

## A tradition of innovation.

A tradition, by definition, involves the preservation and continuation of valued information, customs or actions over time. At the same time, traditions are enhanced over time, through growth and adaptation leading to new and better ways of doing things.

The tradition of PSRS/PEERS investments is to employ an effective and intuitive, risk-based approach to asset allocation decisions and investment management.

Since  
1946

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## Letter from Willis Towers Watson



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November 7, 2016

To the Members of the Board:

Fiscal year 2016 saw mixed results in equity markets, with U.S. equities producing slightly positive returns while international developed and emerging markets finished the year in negative territory. The year began with stocks tumbling due to concerns of an economic slowdown and uncertainty around U.S. monetary policy. Volatility continued in Europe, closing the fiscal year with news of the United Kingdom's decision to leave the European Union. Emerging markets were down despite a strong performance during the last two quarters of the fiscal year. Domestic fixed income markets outpaced global equities as both longer dated U.S. government bonds and credit bonds rallied as interest rates declined. The focus of the coming year will remain on the global economic outlook and when the Fed will, and at what pace, decide to raise interest rates further.

PSRS and PEERS plans are combined to show one performance number for the consolidated Missouri Education Pension Trust (MEPT). The Total Fund return for the fiscal year ended June 30, 2016 was 1.8% for MEPT, which was in line with the policy benchmark return of 1.8%. The MEPT fiscal year return for public risk assets was negative with a return of -1.1% while safe assets were positive for the year at +4.9%. MEPT private risk assets returned +8.7% vs. +5.3% for its benchmark.

The Fund continues to evolve through the ongoing review of the asset allocation, both at the Total Fund and asset class levels. In doing so, PSRS/PEERS continues to take advantage of internal and external resources, as was done with the completion of the asset liability modeling study this fiscal year, in their effort to manage the portfolio through a unique, forward looking market environment.

In the next fiscal year, Willis Towers Watson will continue to work with the PSRS/PEERS internal investment staff, supporting the implementation of the new asset allocation, idea generation and overall governance framework.

We at Willis Towers Watson have enjoyed our relationship with Missouri PSRS/PEERS and are looking forward to the coming year.

Regards,  
Towers Watson Investment Services, Inc.



Michael M. Hall, ASA, CFA  
West Division Practice Leader

## Letter from the Chief Investment Officer



PUBLIC SCHOOL & EDUCATION EMPLOYEE  
RETIREMENT SYSTEMS OF MISSOURI

December 1, 2016

To the Members of the Systems:

Throughout this year's Financial Report you are reminded of the 70-year tradition of reliable retirement with PSRS. At the foundation of that tradition is the professional investment program that has been developed at PSRS and PEERS through multiple decades. The Systems' investment program has always focused on achieving long-term returns at prudent risk levels to support the members of PSRS and PEERS. That has remained true over the last 70 years and specifically over the most recent 30 years where the PSRS and PEERS' annualized investment return has exceeded 8.2%.

Negative returns in the global stock market provided a difficult environment for institutional investors in fiscal year 2016. However, the strength in the U.S. bond market, private equity and the real estate markets allowed PSRS/PEERS to achieve positive returns during the year. The Systems' assets increased through investment earnings by over \$590 million from the previous year with a total fund performance of 1.8% for both PSRS and PEERS.

### Key Points within this year's Financial Report

As you review the financial information in this report for the fiscal year ended June 30, 2016, it is important to be aware of the following points:

- The PSRS and PEERS investment return for fiscal year 2016 exceeded 75% of the peer group as defined by the Wilshire TUCS universe of public pension plans with assets in excess of \$1 billion,
- The Systems generated the investment return while taking less risk than approximately two-thirds of comparable public funds,
- Several of the Systems' primary asset categories (Non-U.S. Public Equity, Credit Bonds, Private Real Estate and Private Equity) generated returns in excess of established policy benchmarks for the year,
- The PSRS/PEERS investment expenses (including accrued performance based fees and all internal investment staff expenses) for fiscal year 2016 were 0.92%, or \$0.92 for every \$100 managed. The investment returns reported throughout this publication are mostly net of these fees. The investment return net of all fees and expenses for PSRS and PEERS was 1.6%,
- Total Systems' assets have increased through investment earnings by approximately \$12 billion over the last five years,
- The PSRS and PEERS investment returns for the last five years exceeded 77% of the peer group as defined by the Wilshire TUCS universe of public pension plans with assets in excess of \$1 billion,
- The PSRS/PEERS internal investment staff and external investment managers added value above the policy benchmark of over \$460 million, net of all fees and expenses over the last five years. The outperformance was due to portfolio construction and tactical asset allocation decisions by internal

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investment staff (overweighting and underweighting asset classes around targets) as well as active management on the part of external managers,

- Investment performance throughout this report is calculated using a time-weighted rate of return based on market values, and
- The total assets of both PSRS and PEERS were approximately \$38.1 billion on June 30, 2016, making the combined entity larger than all other public retirement plans in the state of Missouri combined, and the 45th largest defined benefit plan in the United States.

## Fiscal Year 2016 Year in Review

The internal investment staff, under the direction of the PSRS/PEERS Board of Trustees, has adopted a disciplined and diversified investment portfolio that includes allocations to multiple asset classes. In each year or market cycle, every asset class within the PSRS/PEERS investment portfolio performs a valuable function.

In fiscal year 2016, the combined asset allocation provided the Systems with low (yet positive) investment returns. U.S. stocks returned 2.1% for the fiscal year ended June 30, 2016 (as measured by the Russell 3000 Index), non-U.S. developed stocks declined 10.2% (as measured by the MSCI EAFE Index), and emerging market stocks fell 12.1% (as measured by the MSCI Emerging Markets Index). U.S. Treasury Bonds provided strong absolute returns for PSRS/PEERS, increasing 5.6% for the year.

Diversification into private equity and private real estate proved beneficial for the year as the PSRS/PEERS' Private Real Estate Composite returned 10.5% and the Private Equity Composite increased 8.4%. The adoption of private asset classes were not only additive to the PSRS/PEERS' total fund performance in fiscal year 2016, but also proved beneficial over the last five years. The Private Real Estate Composite increased 12.2% (annualized) over the last 5 years with the Private Equity Composite moving 13.1% (annualized) higher.

As noted above, strong returns in bonds and private markets offset negative performance in global stock markets and contributed to the 1.8% return for PSRS and PEERS in fiscal year 2016. Additionally, the investment returns were supported by solid implementation and tactical asset allocation decisions. For example, the PSRS/PEERS' Non-U.S. Public Equity Composite outperformed its benchmark (MSCI All Country World Free ex U.S. Index) by 4.5% while the PSRS/PEERS' Private Equity Composite outperformed its benchmark (Russell 3000 Index) by 6.3%. From a portfolio construction and tactical standpoint, the internal investment staff maintained a substantial overweight to U.S. stocks relative to Europe throughout the year. The overweight to U.S. stocks relative to non-U.S. developed stocks provided meaningful contribution to the overall PSRS/PEERS' return in fiscal year 2016.

## Asset Allocation Changes

In my annual letter the last two years, I wrote about the low return environment that PSRS/PEERS and all institutional investors were facing. As I write the annual letter this year (on December 1, 2016), not much has changed. In fact, a case could be made for even lower return expectations today as most asset classes are fully valued. For example, stock markets in the United States once again reached all-time highs at the end of November. Additionally, despite a significant increase in yields on U.S. Treasury bonds following the Presidential election, interest rates remain close to historical lows.

## Letter from the Chief Investment Officer, continued

The Systems' external investment consultant typically conducts an Asset Liability Study every five years for the Systems. The timing for the most recent Study in the spring of this past year was particularly beneficial given the low investment return environment. Willis Towers Watson (WTW) conducted the Study and the results were presented to the Board of Trustees in April and ultimately adopted in June. The objective of the Study was to determine the appropriate asset allocation for PSRS and PEERS given the specific liabilities of the Systems. A secondary objective of the Study was to recommend an appropriate assumed investment rate of return for the Systems.

WTW recommended that the Systems lower the assumed rate of return to 7.75%, effective with the June 30, 2016 actuarial valuations and for investment performance measurement beginning with fiscal year 2017. The assumed rate of return for PSRS and PEERS had been set at 8.0% since 1980. As stated previously, the return expectations for all asset classes are lower than historical norms. The WTW analysis and ultimate recommendation were certainly a reflection of the market environment.

Through the Asset Liability Study, WTW worked closely with the PSRS/PEERS' investment staff to develop a number of potential asset allocation scenarios to present to the Board of Trustees. The most consistent way to compound wealth is to limit both the volatility and the downside (risk of loss) in a portfolio. As such, both staff and WTW were comfortable with the current level of risk in the Systems' portfolio and thus recommended asset allocation scenarios with similar levels of total portfolio risk.

A substantial advantage to being an institutional investor for defined benefit pension assets is the long-term investment horizon. Investors who embrace a long time horizon have a significant advantage over short-term oriented investors. The Systems have embraced the long time horizon with staff and WTW collectively recommending asset allocation alternatives to the Board that increased the Systems allocation to longer dated (private) risk assets. There is a return premium and a diversification benefit afforded to those investors willing to accept the illiquidity risk within private assets. To that end, PSRS/PEERS could add private assets to the total portfolio which would result in higher expected return with only a modest increase in risk.

