Investment Section

CHIEF INVESTMENT OFFICER'S REPORT

INVESTMENT OVERVIEW

The Maryland State Retirement and Pension System returned 6.46 percent net of fees in fiscal year 2019, relative to the actuarial return target of 7.45 percent, and 7.09 percent for its policy benchmark. After the payment of benefits, the market value of assets increased by approximately $2.2 billion, from $52.0 billion on June 30, 2018 to $54.2 billion on June 30, 2019.

While all major asset classes achieved positive returns, the performance was not evenly distributed. The private equity and rate sensitive categories generated the best returns for the year, producing 13.7 percent and 9.4 percent, respectively. At the other end of the spectrum, absolute return and developed foreign stocks generated returns of 3.0 percent and 0.4 percent, respectively.

The Board's asset allocation policy is designed to achieve the actuarial rate of return over long periods of time by assembling a diversified portfolio of asset classes, each of which may have a large or small, positive or negative return in any given year. By assembling assets that exhibit distinct risk and return characteristics in different market environments, the Board expects more stable investment returns over time than a less diversified portfolio. This lower risk portfolio should result in a larger asset pool for the System's beneficiaries than a more volatile portfolio with the same average return. Understanding the Board's principals of asset allocation is important in evaluating the performance in any one-year period. While the realized return of 6.46 percent for fiscal year 2019 is below the Board's long-term expectation for the portfolio, it is well within its expected ranges for annual variations.

The System's asset allocation is organized into five broad categories: Growth/Equity, Rate Sensitive, Credit, Real Assets, and Absolute Return. During the fiscal year, the asset allocation remained unchanged from the prior year, as the long-term return expectations and risk profile of the portfolio remained consistent with the Board's objectives.

The Growth/Equity portfolio is comprised of public equity and private equity. Within public equity, there are dedicated allocations to U.S., international developed, and emerging markets. The objective of this asset class is to generate high returns associated with the economic growth underlying global economies.

The Rate Sensitive category consists of exposure to core, or investment-grade, bonds. This asset class is designed to provide protection against downturns in the equity market by offering a reliable income stream through the yield component. This yield also provides some protection against a deflationary environment, characterized by falling interest rates. This asset class includes long-term U.S. Treasury bonds, Treasury inflation protected securities, corporate bonds and securitized debt.

The purpose of the Credit asset class is to take advantage of the potential higher returns offered by below investment-grade bonds. The return objective is similar to public equity, with a lower risk profile. This category includes high yield bonds, bank loans, emerging markets debt, distressed debt, mezzanine debt, and other credit-focused investments.

Real Assets includes real estate, natural resources and infrastructure investments. A significant portion of the assets in this category provides a regular income stream. Due to the tangible, or real, element of this asset class, it is expected to provide some level of protection against an inflationary environment, as well as additional diversification to the total portfolio.

The objective of the Absolute Return asset class is to achieve a return that falls between the expectations for public equity and bonds, with low correlation to other asset classes. The risk profile of this asset class is expected to be significantly lower than public equity, which should provide protection during periods of stock market decline. Strategies in this asset class include event-driven, global macro, and relative value hedge funds, as well as insurance-related products.

INVESTMENT POLICY AND OBJECTIVES

The Board of Trustees is charged with the responsibility of managing the assets of the System. In doing so, the Board is required to exercise its fiduciary duties solely in the interest of the participants with the care, skill, and diligence that a prudent person would exercise under similar circumstances. This standard of care encourages diversifying investments across various asset classes.

Investment objectives are designed to support the fulfillment of the Board's mission to optimize risk-adjusted returns to ensure that sufficient assets are available to pay benefits to members and beneficiaries when due. As a long-term investor, the Board understands that short-term market returns will fluctuate.

These investment objectives are implemented in accordance with investment policies developed by the Board. The "prudent person standard", as outlined in both the Maryland Annotated Code and the Board's investment policies, allows the Board to set investment policies and delegate authority to investment professionals employing active and passive strategies. Firms retained generally have a demonstrated performance record and a clearly defined and consistently applied investment process.

The Board manages the assets for the System with the goal of achieving an annualized investment return that over a long-term time frame: (1) meets or exceeds the investment policy benchmark for the System; (2) in nominal terms, equals or exceeds the actuarial investment return assumption adopted by the Board; and (3) in real terms, exceeds the U.S. inflation rate by at least 3 percent. A more detailed discussion of each of these goals follows below.

1. **Meeting or exceeding the Investment Policy Benchmark for the System**. The Investment Policy Benchmark is calculated by using a weighted average of the Board-established benchmarks for each asset class. This benchmark enables the comparison of the actual performance of the System to a proxy portfolio, and provides a measure of the contribution of policy implementation and active management to overall fund returns.

2. **In nominal terms, equaling or exceeding the actuarial investment return assumption of the System.** The Board adopts the actuarial rate of interest, which was set at 7.45 percent for fiscal year 2019. The actuarial investment return assumption functions as an estimate of the long-term rate of growth of the assets for the System. In adopting an actuarial return assumption, the Board anticipates that the investment portfolio will achieve higher or lower returns each year but will trend toward 7.45 percent over time.

3. **In real terms, exceeding the U.S. inflation rate by at least 3 percent**. The inflation related objective compares the investment performance against a rate of inflation measured by the Consumer Price Index (CPI) plus 3 percent. The inflation measure provides a link to the liabilities of the System, which have an embedded sensitivity to changes in the inflation rate.

The Board is also responsible for establishing the asset allocation policy for the System. It does this by weighing three liability-oriented objectives when making asset allocation determinations. These objectives include:

1. achieving and maintaining a fully funded pension plan;
2. minimizing contribution volatility year to year; and
3. realizing surplus assets.

Asset allocation policy targets are determined by recognizing that liabilities (future benefit payments to the participants and beneficiaries of the System) must be paid in full and on time. The mix of asset classes is chosen to provide sufficient growth to meet the long-term return objective of the System, while providing sufficient diversification to moderate the volatility of that return. For example, a portfolio of equities will likely provide the required return over a long time horizon, but will subject the market value of the portfolio to unacceptable levels of volatility such that the goals of minimizing contribution volatility and realizing surplus assets would be difficult to achieve. Combining other asset classes with equities will provide differentiated return sources, reduce the volatility of returns and help realize those liability-oriented objectives.

The Board's long-term asset class targets and ranges as of June 30, 2019 are shown below.

ASSET CLASS	LONG-TERM POLICY TARGET	RANGE
Growth Equity	**50%**	**+/-7%**
U.S Equity	16%	
International Developed Equity	10%	
Emerging Markets Equity	11%	
Private Equity	13%	
Rate Sensitive	**19%**	**+/- 5%**
Long-term Government Bonds	10%	
MBS/Corporate Bonds	5%	
TIPS	4%	
Credit	**9%**	**+/- 4%**
High Yield Bonds/Bank Loans	7%	
Emerging Market Debt	2%	
Real Assets	**14%**	**+/- 4%**
Real Estate	10%	
Natural Resources/Infrastructure	4%	
Absolute Return	**8%**	**+/- 4%**
Total Assets	**100%**	

INVESTMENT PERFORMANCE

Investment performance is calculated using time-weighted rates of total return, including the impact of fees and expenses. Total return includes interest and dividends, as well as capital appreciation.

The investment program realized a return of 6.5 percent for fiscal year 2019. Annualized returns for the 3-, 5-, 10-, 20- and 25-year periods ending June 30, 2019 were 8.2 percent, 5.6 percent, 8.6 percent, 5.3 percent and 6.9 percent, respectively.

	FY 2019 SRPS Performance	FY 2019 Benchmark Performance	SRPS Exposure June 30, 2019
Public Equity	3.9%		36.4%
Custom Benchmark		10.6%	
U.S. Equity	8.2%		12.3%
Russell 3000		9.0%	
International Equity	0.4%		7.2%
MSCI World ex U.S.		1.3%	
Emerging Markets Equity	3.3%		9.4%
MSCI Emerging Markets		8.2%	
Global Equity	1.8%		7.5%
MSCI AC World Index		5.7%	
Private Equity	13.7%		14.0%
Custom State Street PE		10.9%	
Rate Sensitive	9.4%		18.2%
Custom Benchmark		9.8%	
BC U.S. Gov't Long Index		12.3%	
BC U.S. TIPS Index		4.9%	
Credit/Debt Strategies	6.5%		8.9%
Custom Benchmark		7.3%	
BC High Yield		7.5%	
S&P LSTA Leveraged Loan		4.0%	
JP Morgan GBI EM GD		9.0%	
JP Morgan EMBI GD		12.5%	
JP Morgan CEMBI Broad		10.7%	
Real Assets	5.3%		13.3%
Custom Benchmark		6.2%	
Absolute Return	3.0%		7.4%
Custom Benchmark		3.1%	
Multi-Asset	4.4%		1.3%
Custom Benchmark		7.1%	
Cash	2.3%		0.5%
Custom Benchmark		2.3%	
TOTAL FUND	**6.5%**	**7.1%**	**100%**

The allocation as of June 30, 2019 reflects the ranges and transitional targets of the System as described in the previous section.

