>-8.9</i>	<i>1.8</i>	<i>4.6</i>	<i>10.4</i>	<i>6.7 03/04</i>
State Street Global Advisors Russell 2000 Index Fund	25.4	-13.0	-6.6	2.0	4.3	10.5	7.7 03/97
<i>Russell 2000</i>	<i>25.4</i>	<i>-13.0</i>	<i>-6.7</i>	<i>2.0</i>	<i>4.3</i>	<i>10.5</i>	<i>7.8 03/97</i>
AMI Asset Management Small Cap Growth Equity	32.2	-0.2	-0.7	---	---	---	0.6 09/17
<i>Russell 2000 Growth</i>	<i>30.6</i>	<i>-3.1</i>	<i>3.5</i>	<i>7.8</i>	<i>6.8</i>	<i>12.9</i>	<i>6.2 09/17</i>
Copeland Capital Management Small Cap Dividend Growth	15.9	-15.1	-8.9	---	---	---	3.0 09/17
<i>Russell 2000 Growth</i>	<i>30.6</i>	<i>-3.1</i>	<i>3.5</i>	<i>7.8</i>	<i>6.8</i>	<i>12.9</i>	<i>6.2 09/17</i>
Emerald Advisors Diversified Small Cap Growth	32.5	-0.4	4.0	10.2	7.8	15.6	10.6 09/98
<i>Russell 2000 Growth</i>	<i>30.6</i>	<i>-3.1</i>	<i>3.5</i>	<i>7.8</i>	<i>6.8</i>	<i>12.9</i>	<i>7.7 09/98</i>
LSV Asset Management US Small Cap Value Equity	22.2	-27.7	-22.1	-7.1	---	---	-6.0 12/16
<i>Russell 2000 Value</i>	<i>18.9</i>	<i>-23.5</i>	<i>-17.5</i>	<i>-4.4</i>	<i>1.2</i>	<i>7.8</i>	<i>-3.6 12/16</i>
Smith, Graham & Company Small Cap Value	26.5	-20.6	-10.9	-4.3	---	---	-2.6 12/16
<i>Russell 2000 Value</i>	<i>18.9</i>	<i>-23.5</i>	<i>-17.5</i>	<i>-4.4</i>	<i>1.2</i>	<i>7.8</i>	<i>-3.6 12/16</i>
HGK Asset Management HGK International Equity	19.0	-9.9	1.3	3.1	4.5	---	7.9 03/12
<i>S&amp;P BMI Developed Ex US Index</i>	<i>16.8</i>	<i>-10.8</i>	<i>-4.0</i>	<i>1.3</i>	<i>2.9</i>	<i>6.4</i>	<i>5.0 03/12</i>
Hardman Johnston International Equity	25.5	-1.4	10.2	8.9	8.4	---	8.8 03/12
<i>S&amp;P BMI Developed Ex US Index</i>	<i>16.8</i>	<i>-10.8</i>	<i>-4.0</i>	<i>1.3</i>	<i>2.9</i>	<i>6.4</i>	<i>5.0 03/12</i>
State Street Global Advisors World Ex-US	15.5	-11.2	-5.0	1.2	2.4	---	4.6 03/12
<i>MSCI World Ex US</i>	<i>14.6</i>	<i>-12.7</i>	<i>-6.7</i>	<i>0.8</i>	<i>2.2</i>	<i>5.8</i>	<i>4.6 03/12</i>
State Street Global Advisors Emerging Markets Index	19.0	-9.5	-3.1	2.0	2.9	3.1	7.4 12/08
<i>Blended Emerging Markets Index</i>	<i>18.2</i>	<i>-9.7</i>	<i>-3.0</i>	<i>2.3</i>	<i>3.2</i>	<i>3.6</i>	<i>8.3 12/08</i>
Prudential PRISA SA	---	1.4	3.9	6.0	7.3	10.5	---
<i>NCREIF NFI-ODCE Index</i>	<i>---</i>	<i>1.0</i>	<i>3.8</i>	<i>6.2</i>	<i>7.6</i>	<i>11.0</i>	<i>7.4 12/90</i>
Prudential PRISA II SA	---	1.0	4.4	6.5	8.3	12.1	3.8 06/07
<i>NCREIF NFI-ODCE Index</i>	<i>---</i>	<i>1.0</i>	<i>3.8</i>	<i>6.2</i>	<i>7.6</i>	<i>11.0</i>	<i>5.5 06/07</i>
TIAA CREF	---	1.1	5.9	6.8	7.6	8.0	3.0 06/08
<i>NCREIF NFI-ODCE Index</i>	<i>---</i>	<i>1.0</i>	<i>3.8</i>	<i>6.2</i>	<i>7.6</i>	<i>11.0</i>	<i>5.3 06/08</i>
TIAA CREF 1721 North Front Street	-0.5	-0.4	1.7	2.0	---	---	-1.7 06/16
<i>NCREIF Property Index</i>	<i>---</i>	<i>0.7</i>	<i>3.7</i>	<i>5.8</i>	<i>7.0</i>	<i>9.8</i>	<i>6.1 06/16</i>