The Board of Trustees ultimately adopted a new asset allocation that will increase the allocation to private assets by 5% with a commensurate decrease in the allocation to public credit. The Systems began building private investment portfolios (including private equity, private credit and private real estate) in 2003 in order to generate long-term returns superior to the public markets, take advantage of market inefficiencies, and increase diversification. The nature of private investing requires a process of portfolio construction that takes years to develop. This is particularly true for a plan with the substantial assets of PSRS/PEERS. Over the years, the Systems have continued to build on this successful investment platform that serves as an alternative to traditional public markets. It is anticipated that the most recent increase in the target to private assets will take several years to implement.

### Fiscal Year 2017

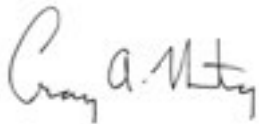
The newly adopted strategic asset allocation for PSRS/PEERS is designed to achieve the assumed investment return of 7.75% over long periods of time. The Board has also adopted an Investment Policy that provides the PSRS/PEERS' internal investment staff and external advisors with the flexibility to deviate from the strategic asset allocation within appropriate bands. At times the investment staff has deviated significantly from the target allocation as valuations in specific asset classes were attractive relative to historical pricing. However, at the close of fiscal year 2016, most asset classes appeared close to full valuation. As such, PSRS/PEERS were close to the long-term targets in all asset classes on June 30, 2016.

As we begin to move through fiscal year 2017, we continue to believe that, in the current environment, it is prudent to maintain a healthy allocation to safe assets (Treasuries and cash) and hedged assets to reduce the total volatility of the fund. The hedged asset portfolio is designed to offer the diversification benefits traditionally associated with bonds but at higher levels of expected return. PSRS/PEERS is obviously sacrificing yield in the short-term but safe assets have protective and option value. The allocation provides a level of safety during market dislocations and offers liquidity to redeploy capital into attractive assets after a correction occurs.

The investment staff began to re-allocate a portion of the assets from U.S. equity to both non-U.S. equity developed and emerging markets in early fiscal year 2017. The valuation levels for the equity markets outside the U.S. and the additional growth potential in emerging markets supported the rebalancing effort. In total, the Systems carry an investment belief that markets are generally efficient. However, we do believe markets contain pockets of inefficiency that may be exploited through active management and tactical asset allocation. As such, the internal staff will continue to attempt to attain 'alpha', or return above market levels, in fiscal year 2017.

Under the support and guidance of the Board of Trustees, it remains our privilege to manage the investment assets at PSRS/PEERS. The investment program has supported the membership at PSRS for 70 years and we believe that portfolio is well-positioned to continue to support both PSRS and PEERS members over the next 70 years.

Respectfully,



Craig A. Husting, CFA  
Chief Investment Officer

## Investment Policy Summary

The Board of Trustees of the Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri (PSRS and PEERS, also referred to as the Systems) is charged with the responsibility for investing the assets of the Systems in a manner consistent with the fiduciary standards set forth in the 'prudent person' rule. To that end, the Board has adopted the following principles to guide all investment-related decisions:

1. Act in the exclusive interest of the members of the Systems,
2. Maximize total return within prudent risk parameters, and
3. Preserve the long-term purchasing power of the Systems.

The investment portfolios of PSRS and PEERS represent all contributions to the plans, from members and their employers, as well as all net earnings on these assets. These funds are held in support of both current and future liabilities. In total, approximately 61% of every dollar used to pay retirees is generated from investment earnings.<sup>1</sup>

The Board of Trustees of PSRS and PEERS approved the commingling of assets for purposes of investment as allowed by state statute in January 2013. In order to implement this change, PSRS and PEERS adopted the Missouri Education Pension Trust Agreement (MEPT), which is managed by the PSRS and PEERS Board of Trustees and Investment Staff. Effective July 1, 2013, the invested assets of the Systems were pooled and invested in MEPT. All assets held by MEPT are for the exclusive benefit of PSRS and PEERS. Each of the Systems has equity in MEPT based on funds contributed and earnings allocated. Earnings of MEPT are allocated based on the average daily balances of each of the respective Systems. Individual investments in MEPT are not specifically identified to the respective Systems. Due to the fact all invested assets are invested in MEPT, the rate of return for each of the Systems is approximately the same. Therefore, the following discussions focus on MEPT in total and not the individual Systems.

## Roles and Responsibilities

### Board of Trustees

It is the responsibility of the Board of Trustees (Board) to establish and maintain policies and objectives for all

aspects of the Systems' investment program including the determination of long-term policies for risk tolerance and asset allocation.

In keeping with its obligation to serve as the governing fiduciary, any changes to the investment policy or investment implementation manuals require the Board's approval.

As one of the largest public pension funds in the United States, the Systems' operational requirements are complex. In order to properly administer the Systems and carry out investment strategies, the Board relies heavily on both internal staff and external service providers. Due to the number of parties involved, their roles as fiduciaries are clearly identified to ensure distinct lines of responsibility and proper controls exist, while providing increased operational efficiency and elimination of duplication of effort.

### Executive Director

The Executive Director (Director) is appointed by, and serves at the pleasure of the Board. The Director is responsible for planning, organizing, and administering all operations of the Systems under the broad policy guidance and direction of the Board. The Director, with the assistance of the investment staff, monitors the performance of the investment portfolio; ensures that funds are invested in accordance with Board policies; and, ensures that proper internal controls are developed to safeguard the assets of the Systems. In fulfilling these responsibilities, the Director relies heavily on the Chief Investment Officer and external asset consultants.

### Chief Investment Officer

The Chief Investment Officer (CIO) serves at the pleasure of the Director yet has a direct, but limited, link to the Board on investment-related issues. The CIO's sole access to the Board is for submission of investment reports, information, or communications required by the investment policy and any other information or opinions specifically requested by the Board with regard to the investment program. The CIO is the individual primarily responsible for providing direction for the investment program. It is the CIO's responsibility to work with the Director, the general consultant, specialty consultants, and other external service providers, with the assistance of the internal staff, in advising the Board on policies related to the investment program. The CIO has responsibilities related to hiring and terminating service providers.

<sup>1</sup> Based on a twenty-year average for fiscal years 1996-2016.



Critical functions of the CIO include recommendations for implementation decisions related to the investment plan and for the strategic allocation of the portfolio within broad ranges approved by the Board.

### External Asset Consultants

The Systems employ Willis Towers Watson (WTW) as a general consultant and Albourne America, LLC (Albourne), Pathway Capital Management (Pathway) and The Townsend Group (Townsend) as specialty consultants. WTW is an independent resource available to collaborate with the Board and staff on the investment process. This typically includes regular meetings with the Board to provide an independent perspective on the Systems' goals, structure, performance and external service providers. Additionally, WTW may be involved with the strategic allocation shifts for the portfolio.

The specialty consultants work on specific programs within the overall investment program. Albourne is utilized for the Private Credit, Private Equity, Hedged Assets and Alpha Overlay programs. Pathway is a consultant for the Private Equity and Private Credit programs and Townsend consults on the Real Estate program.

### External Investment Managers

The Systems employ external investment managers that include external money managers which may be structured as public or private entities in the form of a partnership, limited liability company, trust, separately managed account, commingled account, or some other form of operational structure in which assets may be held by an external custodian selected and monitored by the external manager.

Managers are given explicit written directions detailing their particular assignments or they follow the investment program outlined in their offering documents or Limited Partnership Agreements, and will construct and manage investment portfolios that are consistent with the investment philosophy and disciplines for which they were hired. Discretion is delegated to the managers to carry out investment actions as directed by the Systems.

### Master Custodian

JP Morgan Chase Bank, NA (JP Morgan) serves as the master custodian for the Systems. The master custodian holds most cash and securities for the Systems, except in cases where investment in a partnership, commingled account, or unique asset class makes it impossible to do

so. The Systems thoroughly evaluate the structure of all investments and their custody arrangements. JP Morgan is responsible for providing the official book of record for performance reporting and accounting, and serves as an additional layer of risk control in safekeeping the Systems' assets.

### 2016 Asset/Liability Study

The Board of Trustees recognizes that even though the Systems' investments are subject to short-term volatility, it is critical that a long-term investment focus be maintained. Given the importance of the broad asset allocation decision to the Systems' long-term investment success, internal staff is required to conduct an asset/liability study at least every five years to examine the appropriate long-term strategies for the Systems and to report the results to the Board. More frequent studies are conducted if there is a significant change in the assets or liabilities. The key goal of the asset/liability study is the development of an asset allocation that maximizes the likelihood that the investment portfolio assets will, over the long-term planning horizon, fund plan benefits within appropriate risk parameters.

The most recent study was completed during the current year with the assistance of the Systems' external investment consultant, WTW. As a result, the Board of Trustees modified the assumed rate of return and long-term asset allocation targets as discussed in the following sections.

### Investment Objective

Based on the long-term investment returns available from a well-diversified, prudently invested portfolio, the Board adopted an objective to achieve a total nominal investment return of 8.0% with a real rate of return of at least 5.5% per annum over time.<sup>2</sup> The Board of Trustees revised the long-term investment return objective to 7.75% effective for fiscal year 2017 investment performance. The investment objective of 8.0% was effective from 1980 through fiscal year 2016. Fiscal year 2016 performance, as presented throughout the following sections of this report will be measured against the historical objective of 8%.