ECONOMIC AND CAPITAL MARKET OVERVIEW

For fiscal year 2019, the System produced its tenth consecutive year of positive performance, as the length of the bull market in U.S. stocks achieved record status. While stocks of large companies located in the U.S., as represented by the S&P 500, achieved returns in excess of 10% for the fiscal year, the path of the return was marked by extreme volatility. In fact, fiscal 2019 can be characterized as a tale of two distinct economic regimes. During the first half of the fiscal year, the Federal Reserve continued with the rate tightening cycle that began in December 2015 by hiking twice, in September and December. This rising rate environment, coupled with the escalating trade tensions with China and concerns over the implication of an inverted yield curve, sparked investor fear of a global economic slowdown. As a result of this uncertainty, the S&P 500 plummeted by over 13% in the fourth quarter of 2018, ending the first half of the fiscal year down by almost 7%.

The beginning of calendar year 2019 saw a complete reversal for U.S. stocks, as the Federal Reserve pivoted its course and signaled a potential pause to the rising interest rate cycle that began in late 2015. This turnaround in policy was in response to the slowing of the Chinese economy, and the negative implications the escalating trade tensions with China would have on the global economy. The markets cheered this policy change and began to anticipate rate cuts by the Federal Reserve in an effort to extend the current economic expansion. The focus turned to the positive factors propelling the U.S. economy, namely strong gross domestic product readings, historically low unemployment rates below 4%, and benign inflation slightly below the target rate of 2%. These favorable conditions pushed U.S. equities higher in the second half of the fiscal year, with the S&P 500 rising more than 18%, erasing the negative returns produced in the first half of the fiscal year.

Fiscal year 2019 was somewhat unusual in that diversification in public stocks hurt investors. While large companies in the U.S. achieved strong returns in excess of 10% for the fiscal year, these returns were not broad-based across all equity markets. Smaller-sized companies in the U.S. struggled, as investors were willing to pay premium prices for large capitalization stocks, particularly growth-oriented companies in the technology sector. Smaller companies in the U.S., as represented by the Russell 2000, generated a negative return of -3.3%, underperforming large companies by over 13%. Non-U.S. stocks did not fare much better, as weaker growth in international economies relative to the U.S., coupled with concerns over slowing global growth relating to the trade tariffs, caused investors to prefer U.S. stocks to foreign equities. Foreign stocks, as represented by the MSCI All-Country World ex-U.S. index, generated a positive return of only 1.3%, trailing the S&P 500 by over 9%.

Fiscal year 2019 was also marked by extreme volatility in interest rates. As a result of the Federal Reserve raising the Federal Funds Rate nine times over a period of three years, the rate on the ten-year U.S. Treasury Note peaked at roughly 3.25% in November of 2018. Due to slowing global growth and indications that the Federal Reserve would end its hiking cycle, the ten-year rate dropped precipitously over the remainder of the fiscal year. As of June 30, 2019, the ten-year rate stood at 2.0%, representing a drop of about 1.25% from the November 2018 high. This decrease in interest rates provided a favorable environment for bonds, particularly the more duration-sensitive, long maturity portion of the treasury curve. In fact, long maturity U.S. Treasury bonds achieved higher returns than stocks, returning 12.3% for the fiscal year, versus 10.4% for the S&P 500.

PUBLIC EQUITIES

As of June 30, 2019, approximately $19.7 billion was invested in public equities, representing 36.4 percent of total assets. The public equity program consists of three components: U.S. equities, international developed equities and emerging markets equities.

The Terra Maria program, which seeks to identify promising smaller or developing management firms, is an integral part of the public equities asset class. As of June 30, 2019, 76 percent of the public market Terra Maria program was invested in equities, with 44 percent in international stocks. Each of the managers in the Terra Maria program has an active management mandate. A more detailed discussion of the Terra Maria program follows below.

A. U.S. Equities

As of June 30, 2018, approximately $6.4 billion, or 12.3 percent of total assets, was invested in U.S. public equities. Passively and enhanced-passively managed equities totaled $5.9 billion, while Terra Maria program assets were $509 million, representing 11.4 percent, and 0.9 percent of total assets, respectively.

U.S. Equity	$ Millions	% of Total Plan
Passively/Enhanced Managed	**$6,129**	**11.3%**
Terra Maria Program	**$483**	**0.9%**
Total U.S. Equity	**$6,612**	**12.2%**

For fiscal year 2019, U.S. equities returned 8.2 percent, compared to 9.0 percent for its benchmark, the Russell 3000 Index.

B. International Equities

As of June 30, 2019, approximately $3.9 billion, or 7.2% of total assets, was invested in international equities. Passively and enhanced-passively managed assets totaled approximately $1.6 billion, while actively managed assets outside of the Terra Maria program totaled approximately $1.2 billion and Terra Maria assets were $1.1 billion, representing 2.9%, 2.2% and 2.1% of total assets, respectively. As more fully described below, in 2009 the System instituted a currency overlay program which is designed to protect the value of some foreign equities in a rising dollar environment.

International Equity	$ Millions	% of Total Plan
Passively/Enhanced Managed	**$1,588**	**2.9%**
Actively Managed (excluding T.M.)	**$1,180**	**2.2%**
Terra Maria Program	**$1,149**	**2.1%**
Currency Overlay	**$0.0**	**0.0%**
Total International Equity	**$3,917**	**7.8%**

For fiscal year 2019, international equities, including the impact of the currency overlay program, returned 0.4%, compared to 1.3% for its benchmark, the MSCI World ex-U.S. Index.

C. Emerging Market Equities

As of June 30, 2019, approximately $5.1 billion, or 9.4% of total assets, was invested in emerging market equities. Actively managed long-only assets outside of the Terra Maria program totaled $4.6 billion, Terra Maria assets were $366 million, and passively-managed assets were $201 million, representing 8.3%, 0.70%, and 0.4% of total assets, respectively.

Emerging Equity	$ Millions	% of Total Plan
Passively Managed	**$202**	**0.4%**
Actively Managed (excluding T.M.)	**$4,552**	**8.3%**
Terra Maria Program	**$366**	**0.7%**
Total Emerging Markets Equity	**$5,120**	**9.4%**

For the fiscal year, the portfolio returned 3.3% compared to 1.2% for the MSCI Emerging Market Index.

D. Global Equities

As of June 30, 2019, approximately $4.1 billion, or 7.5% of total assets was invested in global equities, which includes both U.S. and foreign stocks. This portfolio is comprised of 100% active mandates.

Global Equity	$ Millions	% of Total Plan
Actively Managed	**$4,064**	**7.5%**
Total Emerging Markets Equity	**$4,064**	**7.5%**

For the fiscal year, the portfolio returned 1.8% compared to 5.7% for the MSCI AC World Index.

CURRENCY OVERLAY PROGRAM

The currency overlay program was implemented in May of 2009. An objective of the program is to provide insurance against a strengthening dollar, which could negatively impact returns from foreign currency denominated equities. The manager in this program uses a systematic currency overlay strategy and generally, does not make fundamental currency valuation assessments. The strategy is also dynamic in that the degree to which currency hedging is applied changes depending on currency market conditions. The manager in this program tends to use low hedge ratios when the dollar is weak, and high hedge ratios when the dollar is strong.

During fiscal year 2019, the currency program enhanced returns in the System's foreign equity holdings, as the U.S. dollar strengthened relative to other currencies. The currency hedging program generated $29.8 million in value during the fiscal year. In addition to generating positive results during fiscal year 2019, the currency program has served to reduce volatility and improve the risk/return profile of the System's non-U.S. equity exposure since its inception.

PRIVATE EQUITY

As of June 30, 2019, private equity totaled $7.6 billion, or 14.0% of total assets. This asset class includes buyouts, growth equity, venture capital, secondaries and funds-of-funds.

In fiscal year 2019, commitments were made to 21 private equity funds, totaling $1.7 billion. Since the inception of the private equity program in fiscal year 2005, $15.6 billion in commitments have been made to 225 different funds. Unfunded commitments totaled $4.8 billion as of June 30, 2019. Future commitments will follow a pacing model designed to maintain the 13% allocation target for invested assets. In fiscal year 2019, the private equity program returned 13.7%, compared to 10.9% for its benchmark, the State Street Private Equity Index. This return is net of all fees, expenses and carried interest.

RATE SENSITIVE

As of June 30, 2019, the rate sensitive portfolio represented $9.8 billion, or 18.1% of total assets. The rate sensitive portfolio returned 9.4% for the year, compared to 9.8% for its blended benchmark: 53% Barclays US Government Long Bond Index, 13% Barclays US Investment Grade Corporate Index, 13% Barclays US Securitized Index, and 21% Barclays US TIPS Index.