Forest Investment Associates	---	0.2	-5.7	1.4	3.1	3.6	4.3 03/99
<i>NCREIF Timber Index</i>	<i>---</i>	<i>0.1</i>	<i>0.3</i>	<i>2.2</i>	<i>2.7</i>	<i>4.4</i>	<i>6.0 03/99</i>
State Street Global Advisors Bond Market	3.0	6.1	8.7	5.3	4.3	3.8	5.4 03/97
<i>Bloomberg Barclays Aggregate Index</i>	<i>2.9</i>	<i>6.1</i>	<i>8.7</i>	<i>5.3</i>	<i>4.3</i>	<i>3.8</i>	<i>5.4 03/97</i>

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM**  
**ALLOCATIONS & TARGETS AS OF JUNE 2020**

<b>Manager</b>	<b>Target</b>	<b>Market Value</b>	<b>%</b>	<b>+ / -</b>	<b>Market Value Ex-cash</b>	<b>%</b>	<b>+ / -</b>
<b>Total Portfolio</b>	<b>-</b>	<b>\$2,660,154,639</b>	<b>100%</b>		<b>\$2,660,154,639</b>	<b>100%</b>	
<b>Large Cap</b>	<b>25</b>	<b>682,385,366</b>	<b>25.7</b>	<b>0.7</b>	<b>672,849,167</b>	<b>25.3</b>	<b>0.3</b>
Eagle		148,169,600	5.6		143,972,170	5.4	
Federated		2	0.0		0	0.0	
LSV Large Cap		143,936,827	5.4		143,333,415	5.4	
Polen		221,955,072	8.3		217,464,168	8.2	
SSgA S&P 500		113,121,142	4.3		113,121,142	4.3	
William Blair		55,202,723	2.1		54,958,272	2.1	
<b>Small Cap</b>	<b>15</b>	<b>405,987,052</b>	<b>15.3</b>	<b>0.3</b>	<b>401,745,302</b>	<b>15.1</b>	<b>0.1</b>
AMI		37,442,685	1.4		36,783,720	1.4	
Copeland		40,739,295	1.5		39,571,353	1.5	
Emerald		69,869,615	2.6		68,224,236	2.6	
LSV Small Cap		56,589,070	2.1		56,463,587	2.1	
Smith, Graham & Co		63,090,367	2.4		62,446,386	2.3	
SSgA Russell 2000		138,256,020	5.2		138,256,020	5.2	
<b>International Equity</b>	<b>15</b>	<b>402,709,708</b>	<b>15.1</b>	<b>0.1</b>	<b>391,042,620</b>	<b>14.7</b>	<b>-0.3</b>
GlobeFlex		4,292	0.0		4,292	0.0	
HGK		122,180,682	4.6		113,713,514	4.3	
Jarislowsky Fraser		303,979	0.0		303,935	0.0	
Johnston		125,362,457	4.7		122,162,581	4.6	
Mercator		18,151	0.0		18,151	0.0	
SSgA International		154,837,145	5.8		154,837,145	5.8	
WHV		3,002	0.0		3,002	0.0	
<b>Emerging Markets</b>	<b>10</b>	<b>250,547,615</b>	<b>9.4</b>	<b>-0.6</b>	<b>250,547,615</b>	<b>9.4</b>	<b>-0.6</b>
SSgA Emerging Mkts		250,547,615	9.4		250,547,615	9.4	
<b>Real Assets</b>	<b>20</b>	<b>502,413,604</b>	<b>18.9</b>	<b>-1.1</b>	<b>502,413,604</b>	<b>18.9</b>	<b>-1.1</b>
Forest		133,753,095	5.0		133,753,095	5.0	
PRISA I		52,416,298	2.0		52,416,298	2.0	
PRISA II		106,418,646	4.0		106,418,646	4.0	
TIAA N. Front St.		2,284,578	0.1		2,284,578	0.1	
TIAA CREF		207,540,987	7.8		207,540,987	7.8	
<b>Fixed Income</b>	<b>15</b>	<b>409,985,424</b>	<b>15.4</b>	<b>0.4</b>	<b>409,985,424</b>	<b>15.4</b>	<b>0.4</b>
SSgA BC Aggregate		409,985,424	15.4		409,985,424	15.4	
<b>Cash &amp; Equivalents</b>	<b>0</b>	<b>6,125,870</b>	<b>0.2</b>	<b>0.2</b>	<b>31,570,907</b>	<b>1.2</b>	<b>1.2</b>
BNY Cash		947,803	0.0		947,803	0.0	
STIP Cash		5,169,338	0.2		5,169,338	0.2	
Abel Noser Transitional		8,729	0.0		0	0.0	
Manager Cash		n/a	-		25,453,766	1.0	