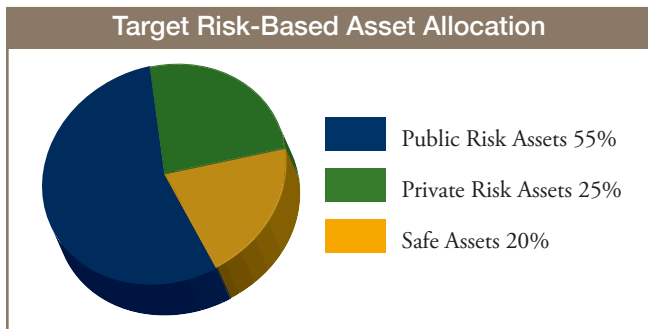
<sup>2</sup> The real rate of return is the rate by which the long-term total return exceeds the long-term inflation rate. The Board of Trustees shall employ an actuarial consultant for purposes of determining the inflation rate to be used in calculating the pension obligations. The assumed inflation rate was 2.50% per annum during fiscal year 2016; however the assumed inflation rate was revised to 2.25% for fiscal year 2017.

In order to achieve the investment objective, the Systems have developed a portfolio that is prudently invested across a broad array of assets that reflects the long-term nature of the Systems’ pension obligations. The principles of diversification, risk control, and competitive rates of return provide the framework for selecting an asset allocation that is expected, over longer periods of time and in the aggregate, to give the Systems the most competitive long-term return within a prudent level of risk.

**Understanding Risk**

Selection of an appropriate asset allocation is one of the most important decisions made by a retirement plan. Within that asset allocation, it is important to not only consider the expected investment return, but also to understand the risks. The importance of risk consideration for institutional investors is critical to long-term success. To that end, the Systems employ an effective and intuitive risk-based approach to setting and reporting the asset allocation decision. The Systems developed a risk-based asset allocation to clearly define the prudent risks taken within its investment portfolios. The Systems consider a variety of risks including, but not limited to, liquidity risk, volatility, tail risk (the possibility that an investment will move much more than expected) and the ability to meet the Systems’ assumed rate of return when structuring the portfolio.

This analysis results in an asset allocation to Public Risk Assets, Safe Assets and Private Risk Assets. Within each risk allocation, the Systems’ investment portfolio includes strategic, long-term commitments to specific asset programs. As of June 30, 2016, the target risk-based asset allocation is illustrated in the pie chart below. The Board of Trustees recently increased the Private Risk Assets target by 5% and proportionately decreased the Public Risk Assets target. These changes are discussed further in the following Asset Allocation section.



**Asset Allocation**

The asset allocation decision is generally regarded as the most important decision in the investment management process since it is crucial to achieving the long-term objectives established by the Board. In that light, it is the Board’s responsibility to determine the appropriate policy asset allocation based upon several criteria with input and guidance from internal staff and WTW. These criteria are as follows:

1. The expected rate of return for each asset classification;
2. The expected risk of each asset classification (expressed as the standard deviation of the rate of return);
3. The correlation of returns between asset types;
4. The investment objectives and risk constraints of the Systems (including, but not limited to, liquidity needs and the expected time horizon);
5. The funded ratio and cash flow requirements for PSRS and PEERS; and
6. The impact of the Systems’ return volatility on the contribution rate.

The Board of Trustees amended the long-term target asset allocation at the June 2016 Board of Trustees meeting. The allocation to each investment program considers both the risk tolerance of the Systems and the long-term return objective. The new long-term target asset allocation is expected to maintain similar levels of total portfolio risk while allowing for more efficient investment returns. However given the nature of investing in Private Risk assets, it is expected to take several years to implement. Implementation will be achieved over a number of years through a disciplined investment approach. The policy benchmarks will change over time as the Systems make meaningful progress to the new long-term targets. The changes to the asset allocation are as follows: Public Risk Assets decreased 5% and Private Risk Assets increased 5%. Within Public Risk Assets, Public Credit decreased from 12% to 7%. Within Private Risk Assets, Private Equity increased from 10.5% to 12%, Real Estate increased from 7.5% to 9% and Private Credit increased from 2% to 4%.

The following chart details the long-term asset allocation targets that were in effect during fiscal year 2016, as well as, the new long-term asset allocation targets approved by the Board of Trustees near fiscal year end. The new long-term allocation targets were approved in June 2016. As such, it would not be appropriate to compare fiscal year 2016 activity to the recently, amended asset allocation. The remaining sections of the annual report will discuss the asset allocation in effect during fiscal year 2016 (referenced below as the long-term target during fiscal year 2016).

Long-term Target and Policy Ranges				
Investment Type	During Fiscal Year 2016		As Recently Amended	
	Long-Term Target	Policy Ranges	Long-Term Target	Policy Ranges
<i><b>Public Risk Asset Programs</b></i>				
U.S. Public Equity	27.00%	16% - 48%	27.00%	16% - 48%
Public Credit	12.00%	0% - 20%	7.00%	0% - 20%
Hedged Assets	6.00%	0% - 25%	6.00%	0% - 25%
Non-U.S. Public Equity	15.00%	8% - 28%	15.00%	8% - 28%
<b>Total Public Risk Assets</b>	<b>60.00%</b>	<b>35% - 75%</b>	<b>55.00%</b>	<b>35% - 75%</b>
<i><b>Safe Assets Programs</b></i>				
U.S. Treasuries	16.00%	0% - 40%	16.00%	0% - 40%
U.S. TIPS	4.00%	0% - 40%	4.00%	0% - 40%
Cash Equivalents	0.00%	0% - 10%	0.00%	0% - 10%
<b>Total Safe Assets</b>	<b>20.00%</b>	<b>10% - 40%</b>	<b>20.00%</b>	<b>10% - 40%</b>
<i><b>Private Risk Asset Programs</b></i>				
Private Equity	10.50%	4% - 14%	12.00%	4% - 15%
Private Real Estate	7.50%	4% - 10%	9.00%	4% - 12%
Private Credit	2.00%	0% - 7%	4.00%	0% - 8%
<b>Total Private Risk Assets</b>	<b>20.00%</b>	<b>5% - 25%</b>	<b>25.00%</b>	<b>10% - 30%</b>
<b>Total Fund</b>	<b>100.0%</b>		<b>100.0%</b>	

The Board recognizes the cyclical nature of the investment markets and it has allowed the internal staff to capitalize upon opportunities by changing the allocation of each asset class or sub-asset class within broad strategic bands or policy ranges (as indicated in the table above). The flexibility given to the internal staff in establishing the strategic mix provides opportunities for the Systems to take advantage of changing market conditions. To ensure appropriate controls, the Director, CIO and WTW must unanimously agree upon all material strategic changes prior to implementation.

## Performance Objectives and Monitoring Process

Generating a total nominal rate of return net of expenses of at least 8.0% and a real rate of return net of expenses of at least 5.5% per annum has been an important consideration in the asset allocation decision and the primary performance objective for the Systems over long periods of time. The need for a long-term focus is necessary to preclude the temptation to overreact to events in the financial markets that have no relevance to long-term asset/liability management of the Systems. The resulting dilemma is the conflicting requirement to evaluate investment policy implementation over shorter time periods while maintaining a long-term focus on meeting the return objectives. In order to determine if the Systems' short-term and long-term objectives are being achieved, the Board evaluates performance relative to policy and strategic benchmarks. The policy benchmarks allow the Systems to be judged by performance relative to a defined set of broad market indices (i.e., the Systems' long-term asset allocation objective). The strategic benchmarks allow the Board to consider the additional value generated from the latitude given to the internal staff to alter the asset class or sub-asset class allocations.

### Policy Decisions

The value added through policy decisions is measured by the difference between the policy benchmark return and the actuarial required rate of return objective (defined as Real Return Objective + Inflation). A policy benchmark return greater than the actuarial required rate of return reflects value added. A policy benchmark return less than the actuarial required rate of return reflects losses or shortfalls in performance in funding the liabilities of the Systems. These policy decisions are measured over long periods of time.

### Strategy Decisions

Strategy decisions are asset class or sub-asset class asset allocation choices made by the internal staff to deviate from the policy benchmark weights, with approval from WTW and the Director that the proposed material deviation is in compliance with the Board's investment policy. The value added through these decisions to overweight and/or underweight these sub-asset classes is measured by the difference between the strategic benchmark return and the policy benchmark return. This difference captures the value added by internal staff through sub-asset class strategic decisions relative to the Board's broad policy allocation decisions. A strategic benchmark return greater than the policy benchmark return reflects value added through the allocation decisions. A strategic benchmark return less than the policy benchmark return reflects losses to the fund's performance based upon strategy decisions.