CREDIT/DEBT STRATEGIES

The credit/debt strategies portfolio totaled approximately $4.8 billion, representing 8.9% of total plan assets as of June 30, 2019. Investments in this asset class are held in both liquid and illiquid structures. Typical asset types in the portfolio include: mezzanine and distressed debt, high yield bonds, bank loans, and emerging market debt. The portfolio has a blended benchmark of 78 percent U.S. (80% BC U.S. Corporate High Yield Index, 20% S&P LSTA Leveraged Loan Index), and 22% Non-U.S. (50% BBG Barclays EM Local Government Index, 25% BBG Barclays EM Hard Currency Sovereign Index, 25% BBG Barclays EM USD Corporate Index). The portfolio returned 6.5% for the fiscal year, versus 7.3% for its benchmark.

REAL ASSETS

The real assets portfolio totaled approximately $7.2 billion, representing 13.3% of total assets as of June 30, 2019. The objectives of this asset class are to provide a level of protection against inflation, and to enhance diversification for the total fund. As of June 30, 2019, the largest component of the asset class was real estate, totaling $5.1 billion, or 9.4% of total assets. The remaining assets consisted of investments associated with natural resources and infrastructure totaling $2.2 billion or 4.0% of total assets.

The real assets portfolio returned 5.3% for the fiscal year, compared to 6.2% for its blended benchmark, which consists of approximately 70% real estate with the remainder in natural resources and infrastructure. Real estate achieved a 6.0% return, versus the real estate benchmark return of 7.7%. Much of the underperformance was due to a mismatch in the timing of the asset class returns relative to the benchmark return, as the benchmark return is typically lagged by one quarter and most of the assets reflect pricing as of June 30 2019. The natural resources and infrastructure portion of the portfolio outperformed its benchmark by 1.4%, as the private natural resources portfolio outperformed the public benchmark.

ABSOLUTE RETURN

The absolute return portfolio totaled approximately $4.0 billion, representing 7.4% of total assets as of June 30, 2019. The portfolio consists of event-driven, global macro, multi-asset, relative value multi-strategy, and opportunistic funds. Its goal is to provide diversification for the total plan through its low correlation to the broad financial markets. The absolute return portfolio returned 3.0%, compared to the 3.1% return for its benchmark, Hedge Funds Research, Inc. (HFRI) Fund of Funds Index: Conservative +1%.

TERRA MARIA PROGRAM

As previously mentioned, the Terra Maria program seeks to identify promising smaller or developing managers. The five public market program managers serve as an extension of staff to source investment managers, perform manager due diligence, monitor managers and prepare manager "hire/fire" and funding recommendations. The managers include Acuitas Investment Management, Attucks Asset Management, Capital Prospects LLC, FIS Group, and Leading Edge Investment Advisors.

Terra Maria publicly-traded assets totaled approximately $2.6 billion, or 4.8 percent of total assets at June 30, 2019. The program returned 0.15% for the fiscal year, underperforming its custom benchmark return of 0.32%. The relative performance results have remained positive since the April 2007 inception of the program.

At the end of fiscal year 2019, $11.9 billion, or 21.9 percent of the System's total assets, were managed by minority and women-owned firms.

INVESTMENT MANAGEMENT FEES

The asset allocation of the System is the primary determinant of return. The asset allocation is also the primary determinant in the cost of investing the assets. Thirty-one percent of the policy allocation does not have public market benchmarks and therefore does not have a passive option for implementation. These alternative assets such as closed-end limited partnerships used for private equity, infrastructure and some real estate, in addition to open-end partnerships used for real estate and hedge fund strategies are included in the asset allocation with the objective of earning higher returns over time, reducing risk by providing returns that are differentiated from stock and bond returns, or for both reasons.

These alternative assets are typically structured as limited partnerships with embedded profit sharing provisions to motivate the manager to make profitable investments, and to ensure alignment of interests. Carried interest represents the portion of the investment profits that is earned by managers, and is only paid if performance thresholds are achieved. The percentage of profits that is allocated to the manager is substantially lower than the amount received by the System. Because of this disproportionate sharing of profits, the amounts realized by the System far exceed any incentive earned by investment managers. Large amounts of carried interest should be considered a positive result, as this would imply much greater gains to the System. In calendar year 2018, the System realized an estimated $795.5 million in profits from these private alternative investments, while the investment managers, or general partners, earned roughly $162.5 million in carried interest incentives.

The Board is mindful of the negative effects fees have on net investment performance and is committed to aggressively negotiating fair and reasonable terms to mitigate the drag on performance, while maintaining exposure to investments that exhibit positive risk and return characteristics in a total portfolio context.

CONCLUSION

Fiscal year 2019 was unique in that the overall global stock market exhibited such a wide range of returns, where diversification into smaller U.S. and foreign stocks detracted from results. Each year one or two asset classes stand out as particularly strong performers. From year to year, the list of leading and lagging asset classes changes. While this year's performance would have been better if the entire public equity portfolio was allocated to large companies located in the U.S., this will not be the outcome every year. It is not possible to know ahead of time which asset class will perform best in any given year. Therefore, a key to successful long-term investing is diversification. The System's Board of Trustees has adopted a diversified allocation to allow it to collect the diversified risk premiums associated with the various asset classes. The best way to account for the unknown is to maintain a balanced and diversified portfolio that is designed to meet the long-term risk and return objectives in the most efficient way possible.

Respectfully submitted,

Andrew C. Palmer CFA
Chief Investment Officer

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MARYLAND STATE RETIREMENT AND PENSION SYSTEM

INVESTMENT PORTFOLIO SUMMARY
as of June 30, 2019 and 2018
(Expressed in Thousands)

	2019		2018	
	Fair Value	**% of Fair Value**	**Fair Value**	**% of Fair Value**
Rate Sensitive				
Fixed Income	$ 8,159,802	15.0 %	$ 8,155,151	15.7 %
Inflation linked bonds	2,159,487	4.0	2,000,831	3.9
(1) Cash (non-manager)	263,206	0.5	947,306	1.8
(2) Net cash & cash equivalents (manager)	-504,851	-0.9	163,872	0.3
Total Rate Sensitive	**10,077,644**	**18.6**	**11,267,160**	**21.7**
Credit				
Hight Yield Bond/Bank Loans	3,471,772	6.4	2,775,004	5.4
Emerging markets debt	1,013,022	1.9	1,323,123	2.5
(2) Net cash & cash equivalents (manager)	356,041	0.7	60,951	0.1
Total Credit	**4,840,835**	**9.0**	**4,159,078**	**8.0**
Equity				
Domestic stocks	6,565,295	12.1	6,384,482	12.3
Emerging markets stocks	5,017,336	9.3	4,846,222	9.4
Global stocks	4,013,443	7.4	4,106,295	7.9
International stocks	3,794,391	7.0	3,916,511	7.5
(2) Net cash & cash equivalents (manager)	322,607	0.6	230,648	0.4
Total Public Equity	**19,713,072**	**36.4**	**19,484,158**	**37.5**
Private Equity	**7,604,200**	**14.0**	**6,484,363**	**12.5**
Total Equity	**27,317,272**	**50.4**	**25,968,521**	**50.0**
Absolute Return	**4,013,023**	**7.4**	**4,363,245**	**8.4**
Real Estate (includes private)	**5,064,575**	**9.3**	**4,624,011**	**8.9**
Multi Asset	**651,962**	**1.2**	**-**	**-**
Natural Resources & Infrastructure	**2,132,249**	**3.9**	**1,524,763**	**2.9**
(2) Net cash & cash equivalents (manager)	**107,045**	**0.2**	**49,812**	**0.1**
Total Portfolio	**$ 54,204,605**	**100.0 %**	**$51,956,590**	**100.0 %**

(1) Securities lending collateral payable has been netted against the actual collateral. The amounts net to zero.
(2) Includes investment receivables and payables.

Note: This schedule includes assets invested on behalf of the Maryland Transit Administration.

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

INVESTMENT PORTFOLIOS BY MANAGER
as of June 30, 2019
(Expressed in Thousands)

	Fair Value	Investment Advisory Fees
Public Equity		
RhumbLine Advisors	$ 4,834,045	$ 1,286
D E Shaw & Co., LP	1,891,146	6,428
AQR Capital Management, LLC	1,480,809	5,102
Baillie Gifford & Company	1,437,665	6,564
Dimensional Fund Advisors, Inc.	1,384,192	6,158
T. Rowe Price Associates, Inc.	930,815	1,460
Marshall Wace	828,291	19,719
Axiom International Investors	804,529	6,085
Longview Partners Ltd.	704,961	3,581
FIS Group, Inc.(1)	661,230	3,988
Artisan Partners Limited Partnership	611,401	2,640
Westwood Global Investment	570,346	3,417
Brown Capital Management	568,264	2,809
Fisher Investments	493,358	2,839
Attucks Asset Management, LLC (1)	428,246	2,441
Leading Edge Invest. Advisors, LLC (1)	421,291	2,219
Polunin Capital Management	412,458	3,590
Capital Prospects, LLC (1)	387,703	2,233
Equity Long Short (1)	362,773	2,420
Acadian Asset Management	263,260	1,315
State Street Global Advisors	129,695	124
Acuitas Asset Management (1)	95,105	820
Record Currency Management	(116)	4,431
Other (2)	11,605	2,084
Total Public Equity	**$19,713,072**	**$ 93,753**

	Fair Value	Investment Advisory Fees
Fixed Income Manager		
State Street Global Advisors	$ 4,115,800	$ 579
Pacific Investment Management Company	2,939,609	3,890
Western Asset Management	2,580,371	3,964
Pine Bridge Investments LLC	648,108	922
Capital Prospects, LLC (1)	634,835	1,355
MetLife Investment Management	538,698	1,056
TIPS MD	497,610	N/A
Credit Suisse Asset Management	486,187	1,179
Double Line US Securitized	425,967	635
Dodge & Cox	332,892	618
Cash & Cash Equitization	263,206	N/A
Nominal FI Income Structural/Tactical	38,870	N/A
Other (2)	16,565	1,035
Total Fixed Income	**$13,518,718**	**$ 15,233**
Alternative Investment		
Private Equity Funds (1)	$ 7,604,200	$ 110,473
Credit/Debt Related (1)	1,399,958	18,678
Multi-Asset (3)	725,130	1,445
Absolute Return (1)	4,021,770	72,869
Real Assets		
Natural Resources & Infrastructure (1)	2,150,365	15,690
Private Real Estate (1)	4,541,164	36,136
Morgan Stanley Investment Management	284,615	2,291
State Street Global Advisors	246,466	174
Record Currency Management	(670)	270
Other (2)	(183)	5,440
Total Alternative Investments	**$20,972,815**	**$ 263,466**
Total	**$54,204,605** (4)	**$ 372,452** (5)

(1) Sub-managers separately listed on the following pages
(2) Consulting fees and/or investment managers no longer under contract as of 6/30/19
(3) Assets that represent the overall allocation.
(4) Includes assets invested on behalf of the Maryland Transit Administration.
(5) Includes management fees allocated to the Maryland Transit Administration.

Note: Investment Advisory Fees represents management fees invoiced or reported on capital statements.

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

ALTERNATIVE INVESTMENTS RELATIONSHIP LISTING

as of June 30, 2018

Private Equity

1315 Capital, LP
1315 Capital II, LP
Abbott Capital Private Equity Fund III, LP
Adams Street Partners, LLC
Advent Central & Eastern Europe IV, LP
Advent International GPE V D, LP
Advent International GPE VI A, LP
Advent International GPE VIII B, LP
Apax Europe VI A, LP
Apax Europe VII A, LP
Apax France IX
Apax IX
Apollo Investment Fund VII (AIF), LP
Apollo Investment Fund VIII (AIF), LP
Apollo Investment Fund IX (AIF), LP
Arcadia II Beteiligungen BT GmbH & Co
Astorg VI
Astorg VII
Audax Private Equity Fund II, LP
Audax Private Equity Fund III, LP
Audax Private Equity Fund IV, LP
Audax Private Equity Fund V, LP
Bain Capital Asia Fund III
Bain Capital Europe Fund IV, LP
Bain Capital Life Sciences Fund, LP
Bain Capital Fund IX, LP
Bain Capital IX Coinvestment Fund, LP
Bain Capital Fund X, LP
Bain Capital X Coinvestment Fund, LP
Bain Capital Fund XI, LP
Bain Capital Fund XII, LP
Baring Asia Private Equity Fund VI, LP
Baring Asia Private Equity Fund VII, LP
Black River Capital Partners Fund (Agr. A) LP
Blackstone Capital Partners VI, LP
Blackstone Capital Partners VII, LP
Blue Wolf Capital Fund III, LP
Blue Wolf Capital Fund IV, LP
Bridgepoint Europe Fund V,LP
Bridgepoint Europe Fund VI,LP
CDH Fund V, LP
Charterhouse Capital Partners VIII, LP
Clayton, Dubilier & Rice Fund VIII, LP
Clayton, Dubilier & Rice Fund IX, LP
Clayton, Dubilier & Rice Fund X, LP
Clearlake Capital partners III, LP
Clearlake Capital partners IV, LP
Clearlake Capital partners V, LP
Coller Capital Partners VI, LP
Coller Capital Partners VII, LP
Crescent Capital Partners IV, LP
Crescent Capital Partners V, LP
CVC European Equity Partners V-B, LP
CVC Capital Partners VII, LP
Dover Street VII, LP
Equistone Partners Europe Fund IV, LP
Equistone Partners Europe Fund V, LP
Equistone Partners Europe Fund VI, LP
Everstone Capital Partners II, LLC
Everstone Capital Partners III, LLC
Frazier Healthcare V, LP
Frazier Healthcare VI, LP
Frazier Healthcare VII, LP
Frazier Healthcare Growth Buyout Fund VIII, LP
Frazier Healthcare Growth Buyout Fund IX, LP
Frazier Life Sciences VIII, LP
Frazier Life Sciences IX, LP
Frontier Fund III, LP
Frontier Fund IV, LP
Frontier Fund V, LP
GGV Capital VII, LP
GGV Capital VII Plus, LP
GGV Discovery II, LP
Goldman Sachs Vintage Fund V, LP
Great Hill Equity Partners III, LP
Great Hill Equity Partners IV, LP
Great Hill Equity Partners V, LP
Great Hill Equity Partners VI, LP
Green Equity Investors VII
HarbourVest Partners VI - Buyout Fund, LP
HarbourVest Partners VI - Partnership Fund, LP
Hellman & Friedman Capital Partners VI, LLC
Hellman & Friedman Capital Partners VII, LLC
Hellman & Friedman Capital Partners VIII, LLC
Hg Capital 5, LP
Hg Capital 6A, LP
Hg Capital 7C, LP
Hg Capital 8 A, LP
Hg Capital Mercury A, LP
Institutional Venture Partners XV
Institutional Venture Partners XVI
Landmark Equity Partners XIV, LP
Landmark Equity Partners XV, LP
Landmark Equity Partners XVI, LP
Landmark Equity Partners Co-Investment Fund XVI, LP
Lexington Capital Partners, VII
Lexington Middle Market Investors III, LP
Lexington Middle Market Investors IV, LP
Lexington Co-Investment Partners IV
Lion Capital Fund I, LP
Littlejohn Fund III, LP
Littlejohn Fund IV, LP
Littlejohn Fund V, LP
LLR Equity Partners IV, LP
LLR Equity Partners V, LP
Longitude Venture Partners, LP
Longitude Venture Partners II LP
Longitude Venture Partners III LP
Madison Dearborn Capital Partners V, LP
Madison Dearborn Capital Partners VI, LP
Madison Dearborn Capital Partners VII, LP
Maryland Innovation Opportunity Fund I
MBK Partners Fund III, LP
MBK Partners Fund IV, LP
MD Asia Investors, LP
MD Asia Investors II, LP
MD Asia Investors III, LP
Navis Asia Fund VI, LP
New Mainstream Capital Fund II, LP
New Mainstream Capital Fund III, LP
New Mountain Partners III, LP
New Mountain Partners IV, LP
New Mountain Partners V, LP
North Sky Clean Tech Fund IV, LP
Orchid Asia V, LP
Orchid Asia VI, LP
Orchid Asia VII, LP
PAG Asia Capital II, LP
Pacific Equity Partners V, LP
Partners Group Secondary 2008, LP
Partners Group Secondary 2011, LP
Partners Group Emerging 2011, LP
Partners Group Secondary 2015, L.P
Point 406 Ventures II, LP
Point 406 Ventures III, LP
Point 406 Ventures 2016 Opportunities Fund
Roark Capital Partners IV, LP
Roark Capital Partners V, LP
Silver Lake Partners V, LP
TA X, LP
TA XI, LP
TA XII, LP
TDR Capital III, LP
TDR Capital IV, LP
Thoma Bravo Fund XII, LP
Thoma Bravo Fund XIII, LP
Tiger Iron Oldline Fund, LP
TPG Partners VI, LP
TPG Partners VII, LP
Vista Equity Partners Fund IV, LP
Vista Equity Partners Fund V, LP
Vista Equity Partners Fund VI, LP
Vista Equity Partners Fund VII, LP
Vista Foundation Fund II, LP
Vista Foundation Fund III, LP
Vistria Fund I, LP
Vistria Fund II, LP
Wind Point Partners VII, LP
Wind Point Partners VIII, LP

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

ALTERNATIVE INVESTMENTS RELATIONSHIP LISTING
as of June 30, 2019
(continued)