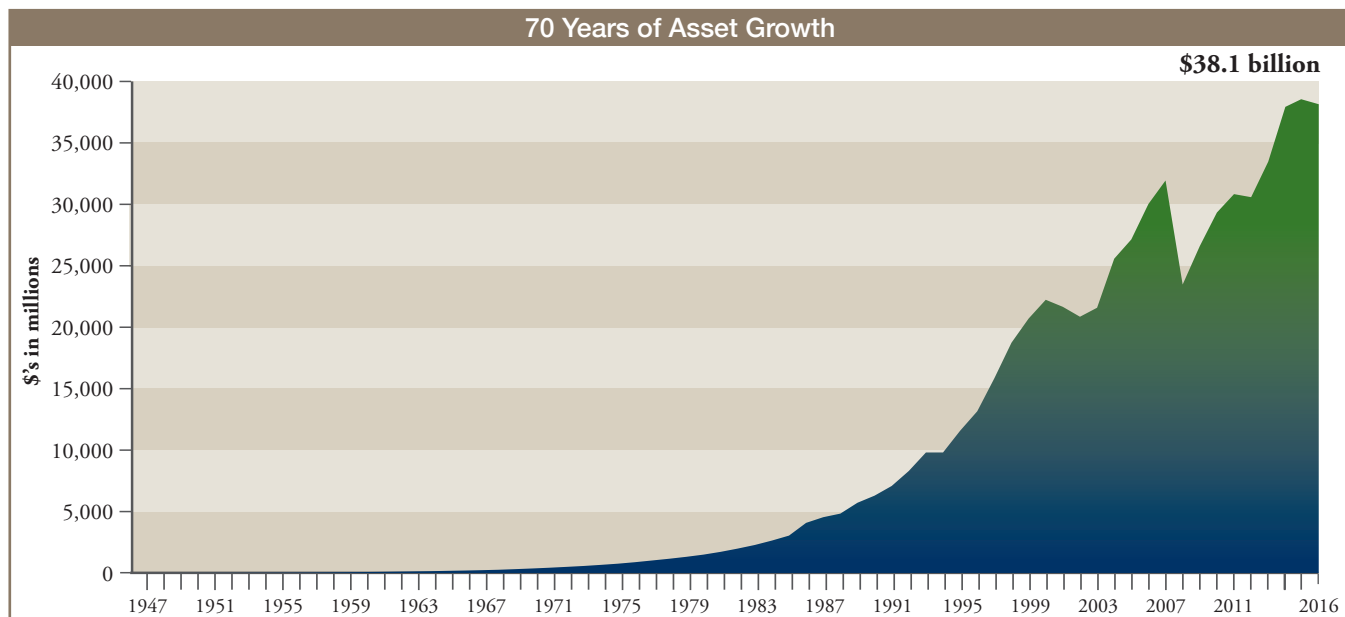
### Implementation Decisions

Implementation decisions are manager selection choices made by the internal staff with the approval of a consultant(s) and the Director. The value added through these manager selection decisions is measured by the difference between the actual portfolio return and the strategic benchmark return. An actual portfolio return greater than the strategic benchmark return reflects value added through these manager selection decisions. An actual portfolio return less than the strategic benchmark return reflects losses to the fund's performance based upon implementation decisions.

### Risk Controls

The Board recognizes that even though the Systems' investments are subject to short-term volatility, it is critical that a long-term investment focus be maintained. Given the importance of the broad asset allocation decision to the Systems' long-term investment success, internal staff is required to conduct an asset allocation/liability study at least every five years to examine the appropriate long-term investment strategies for the Systems. As previously discussed an asset/liability study was conducted in 2016 and the next study is scheduled for 2021. In addition, the CIO must annually evaluate the asset allocation mix and any strategic allocation of the portfolio and provide a report to the Board on the results of that evaluation. This ongoing review of the asset allocation process helps to ensure the asset allocation is being monitored and modified as needed to meet the financial obligations of the Systems.

## Total Fund Review



The Systems' total invested assets were \$38.1 billion as of June 30, 2016. There has been a long-term growth in assets since the inception of PSRS in 1946 and PEERS in 1965, as shown in the graph above.

### Investment Performance<sup>3</sup>

The Systems earned an investment return of 1.8% for fiscal year 2016 (1.6% net of all investment expenses and fees) with an ending market value of invested assets at \$38.1 billion. The total plan return, net of all investment expenses and fees, was marginally below the total plan policy benchmark of 1.8% and fell short of the long-term objective (actuarial assumption) of 8.0%. Total plan performance this year was affected by the recent global equity market weakness and increased short-term market volatility. However, overall performance was helped by the Systems' diversification of risk with Private Equity, Private Real Estate and U.S. Treasury markets producing strong returns. PSRS and PEERS are long-term investors with a diversified portfolio that continues to produce strong long-term returns where the annualized investment return is 8.2% (8.1% net of all investment expenses and fees) over the last 30 years.

As illustrated in the table below, within the Systems' investment portfolio, Public Credit delivered a return of 5.2%, Private Equity (investments in private companies) increased 8.4%, Private Real Estate produced a 10.5% return, and U.S. Treasuries returned 5.6%. Each of these asset classes strongly contributed to the total returns of the Systems while providing diversification from the public equity markets.

Total Fund Performance			
Assets	Total Return	Weighted Contribution*	
U.S. Public Equity	0.1%	0.0%	
Public Credit	5.2%	0.3%	
Hedged Assets	-1.4%	-0.1%	
Non-U.S. Public Equity	-5.7%	-0.8%	
<b>Public Risk Assets</b>	<b>-1.1%</b>	<b>-0.6%</b>	
U.S. Treasuries	5.6%	0.8%	
U.S. TIPS	3.6%	0.1%	
Cash Equivalents	0.9%	0.0%	
<b>Safe Assets</b>	<b>4.9%</b>	<b>0.9%</b>	
Private Equity	8.4%	0.7%	
Private Real Estate	10.5%	0.8%	
Private Credit	-7.8%	0.0%	
<b>Private Risk Assets</b>	<b>8.7%</b>	<b>1.5%</b>	
<b>TOTAL RETURN</b>	<b>1.8%</b>	<b>1.8%</b>	

\*Percentages have been adjusted to reflect compounding effects and changes in asset weights.

<sup>3</sup> Investment returns were prepared using a time-weighted rate of return based on market values.

## INVESTMENT SECTION

### Investment Performance Relative to Benchmarks\*\*

	Fiscal Year	3-Year	5-Year	10-Year*
<b>Public Risk Assets Programs</b>				
<b>U.S. Public Equity</b>	<b>0.1%</b>	<b>10.8%</b>	<b>11.5%</b>	<b>7.5%</b>
Russell 3000 Index	2.1%	11.1%	11.6%	7.4%
<b>Public Credit</b>	<b>5.2%</b>	<b>3.4%</b>	<b>3.9%</b>	<b>n/a</b>
Barclays U.S. Intermediate Credit Index	5.0%	3.9%	4.0%	n/a
<b>Hedged Assets</b>	<b>-1.4%</b>	<b>5.6%</b>	<b>5.0%</b>	<b>n/a</b>
Hedged Assets Benchmark	0.5%	5.2%	5.1%	n/a
<i>Benchmark consists of:</i>				
50.0%	Barclays U.S. Intermediate Credit Index			
25.0%	MSCI ACWI ex-USA Index			
25.0%	Russell 3000 Index			
<b>Non-U.S. Public Equity</b>	<b>-5.7%</b>	<b>4.5%</b>	<b>3.0%</b>	<b>3.0%</b>
MSCI ACWI ex-USA Index	-10.2%	1.2%	0.4%	2.0%
<b>Total Public Risk Assets</b>	<b>-1.1%</b>	<b>7.3%</b>	<b>7.2%</b>	<b>5.0%</b>
Public Risk Assets Benchmark	-0.5%	6.7%	6.7%	4.1%
<i>Benchmark consists of:</i>				
47.5%	Russell 3000 Index			
27.5%	MSCI ACWI ex-USA Index			
25.0%	Barclays U.S. Intermediate Credit Index			
<b>Safe Assets Program</b>				
<b>Total Safe Assets</b>	<b>4.9%</b>	<b>2.6%</b>	<b>2.6%</b>	<b>4.3%</b>
Safe Assets Benchmark	5.1%	2.9%	2.9%	4.3%
<i>Benchmark consists of:</i>				
72.0%	Barclays U.S. Treasury: Intermediate Index			
8.0%	Barclays U.S. Treasury: Long Index			
20.0%	Barclays U.S. TIPS 1-10 Years Index			
<b>Private Risk Assets Program</b>				
<b>Private Equity</b>	<b>8.4%</b>	<b>14.3%</b>	<b>13.1%</b>	<b>10.8%</b>
Russell 3000 Index	2.1%	11.1%	11.6%	7.2%
<b>Private Real Estate</b>	<b>10.5%</b>	<b>12.8%</b>	<b>12.2%</b>	<b>4.7%</b>
NFI-ODCE Index***	10.2%	11.5%	11.4%	5.4%
<b>Private Credit</b>	<b>-7.8%</b>	<b>1.9%</b>	<b>4.0%</b>	<b>n/a</b>
Merrill Lynch High Yield Master II Index	1.7%	4.2%	5.7%	n/a
<b>Total Private Risk Assets</b>	<b>8.7%</b>	<b>12.9%</b>	<b>12.1%</b>	<b>7.5%</b>
Private Risk Assets Benchmark	5.3%	10.8%	11.2%	7.8%
<i>Benchmark consists of:</i>				
52.5%	Russell 3000 Index			
37.5%	NFI-ODCE Index***			
10.0%	Merrill Lynch High Yield Master II Index			
<b>TOTAL FUND</b>				
<b>Total Fund</b>	<b>1.8%</b>	<b>7.6%</b>	<b>7.4%</b>	<b>5.8%</b>
Total Fund Benchmark	1.8%	6.8%	6.9%	5.4%
<i>Benchmark consists of:</i>				
39.0%	Russell 3000 Index			
16.5%	MSCI ACWI ex-USA Index			
14.4%	Barclays U.S. Treasury: Intermediate Index			
1.6%	Barclays U.S. Treasury: Long Index			
15.0%	Barclays U.S. Intermediate Credit Index			
7.5%	NFI-ODCE Index***			
4.0%	Barclays U.S. TIPS 1-10 Years Index			
2.0%	Merrill Lynch High Yield Master II Index			
<b>Actuarially Required Rate of Return</b>	<b>8.0%</b>	<b>8.0%</b>	<b>8.0%</b>	<b>8.0%</b>
<b>TUCS Universe Median</b>	<b>1.1%</b>	<b>6.9%</b>	<b>6.8%</b>	<b>5.9%</b>

\*Some programs have been established more recently and therefore 10-year returns are not available.

\*\*Investment returns were prepared using a time-weighted rate of return based on market values.