Private Real Estate

AEW Senior Housing Fund II, LP
Carmel Partners Investment Fund VII
CBRE US Core Partners
CBRE Strategic Partners US Value 6, LP
CBRE Strategic Partners US Value 7, LP
Covenant Apartment Fund VII
Federal Capital Partners Fund II
Federal Capital Partners Fund III
Frogmore Real Estate Partners II, LP
GI Partners Fund III, LP
GI Partners Fund IV, LP
Heitman America Real Estate Trust
JP Morgan Investment Management Inc
LASALLE Property Fund
Lion Industrial Trust
Lone Star Real Estate Fund II, LP
Lone Star Real Estate Fund III, LP
Lone Star Real Estate Fund IV, LP
Lone Star Real Estate Fund V, LP
Lubert Adler Real Estate Fund VI
Lubert Adler Real Estate Fund VI A
Morgan Stanley Prime Property Fund, LLC
Realty Associates Fund X
Rockwood Capital R E Partners Fund VIII, LP
Rockwood Capital R E Partners Fund IX, LP
Scout Fund II, LP
Starwood Hospitality Fund II, LP
Tristan Capital- European Special Opps 3
Tristan Capital- European Special Opps 4
Tristan Capital- European Special Opps 5
UBS Trumbull Property Fund
Waterton Residential Property Venture XIII

Real Return

Alinda Infrastructure Fund II, LP
Domain Timber Investments III
EIF US Power Fund IV, LP
Energy and Minerals Group V, LP
Energy and Minerals Group V-Accordion, LP
First Reserve Fund XII, LP
First Reserve Fund XIII, LP
Global Timber Investors 9
Hancock Timberland X, LP
Harvest Fund Advisors, LLC
Natural Gas Partners IX, LP
Natural Gas Partners X, LP
Natural Gas Partners XI, LP
Natural Gas Partners XII, LP
NGP Midstream & Resources, LP
Quantum Energy Partners IV, LP
Quantum Energy Partners V, LP
Quantum Energy Partners VI, LP
Quantum Energy Partners VII, LP
RMS Forest Growth III, LP
Tortoise Capital Advisors, LLC
White Deer Energy, LP

Absolute Return

1977 Merger Arbitrage Fund
Aristeia Capital
Aristeia-Coinvest
BlackRock Absolute Return Structural
Bridgewater All Weather
Bridgewater Pure Alpha
Carlson Double Black Diamond
Clover Parallel LLC
Empyrean Capital Fund
Exodus Point
Fort Global Contrarian
Graham Tactical Trend
Hudson Bay Fund
ILS Property & Casualty Fund
King Street Capital, LP
Lone Star Fund XI
Nephia Palmetto Fund
Nimbus Weather Fund Ltd
Petershill Private Equity
Shoals Financial Opportunity Fund, LP
Standard General Fund

FIXED INCOME RELATIONSHIP LISTING
as of June 30, 2019

Credit/Debt Related

Alchemy Special Opps Fund II, LP
Alchemy Special Opps Fund III, LP
Apollo Credit Opps Fund III, LP
CarVal Credit Value Fun I, LP
CarVal Credit Value Fund II, LP
CarVal Credit Value Fund III, LP
CarVal Credit Value Fund IV, LP
Castle Lake III, LP
Castle Lake IV, LP
Castle Lake V, LP
Crescent Capital Mezzanine Partners VI, LP
EIG Energy Fund XV, LP
EIG Energy Fund XVI, LP
Falcon Strategic Partners III, LP
Falcon Strategic Partners IV, LP
Garda Firvo
GSO Credit Alpha Fund II
KKR Mezzanine Partners I, LP
Merit Mezzanine Fund V, LP
Oaktree European Principal Fund III, LP
Oaktree Opportunity Fund VIII, LP
Oaktree Opportunity Fund VIIIB, LP
Oaktree Principal Fund V, LP
Park Square Capital Partners II, LP
Partners Group European Mezzanine 2008, LP
Peninsula Fund V, LP
Perella Weinberg Partners
Prudential Capital Partners III, LP
Prudential Capital Partners IV, LP
Shoreline China Val Fund III, LP
TA Subordinated Debt Fund III, LP
Varde Fund X, LP
Wayzata Opportunities Fund III, LP

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

TERRA MARIA PROGRAM
as of June 30, 2019

Terra Maria Program

Acuitas
Altravue Capital
Matarin Capital Management
Signia Capital Management

Attucks Asset Management
ARGA Investment Management, LP
Globe Flex Capital LP
Metis Global Partners
Paradigm Asset Management Company, LLC
Redwood Investments, LLC

Capital Prospects LLC
Birch Run Investments
Garcia Hamilton and Associates
Inview Investment Management, LLC
Lebenthal Lisanti Capital Growth LLC
Longfellow Investment Management
LM Capital Group LLC
Matarin Capital Management
New Century Advisors
Pacific Ridge Capital Partners
Pacific View Asset Management
Profit Investment Management
Pugh Capital Management
Ramirez Asset Management
Semper Capital Management
Sky Harbor Capital Management

FIS Group
Algert Global, LLC
Ativo Capital Management, LLC
Denali International Small Value
EAM Investors
FIS Emerging CIT
- Aubrey Capital Management
- Bayard Asset Management
- Change Global Investment
- Channing Global
- FIS Tactical Completion Fund

Global Alpha Capital Management
Metis Global Partners

Leading Edge Investment Advisors
Ativo Capital Management
Blackcrane Capital LLC
Black Creek Investment Management, Inc.
Henry James International
Redwood Investments, LLC
Strategic Global Advisors

Bold denotes Program Manager for the Terra Maria Program

EQUITY RELATIONSHIP LISTING
as of June 30, 2019

Equity Long/Short

Hoplite OnShore
Indus-Pacific Opportunities Fund
Marshall Wace TOPS China
Marshall Wace Eureka Fund

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

EQUITY COMMISSIONS TO BROKERS
for the Fiscal Year Ended June 30, 2019
(Expressed in Thousands)

Brokers (1)	Total Shares	Total Commission
Instinet	94,576	$ 399
UBS Securities	82,058	386
Cowen Execution Services	71,200	346
Morgan Stanley	79,394	301
J P Morgan Securities	57,819	237
Goldman Sachs	59,011	220
Loop Capital Markets	15,568	216
Credit Suisse Securities	90,858	201
Citigroup Global Markets	26,492	187
Merrill Lynch	68,551	183
Jefferies & Company	31,233	170
BNP Paribas Securities	23,291	130
Macquarie Bank Limited	31,916	122
Other Broker Fees	283,555	2,296
Total Broker Commissions	**1,015,522**	**$ 5,394**

(1) Proceeds from the sale and disbursements for the purchase of securities are reported net of brokers' commissions. As such, brokers' commissions are not included as investment expenses on the Statement of Changes in Plan Net Assets. Other broker fees include 166 brokers each receiving less than $100,000 in total commissions.

For the fiscal year ended June 30, 2019, total broker commissions averaged .53 cents per share.

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

LARGEST STOCK & BOND HOLDINGS AT MARKET
as of June 30, 2019

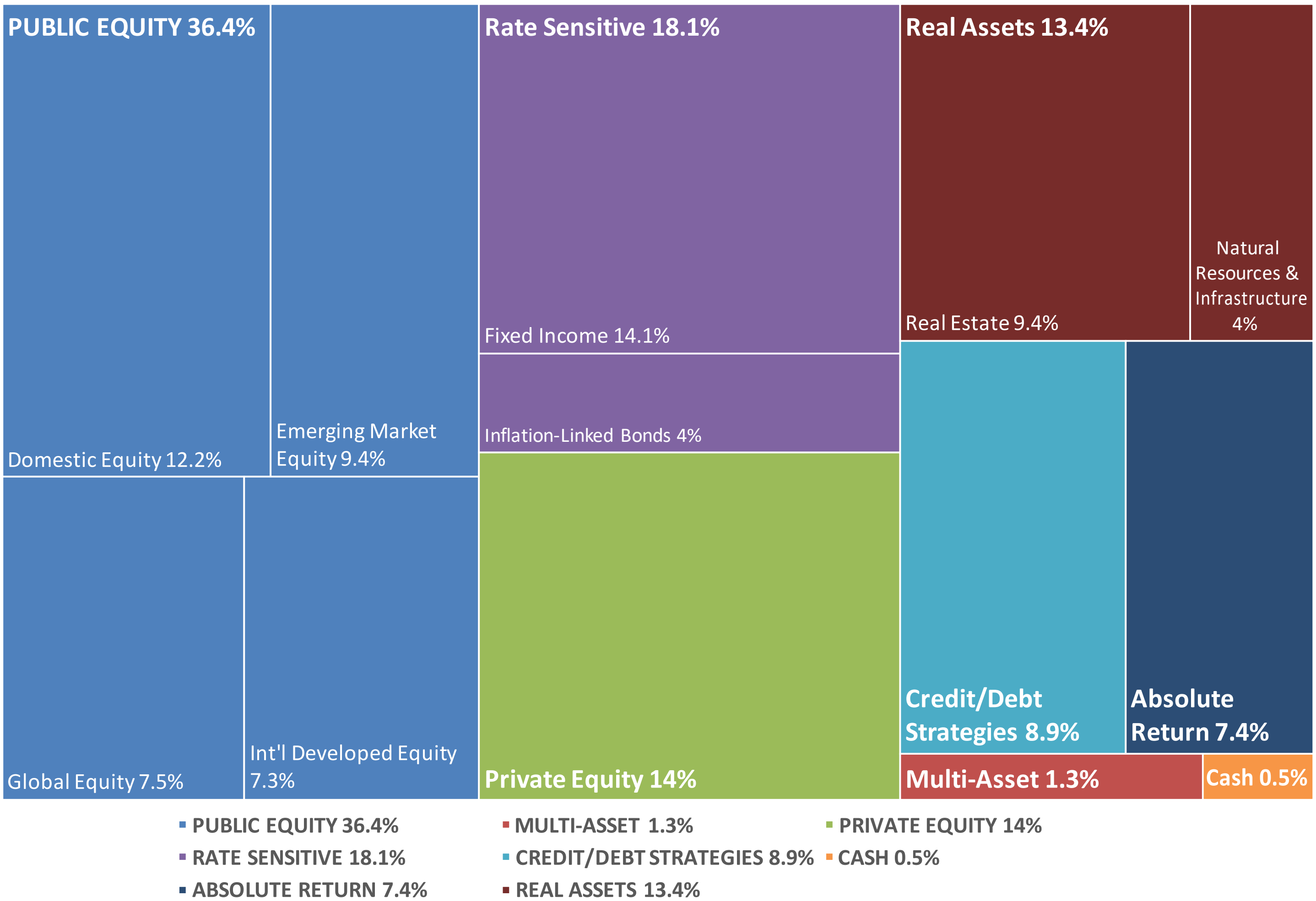
EQUITY INCOME SECURITIES:	Shares	Fair Value
Amazon.Com Inc.	110,661	$ 209,550,989
Microsoft Corporation	1,313,747	175,952,977
Apple Inc.	770,669	152,530,808
Alphabet Inc.	131,909	142,695,225
Facebook Inc. A	583,543	112,623,799
Tencent Holdings Ltd	1,876,500	84,691,699
Alibaba Group Holdings SP ADR	486,789	82,486,396
Samsung Electronics Co. Ltd.	1,918,372	78,087,285
Johnson & Johnson	556,156	77,461,408
Nestle SA Reg	717,592	74,379,331
Wells Fargo & Company	1,452,032	68,710,154
Illumina Inc.	182,855	67,318,068
Merck & Co. Inc.	753,504	63,181,310
UnitedHealth Group Inc.	247,417	60,372,222
Medtronic PLC	611,121	59,517,074

FIXED INCOME SECURITIES:	Par Value	Fair Value
United States Treasury Bonds, 2.875% May 15, 2043	$ 247,200,000	$ 264,387,816
United States Treasury Bonds, 4.375% Nov 15, 2039	181,800,000	241,723,098
United States Treasury Bonds, 3.0% May 15, 2045	202,250,000	221,172,510
United States Treasury Bonds, 3.75% Nov 15, 2048	170,370,000	200,551,046
United States Treasury Bonds, 4.625% Feb 15, 2040	122,650,000	168,399,677
United States Treasury Bonds, 3.75% Nov 15, 2043	135,385,000	166,661,643
United States Treasury Bonds, 4.25% May 15, 2039	119,940,000	156,905,508
United States Treasury Bonds, 3.0% May 15, 2047	141,114,000	154,548,053
United States Treasury Notes, 2.25% Aug 15, 2027	150,680,000	154,335,497
United States Treasury Bonds, 3.125% May 15, 2048	129,035,000	144,791,464
United States Treasury Bonds, 3.0% Nov 15, 2044	127,700,000	139,512,250
United States Treasury Bonds, 3.0% Feb 15, 2049	121,250,000	133,166,450
United States Treasury Bonds, 2.75% Aug 15, 2047	123,210,000	128,590,581
United States Treasury Bonds, 3.625% Aug 15, 2043	105,620,000	127,490,733
United States Treasury Bonds, 3.0% Feb 15, 2048	111,200,000	121,820,712

A complete list of portfolio holdings is available upon request.

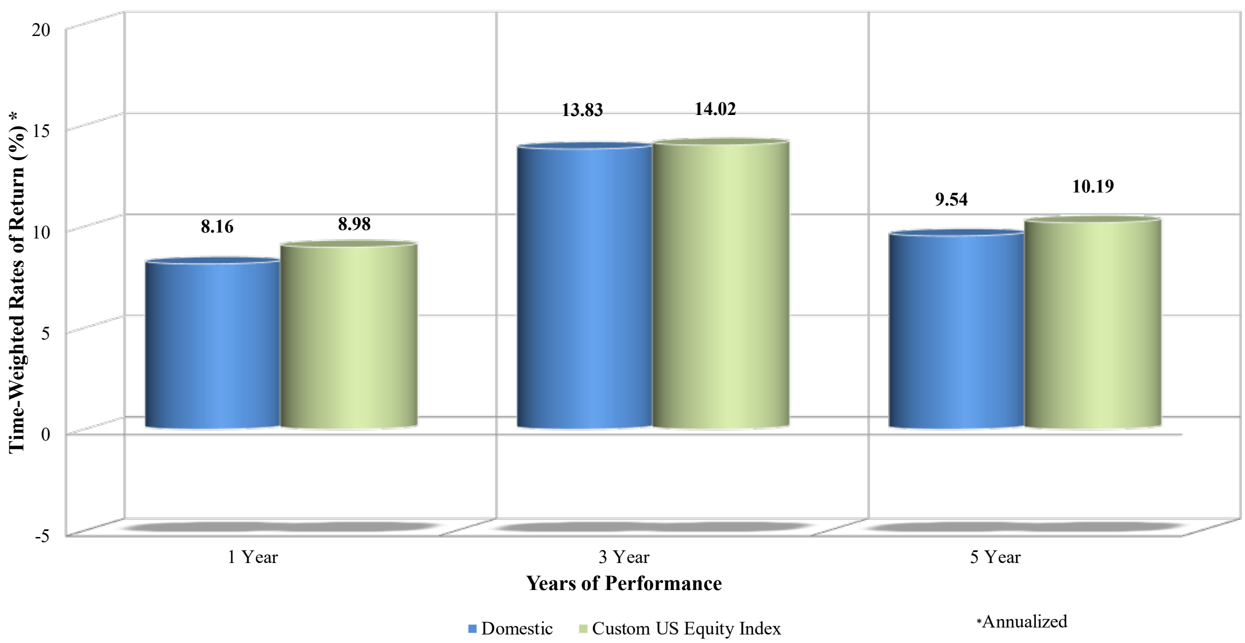
MARYLAND STATE RETIREMENT AND PENSION SYSTEM