\*\*\*Effective January 1, 2016 the Real Estate Policy Benchmark is the NCREIF Open End Diversified Core Equity Index (NFI-ODCE). The NCREIF Property Index is used for prior periods.

## Investment Performance Relative to Benchmarks

The Board has established a long-term objective to achieve a total investment return of at least 8.0% per year and a real rate of return of at least 5.5% per year. As discussed in the Investment Objective section, the long-term objective was revised to 7.75% effective for fiscal year 2017. The total plan return of 1.8% for fiscal year 2016 was short of the long-term objective of 8.0%. However, over long periods of time, PSRS and PEERS continue to produce investment returns that exceed the Systems' objective. The annualized investment return for the Systems is 8.2% over the last 30 years.

As previously discussed, in order to determine if the Systems' short-term and long-term objectives are being achieved, the Board utilizes three benchmarks by which the Systems' progress may be judged: (1) performance relative to a **policy benchmark** (defined set of broad market indices that reflects the Systems' long-term asset allocation, or market beta), (2) performance relative to a **strategic benchmark** which indicates value added by the internal staff, and, to a lesser extent, (3) performance relative to other public pension systems and their investment managers as a reference point of oversight.

Fiscal year 2016 proved to be a difficult environment for all institutional investors. The total plan fiscal year return was equal to the total plan policy benchmark return of 1.8%. The fiscal year investment return, net of *all* fees and expenses, was 1.6% which was marginally below the total plan policy benchmark. However, the total plan return for the last three, five and ten-year time periods, net of *all* fees and expenses, remained substantially above the plan policy benchmark.

The Systems' fiscal year 2016 investment return was low on an absolute basis, but strong on a relative basis. The Systems' investment return for fiscal year 2016 exceeded 75% of the peer group as defined by the Wilshire TUCS universe of public pension plans with assets in excess of \$1 billion. Additionally, the Systems generated the fiscal year 2016 return (and longer-term investment returns) while taking less risk than approximately two-thirds of comparable public funds in the United States. As the previous table indicates, the Systems' total return for the one-year, three-year and five-year time periods also significantly exceeded the median return of other large public funds. The investment return for the ten-year time period was slightly below the public fund median return primarily due to asset allocation and risk tolerance differences. The Systems have taken substantially less risk than comparable funds during all time periods yet have consistently provided higher investment returns.

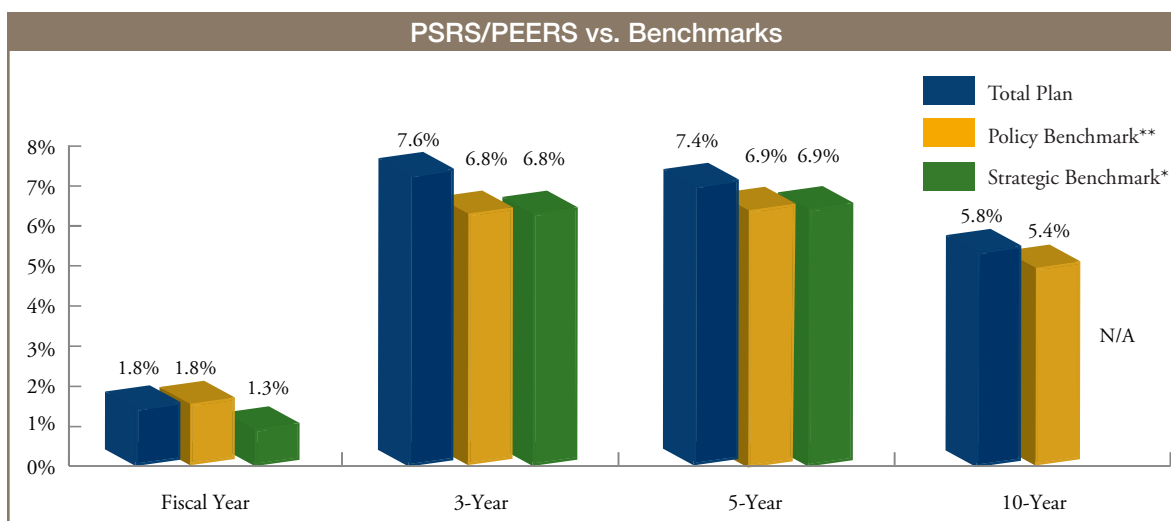
The internal staff presents to the Board a detailed attribution of the total fund performance at the end of each fiscal year. Value is added over and above expected market returns if the strategic benchmark exceeds the policy benchmark (i.e., the internal staff made positive strategic decisions) and/or if the actual total fund return exceeds the strategic benchmark.

The total fund return has exceeded the policy benchmark in seven of the last ten fiscal years, an indication that internal staff and active investment management have added value to the Systems. Over the past five years, the total fund return has exceeded the policy benchmark by 0.3%, on an annualized basis, resulting in over \$466 million in excess performance (net of all investment expenses and fees) to the Systems.

## Statistical Performance

One of the primary investment objectives of the Systems is to achieve returns similar to the market but at lower risk or volatility levels. To that end, internal staff monitors a number of quantitative risk statistics related to the total investment portfolio as well as individual composites. The table below indicates that the Systems have taken less risk than the policy benchmark (as measured by standard deviation) over all time periods while achieving higher returns, thereby indicating strong risk-adjusted performance.

**Beta** measures the volatility, or systematic risk, of a security or portfolio in comparison to the market as a whole. If a portfolio has a beta of 1.0, it indicates that the portfolio moves in unison with the market. The Systems' portfolios have a beta of less than 1.0 relative to the policy benchmark, indicating less market volatility. The Systems' beta relative to the world stock index (MSCI World Index) is approximately 0.50. This signifies that the Systems' portfolio moves up or down approximately half as much as the world stock index.



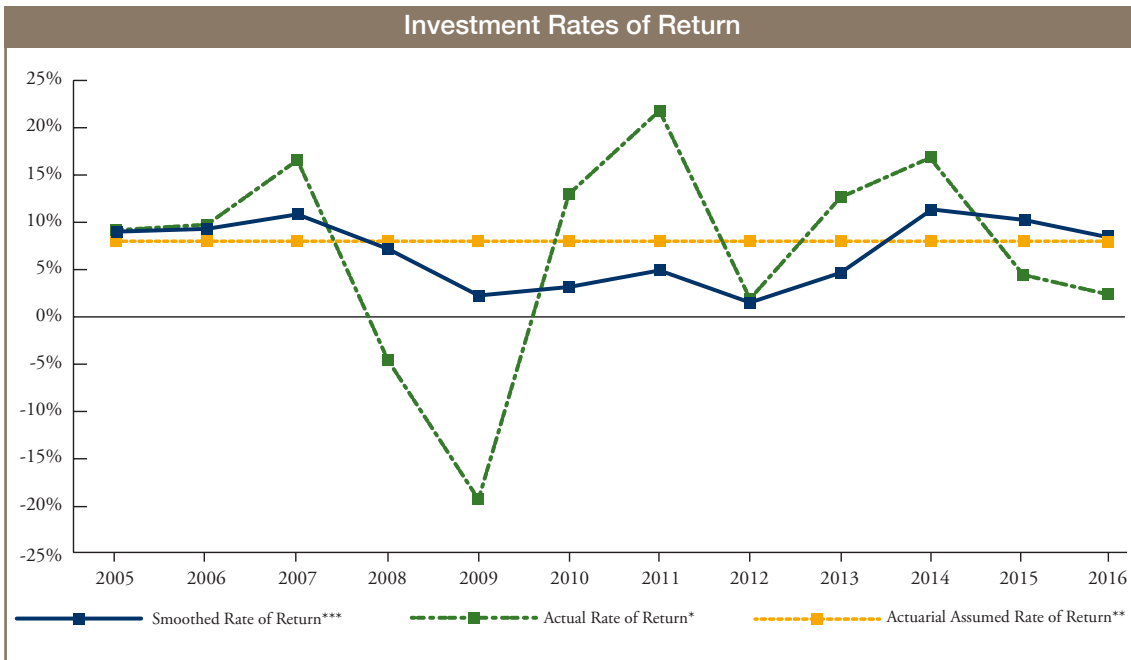
Total Plan Statistical Performance				
Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Total Plan Return	1.8%	7.6%	7.4%	5.8%
Annualized Policy Benchmark Return*	1.8%	6.8%	6.9%	5.4%
Annualized Strategic Benchmark Return**	1.3%	6.8%	6.9%	N/A
Excess return	0.0%	0.8%	0.5%	0.4%
Annualized Standard Deviation of Composite	7.0%	5.7%	6.5%	8.9%
Annualized Standard Deviation of Policy Benchmark	8.6%	6.5%	7.3%	10.1%
Beta to Policy Benchmark	0.82	0.87	0.89	0.87
Beta to MSCI World Index	0.45	0.47	0.48	0.53

\*As of June 30, 2016: 39.0% Russell 3000 Index, 16.5% MSCI ACWI ex-USA Index, 14.4% Barclays U.S. Treasury: Intermediate Index, 1.6% Barclays U.S. Treasury: Long Index, 15% Barclays U.S. Intermediate Credit Index, 7.5% NFI-ODCE, 4% Barclays U.S. TIPS 1-10 Years Index, and 2% Merrill Lynch High Yield Master II Index.

\*\*As of June 30, 2016: 42.1% Russell 3000 Index, 18.8% MSCI ACWI ex-USA Index, 12.9% Barclays U.S. Intermediate Credit Index, 13.0% Barclays U.S. Treasury: Intermediate Index, 1.4% Barclays U.S. Treasury: Long Index, 2.0% Merrill Lynch 3-Month U.S. Treasury Bill Index, 7.9% NFI-ODCE, 1.4% Barclays U.S. TIPS 1-10 Years Index, and 0.6% Merrill Lynch High Yield Master II Index. The Total Plan Strategic Benchmark changes monthly based on the actual asset allocation at the end of the previous month. It was established more recently so a 10-year return is not available.



The following chart shows the relationship between market value returns, the actuarially assumed rate of return and the utilization of an actuarial asset valuation method of smoothed assets. To reduce volatility in employer and employee contribution rates, a common actuarial practice of “asset smoothing” is utilized. The application of this practice results in full recognition of returns at the actuarial assumed rate and recognizes any annual excess or deficiency relative to the assumed rate over a period of five years.

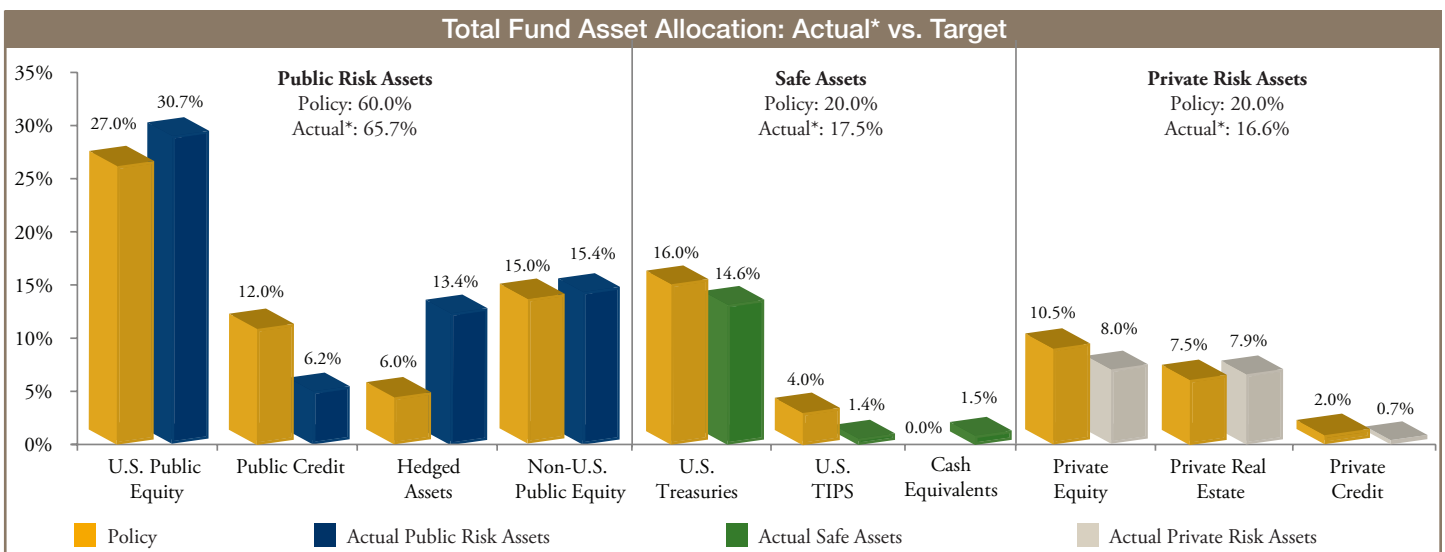


\*The Actual Rate of Return (market return) consists of all investment gains and losses (net of investment expenses) on the fair market value of assets each year.  
 \*\*The Actuarial Assumed Rate of Return is the assumed rate of return on the actuarial value of assets and is used in establishing contribution rates and pension obligations, including the net pension liability.  
 \*\*\*Investment earnings in excess or deficient of the assumed 8.0% rate of return are smoothed over a 5-year period for actuarial funding purposes. Twenty percent of the excess or deficiency is recognized annually for a 5-year period. This calculation results in the Smoothed Rate of Return.

### Asset Allocation: Actual Versus Target

The Board’s broad policy allocation target as of June 30, 2016 was 60% Public Risk Assets, 20% Safe Assets and 20% Private Risk Assets. Within each broad policy target, the Board has established sub-asset class targets. For example, as the chart below indicates, the target allocation to U.S. Public Equity was 27% as of June 30, 2016.

As illustrated in the chart, internal staff utilized the flexibility built into the investment policy to strategically overweight or underweight certain asset classes throughout the year. Strategic decisions within the Public Risk Assets program included an overweight to U.S. equities and emerging market stocks relative to Europe. The overweight to U.S. equities relative to non-U.S. developed equities provided meaningful returns to the Systems in fiscal year 2016.



\*Total Plan assets include 0.2% invested in an operating cash account that is not reflected in the chart above.

## Public Risk Assets Summary

As of June 30, 2016, Public Risk assets had a market value of approximately \$25.0 billion, representing 65.7% of total assets.

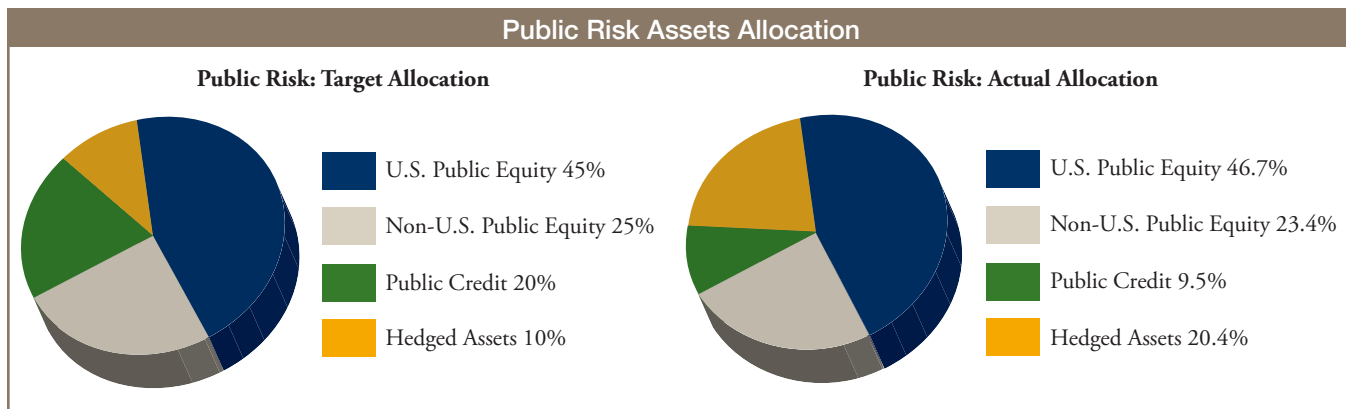
### Investment Program Description

The Board of Trustees has adopted an asset allocation policy that includes a significant allocation to Public Risk Assets. The four programs within the Public Risk Asset composite are U.S. Public Equity, Public Credit, Hedged Assets and Non-U.S. Public Equity. Each program within the Public Risk allocation is a separate multi-manager composite that is treated generally as a single portfolio. Each program serves a specific and distinct role within the overall Public Risk composite and also within the overall total plan allocation. Over time, the Public Risk composite and its sub-components serve as an effective and efficient vehicle to supply the underlying beta exposure to a portfolio of global risk assets required by the Systems' asset allocation policy, while providing the opportunity to achieve excess returns above that of a passive benchmark through the prudent combination of passive investment vehicles and a wide range of active investment strategies.

### Structure

As of June 30, 2016, 46.7% of the Systems' Public Risk assets were invested in the U.S. Public Equity program, 23.4% in the Non-U.S. Public Equity program, 9.5% in the Public Credit program and 20.4% in the Hedged Assets program. Each of these programs is discussed in more detail on the following pages.

The internal staff strategically overweighted the total plan to Public Risk assets during the year. The target allocation for Public Risk assets was 60.0% and the Systems' allocation at the end of the fiscal year was 65.7%. Within the Public Risk Assets composite, internal staff continued to overweight U.S. Public Equity and Hedged Assets, while underweighting Public Credit and non-U.S. developed markets.