INVESTMENT PORTFOLIO ALLOCATION
as of June 30, 2019

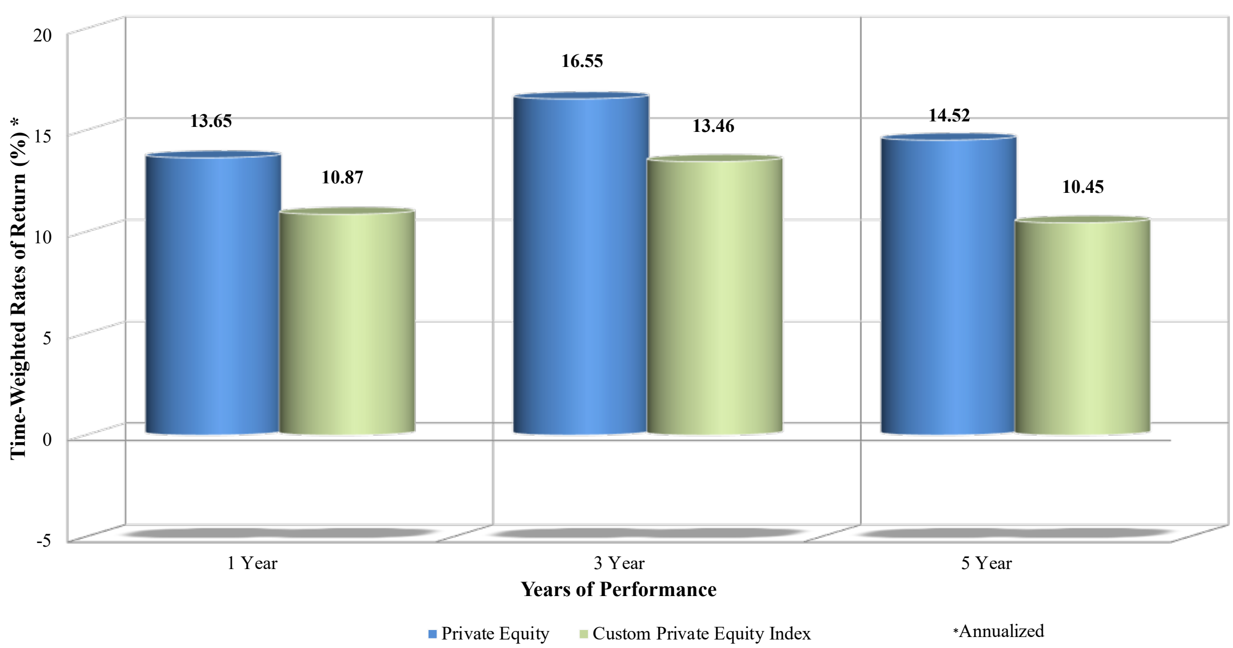


MARYLAND STATE RETIREMENT AND PENSION SYSTEM
COMPARATIVE INVESTMENT RETURNS ENDING JUNE 30, 2019

DOMESTIC EQUITY

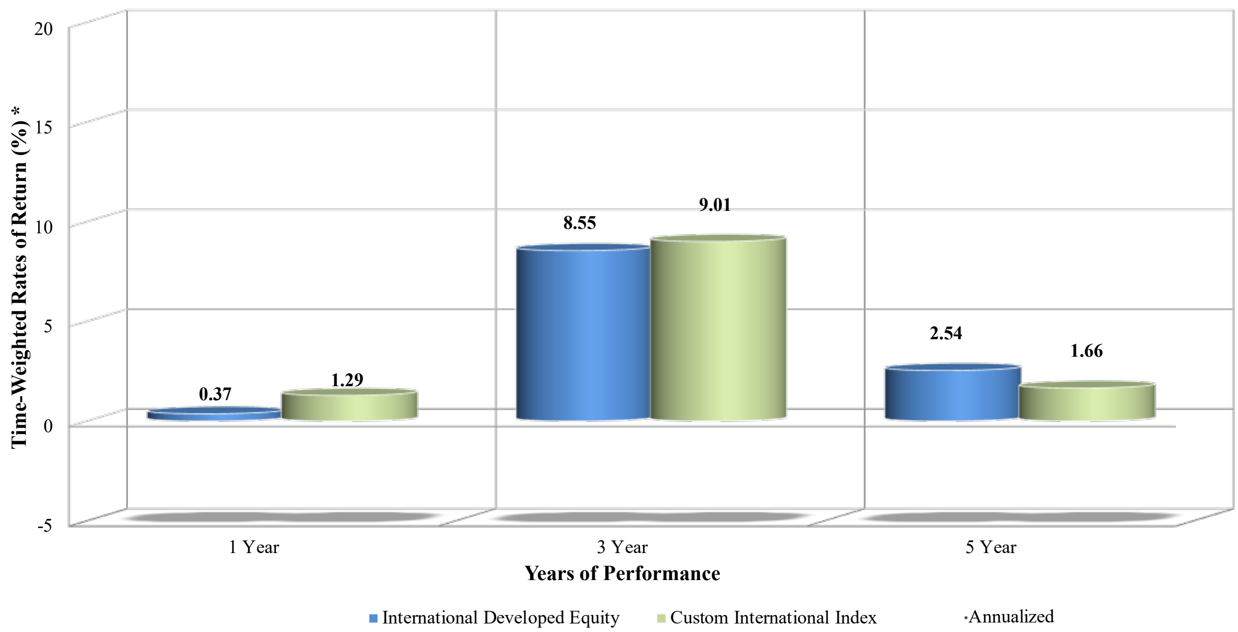


PRIVATE EQUITY

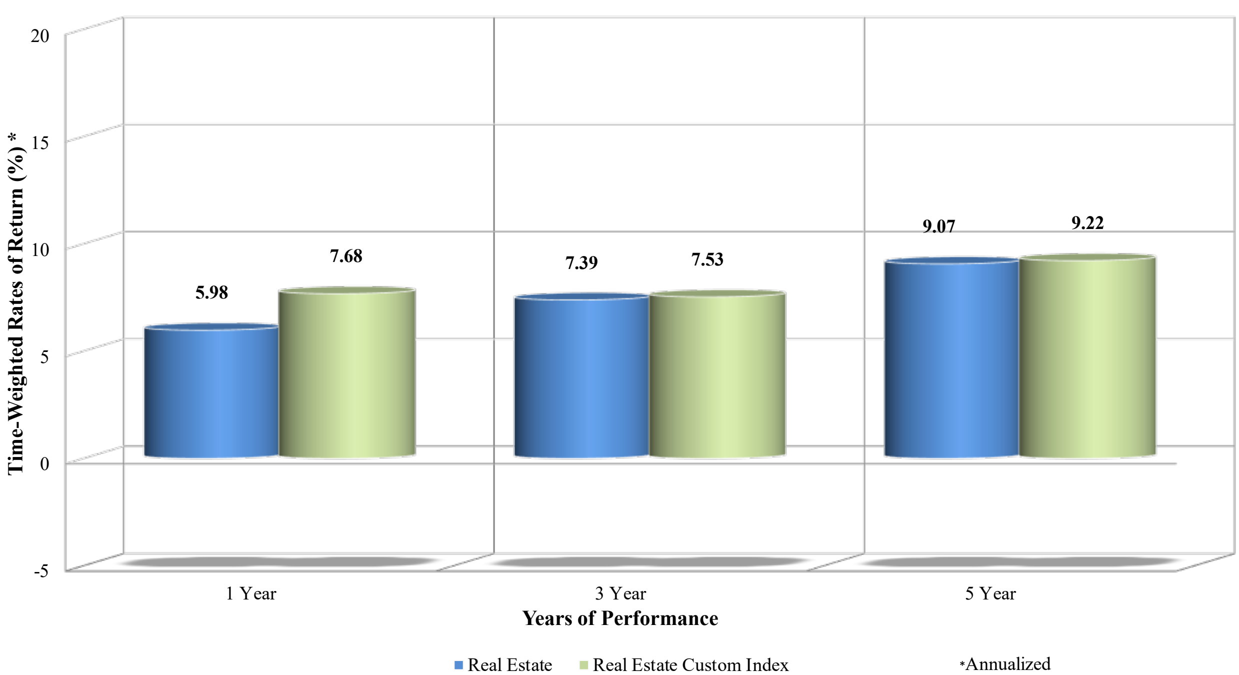


MARYLAND STATE RETIREMENT AND PENSION SYSTEM
COMPARATIVE INVESTMENT RETURNS ENDING JUNE 30, 2019

INTERNATIONAL DEVELOPED EQUITY