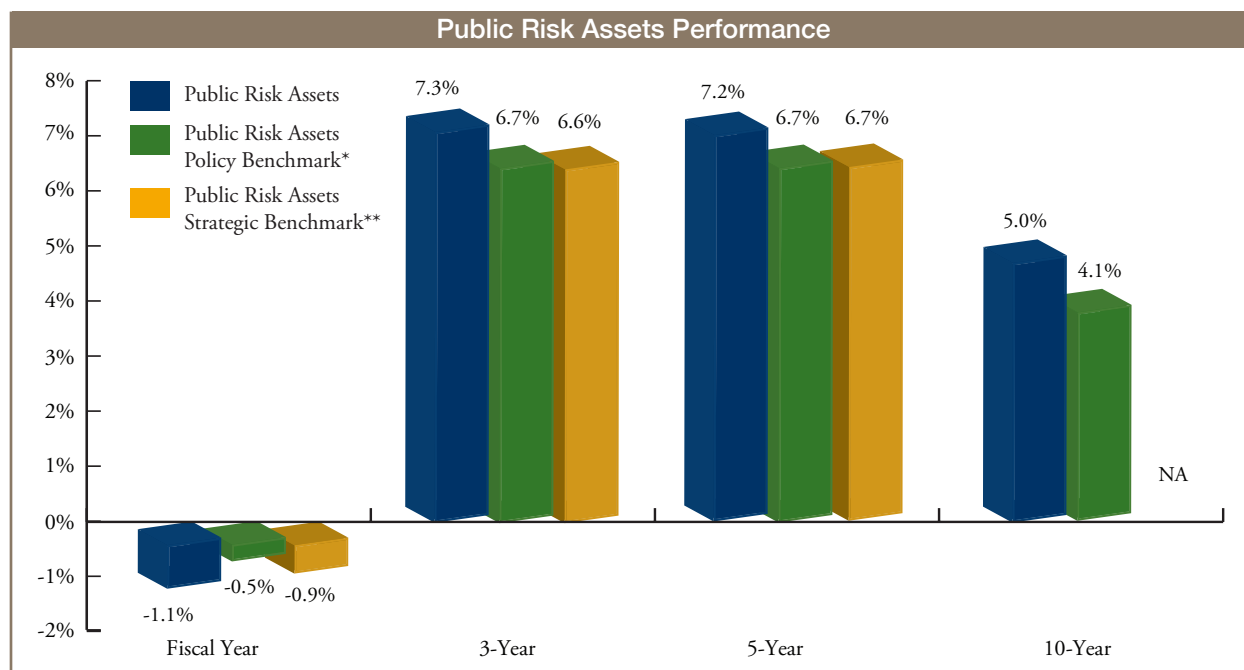


### Market Overview

The global equity markets experienced substantial volatility during the fiscal year, due to signs of weakening economic growth and concerns about the timing of the Federal Reserve's tightening of monetary policy. The Eurozone markets remained fragile from a steep decline in oil prices and geopolitical uncertainty. The Russell 3000 Index (broad measure of the U.S. stock market) was up 2.1% for the year and the MSCI ACWI ex-USA Index (broad measure of the international stock markets) declined 10.2%. Bond markets experienced volatility and declining interest rates to historically low levels. This contributed to strong gains for the Public Credit benchmark (Barclays U.S. Intermediate Credit Index) of 5.0%.

## Performance

The total return for the Systems' Public Risk portfolio was -1.1%, which underperformed the policy benchmark by 60 basis points. It was a difficult year for global public equities. However, the tactical asset allocations away from non-U.S. developed markets to U.S. public equities was additive to performance for the year. Despite the low returns for the year, the Public Risk program has produced strong absolute returns over the longer-term time periods of three and five years and has outperformed the benchmark over the three-, five- and ten-year time periods, as noted below.



**Public Risk Assets Statistical Performance**

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Return	-1.1%	7.3%	7.2%	5.0%
Annualized Policy Benchmark Return*	-0.5%	6.7%	6.7%	4.1%
Annualized Strategic Benchmark Return*	-0.9%	6.6%	6.7%	N/A
Excess Return	-0.6%	0.6%	0.5%	0.9%
Annualized Standard Deviation of Composite	11.0%	8.6%	9.8%	13.8%
Annualized Standard Deviation of Policy Benchmark*	11.7%	9.0%	10.1%	14.3%
Beta to Policy Benchmark*	0.93	0.96	0.96	0.96
Beta to MSCI World Index	0.71	0.72	0.73	0.82

\*The Public Risk Assets Policy Benchmark is composed as follows: 47.5% Russell 3000 Index, 27.5% MSCI ACWI ex-USA Index, 25.0% Barclays U.S. Intermediate Credit Index.

\*\* The Public Risk Assets Strategic Benchmark changes monthly based on the actual asset allocation at the end of the previous month. It was established more recently so a ten-year return is not available.

The table indicates that the Systems have taken slightly less risk relative to the policy benchmark (as measured by standard deviation) while achieving higher returns over the longer-term time periods, thereby indicating strong risk-adjusted performance. Additionally, the Systems' portfolios have a beta of less than 1.0 relative to the policy benchmark, indicating less market risk.

## U.S. Public Equity Program Summary

As of June 30, 2016, U.S. Public Equity assets had a market value of approximately \$11.7 billion, representing 30.7% of total assets.

### Investment Program Description

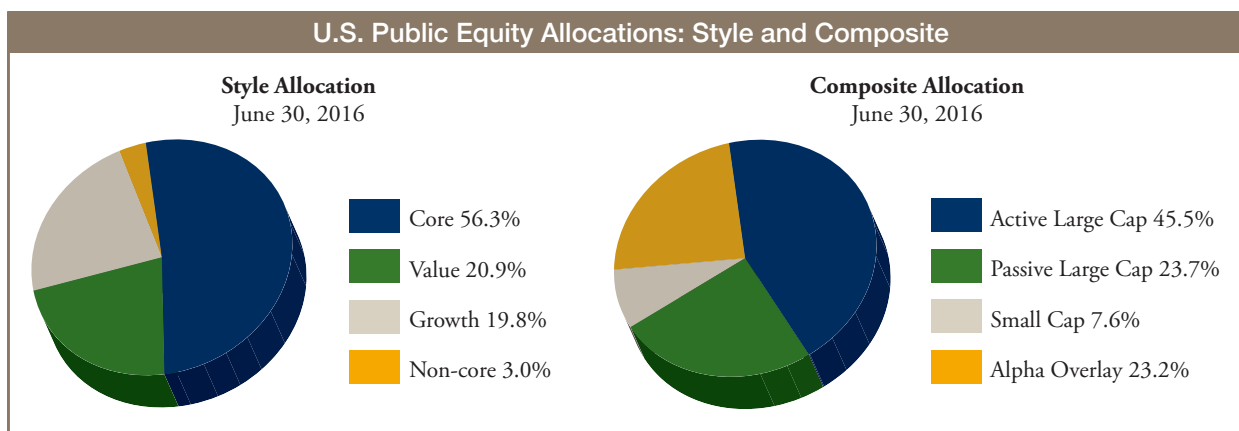
U.S. Public Equity is comprised of the Large-Cap, Small-Cap and Alpha Overlay programs which seek to provide long-term capital appreciation and dividend income in excess of inflation through the investment in domestic equity securities. Returns above a purely passive investment benchmark are targeted through the use of a wide variety of active investment strategies that may employ exposure to both equity securities and other types of investments. The primary *beta* exposure is achieved through investments in passive investment vehicles (including derivatives), traditional long-only active domestic equity management, and active long/short approaches. *Alpha* (or, excess returns above a passive alternative) is expected to be achieved through traditional long-only active domestic equity management, active long/short approaches and alpha overlay strategies (described in greater detail at the end of this section).

### Structure

As of June 30, 2016, 23.7% of the U.S. Public Equity composite was passively managed. The remainder of the portfolio was actively managed and diversified across a broad array of capitalization ranges and investment styles, including the Small-Cap Alpha Pool and the Alpha Overlay program. Both programs represent multi-manager pools of assets managed within the overall U.S. Public Equity structure. The Small-Cap program encompasses all small capitalization assets. The Alpha Overlay composite focuses on the separation of returns into alpha and beta, and encompasses alternative equity mandates including hedge fund portfolios.

Exposure to the various segments of the domestic equity market (i.e., growth-oriented, value-oriented, and core) and to the approved investment strategy types are achieved through the identification, selection and on-going management of SEC-registered investment advisors qualified to serve as fiduciaries to the Systems.

The pie charts below depict the U.S. Public Equity portfolio by presenting the current style structure of the portfolio as well as the allocation by composite and market sector.



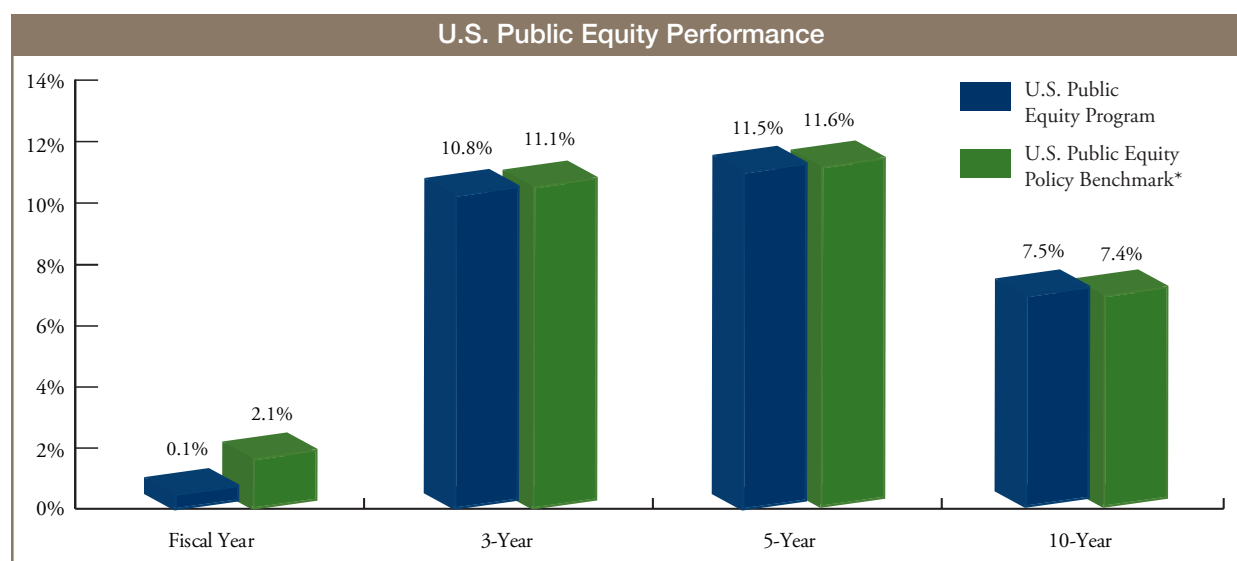
## Market Overview

The U.S. stock markets had a volatile year across both market capitalization and styles. The comprehensive measure of the U.S. stock market (Russell 3000 Index) increased 2.1% while small-cap stocks (Russell 2000 Index) decreased 6.7% for the year. Large-cap growth stocks (Russell 1000 Growth Index) slightly outperformed large-cap value stocks (Russell 1000 Value Index) with a return of 3.0% compared to 2.9% while small-cap growth stocks (Russell 2000 Growth Index) significantly underperformed small cap value stocks (Russell 2000 Value Index) with a return of -10.8% compared to -2.6%.