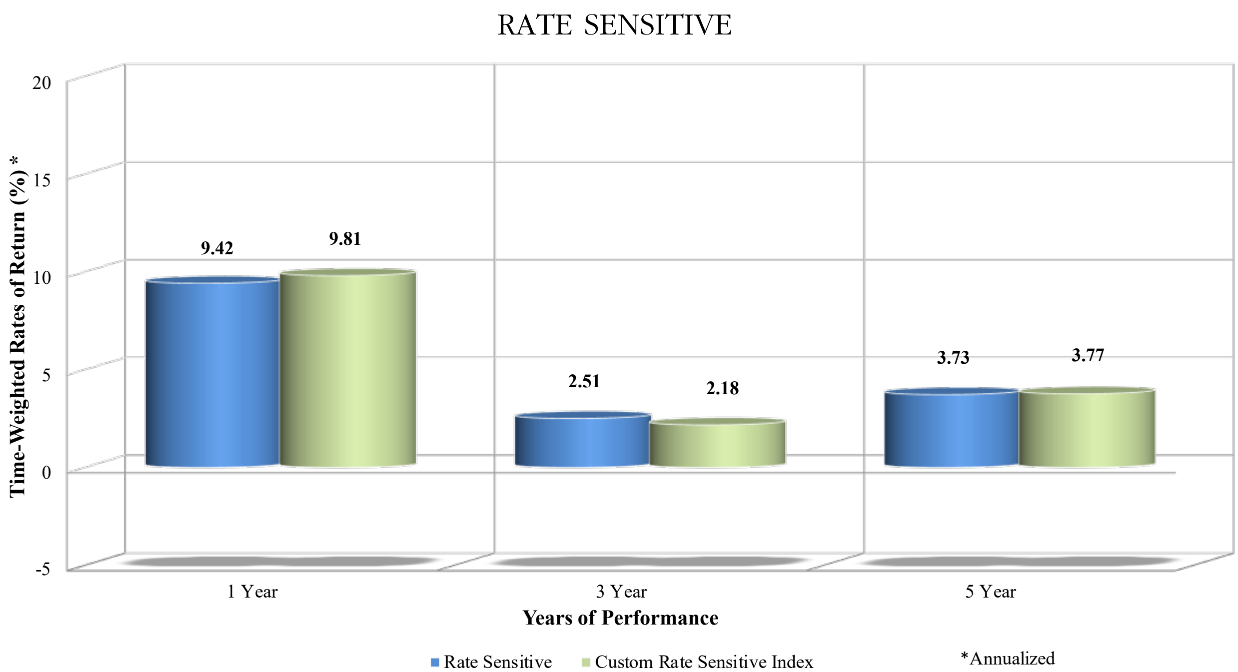


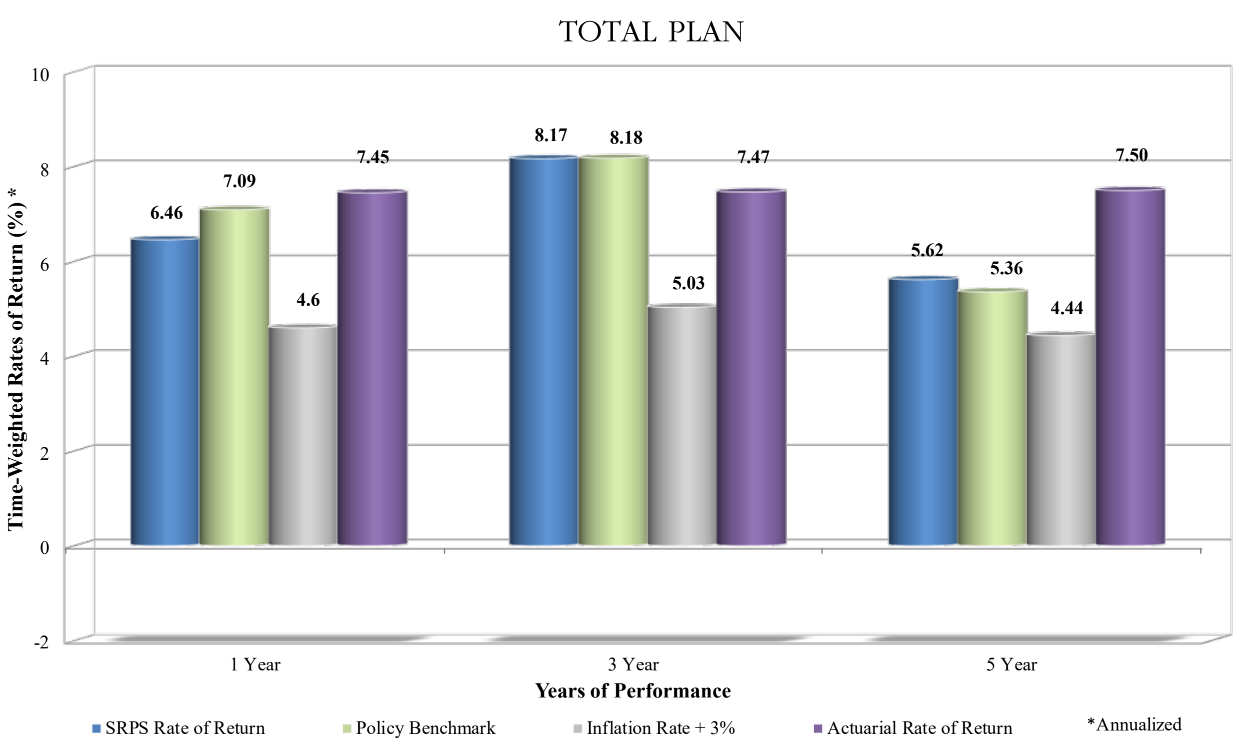
REAL ESTATE



MARYLAND STATE RETIREMENT AND PENSION SYSTEM

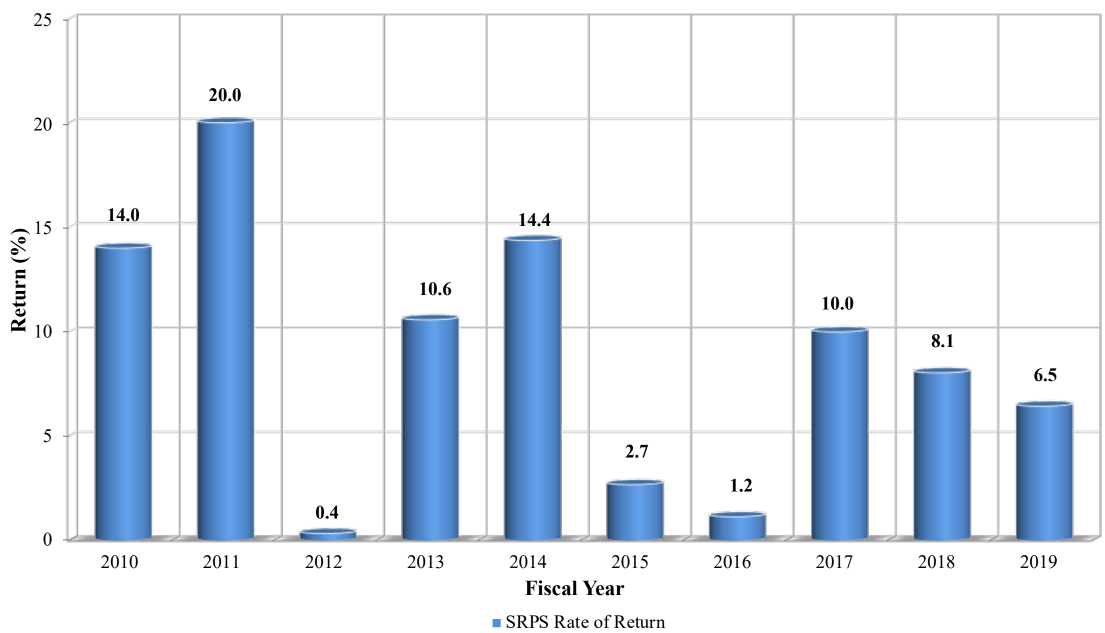
COMPARATIVE INVESTMENT RETURNS ENDING JUNE 30, 2019



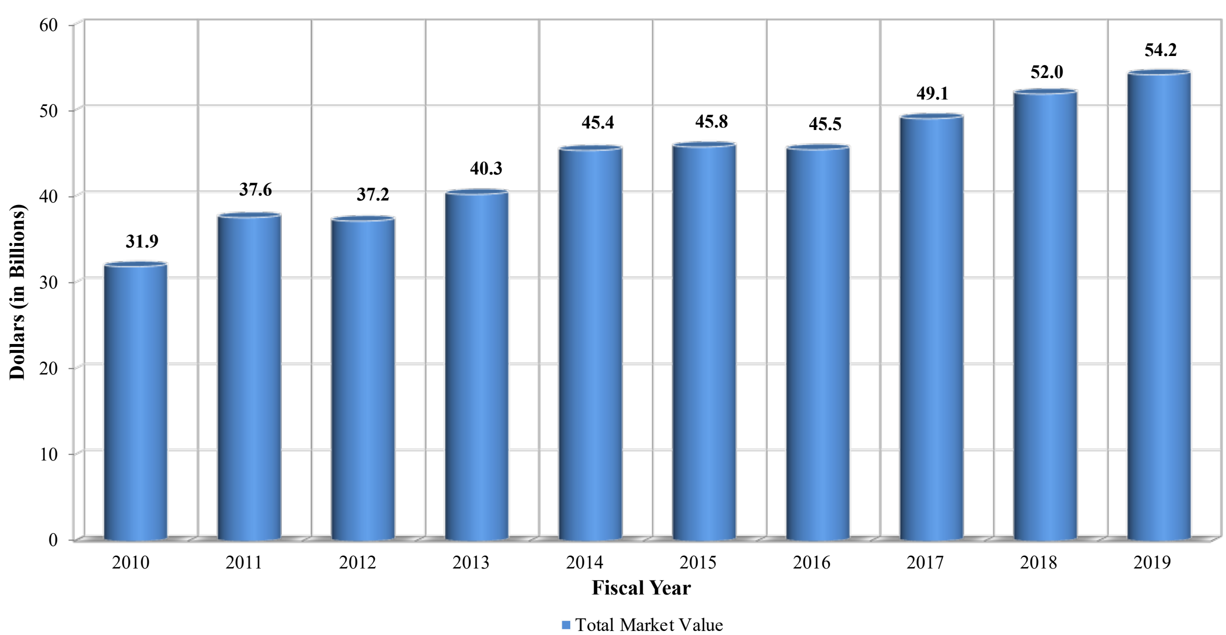


MARYLAND STATE RETIREMENT AND PENSION SYSTEM

TEN-YEAR HISTORY OF TIME-WEIGHTED ANNUAL RETURNS



TEN-YEAR GROWTH OF INVESTMENT PORTFOLIO



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