## Performance

The total return for the U.S. Public Equity program was 0.1% compared to the benchmark return of 2.1% for the fiscal year ended June 30, 2016. Within the U.S. Public Equity program the Large-Cap pool returned 0.9%, Alpha Overlay returned 0.6% and the Small-Cap program returned -7.6% for the year.

As indicated in the table and graph, despite the weak equity markets this year the U.S. Public Equity portfolio has produced strong absolute returns over extended time periods. Over longer periods of time, the Systems' U.S. Public Equity portfolio is designed to deliver approximately 50-100 basis points of excess return through a combination of active and passive investment strategies.



Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
U.S. Public Equity Return	0.1%	10.8%	11.5%	7.5%
Annualized Policy Benchmark Return*	2.1%	11.1%	11.6%	7.4%
Excess Return	-2.0%	-0.3%	-0.1%	0.1%

\*The U.S. Public Equity Policy Benchmark is the Russell 3000 Index.

## Statistics

The following table displays the statistical characteristics of the Systems' U.S. Public Equity program as of June 30, 2016 with comparisons shown to the portfolio's policy benchmark. In addition, the top ten U.S. stock holdings as of June 30, 2016 are shown in the table by the characteristics.

U.S. Public Equity Characteristics		
Characteristics	June 30, 2016 Combined Systems*	June 30, 2016 Russell 3000 Index
Number of Securities	2,068	3,007
Dividend Yield	2.0%	2.0%
Price-to-Earnings Ratio	18.3	20.6
Avg Market Capitalization	92.8 bil	114.6 bil
Price-to-Book Ratio	2.9	2.8

\* Includes only actively managed separate accounts.

A complete list of portfolio holdings is available upon request.

U.S. Public Equity - Top 10 Holdings		
Top 10 Largest Holdings* June 30, 2016	Fair Value	% of Total U.S. Public Equity
Johnson & Johnson	\$ 116,390,989	1.0%
Alphabet, Inc.	85,589,015	0.7%
Amazon.com, Inc.	77,222,554	0.7%
Verizon Communications, Inc.	74,708,057	0.6%
JPMorgan Chase & Co.	68,124,206	0.6%
PepsiCo, Inc.	64,183,325	0.5%
AT&T, Inc.	61,165,613	0.5%
Facebook, Inc.	58,426,907	0.5%
Pfizer, Inc.	54,881,440	0.5%
Microsoft Corp.	53,990,542	0.5%
<b>TOTAL</b>	<b>\$ 714,682,648</b>	<b>6.1%</b>

## Investment Advisors

As of June 30, 2016, the Systems had contracts with 15 external investment advisors who managed 23 portfolios that comprised 76.8% of the U.S. Public Equity portfolio. The remaining 23.2% of the portfolio was in the Alpha Overlay program described in the next section. In fiscal year 2016, one new investment advisor was added: a U.S. equity concentrated assignment by Lazard Asset Management.

U.S. Public Equity Investment Advisors			
Investment Advisor	Investment Style	Fair Value* As of June 30, 2016	% of Total Fair Value
Analytic Investors	Structured Large Cap Value	\$ 227,294,336	0.6%
Analytic Investors	U.S. Low Volatility Equity	1,254,361,809	3.3%
AQR Capital Management	Large Cap 140/40 Core	599,881,085	1.6%
Aronson + Johnson + Ortiz	Active Large Cap 130/30 Value	395,325,892	1.1%
Aronson + Johnson + Ortiz	Active Large Cap Value	536,335,113	1.4%
Blackrock	Passive Russell 1000 Index	2,473,808,258	6.5%
Blackrock	Passive Russell 1000 Growth Index	299,835,052	0.8%
Columbia Management	Active Large Cap Growth	369,738,347	1.0%
Lazard Asset Management	Active U.S. Equity Concentrated	299,945,504	0.8%
Martingale Asset Management	Active Large Cap 130/30 Growth	354,886,839	0.9%
Westwood Management	Active Large Cap Value	537,195,868	1.4%
Westwood Management	Master Limited Partnerships	267,896,251	0.7%
Zevenbergen Capital	Active All Cap Growth	470,189,055	1.2%
<b>Large-Cap Subtotal</b>		<b>8,086,693,409</b>	<b>21.3%</b>
Allianz	Active Micro Cap Growth	88,511,139	0.2%
Allianz	Active Ultra Micro Cap Growth	29,283,124	0.1%
AQR Capital Management	Active Small Cap Value	156,373,471	0.4%
Chartwell Investment Partners	Active Small Cap Value	85,452,556	0.2%
Columbus Circle	Active Small Cap Growth	86,908,010	0.2%
Next Century Growth Investors	Active Small Cap Growth	66,091,754	0.2%
Next Century Growth Investors	Active Micro Cap Growth	12,184,880	0.0%
NISA Investment Advisors	Russell 2000 Value Exposure	98,116,248	0.3%
NISA Investment Advisors	Russell 2000 Exposure	103,974,537	0.3%
RBC Global Asset Management	Active Small Cap Core	164,336,148	0.4%
<b>Small-Cap Subtotal</b>		<b>891,231,867</b>	<b>2.3%</b>
<b>Total</b>		<b>\$ 8,977,925,276</b>	<b>23.6%</b>

\*Includes manager cash

## Alpha Overlay Program Summary

As of June 30, 2016, the Alpha Overlay allocation had a market value of approximately \$2.7 billion, representing 7.1% of total assets.

### Investment Program Description

The Alpha Overlay portfolio resides within the U.S. Large-Cap Equity program. The Alpha Overlay portfolio has been constructed to assist in meeting the long-term goals established for the overall U.S. Large-Cap Equity allocation. Specifically, Alpha Overlay provides broad exposure to large-cap U.S. stocks using S&P 500 total return swaps, while the returns of a select portfolio of hedge fund strategies provides the opportunity to earn excess returns above the passive S&P 500 Index. By combining the market exposure obtained through the S&P 500 total return swaps with the diversified exposures to investment strategies focused on alpha generation, the combined portfolio is constructed and managed to produce a return stream with volatility and beta characteristics similar to the passive S&P 500 Index, while generating excess returns (or alpha) of approximately 200-250 basis points over longer periods of time.

### Structure

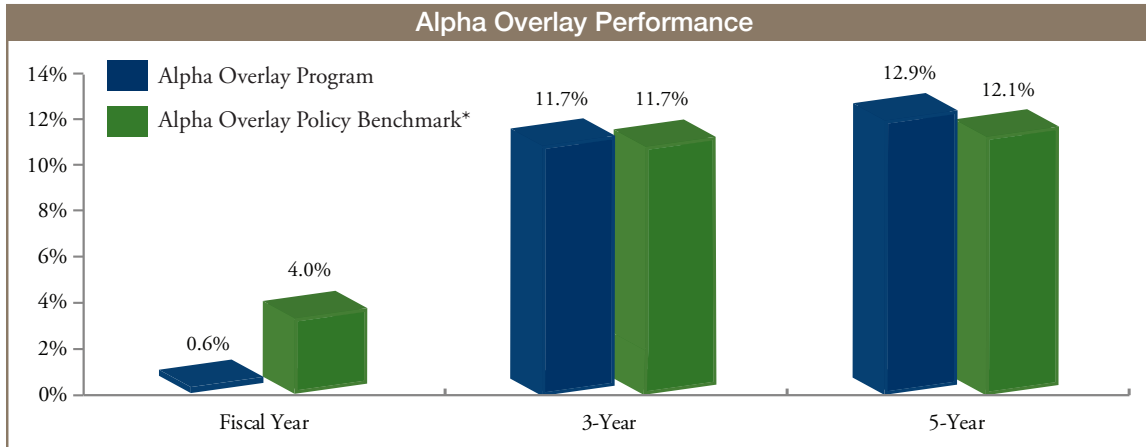
As of June 30, 2016, 25.8% of the Alpha Overlay composite assets were passively managed by NISA Investment Advisors using S&P 500 total return swaps to attain equitization. An additional 70.3% of the portfolio was actively managed across a diversified range of multi-strategy and market neutral hedge fund mandates. The remaining 3.9% of the portfolio was actively managed by Zevenbergen Capital in a long-only mandate. The chart below displays the specific investment advisor exposure within the composite as of June 30, 2016.

Alpha Overlay Investment Advisors				
Investment Advisor	Investment Style	Fair Value*	As of June 30, 2016	% of Total Fair Value
Analytic Investors	Japan Market Neutral	\$	31,415,359	0.1%
AQR Absolute Return Fund	Multi-Strategy		143,895,004	0.4%
Bridgewater Pure Alpha II	Asset Allocation/Global Macro		253,246,117	0.7%
Bridgewater Pure Alpha Major Markets	Asset Allocation/Global Macro		68,532,307	0.2%
Carlson Black Diamond	Multi-Strategy		198,963,582	0.5%
Davidson Kempner Institutional Partners	Multi-Strategy		212,338,037	0.6%
HBK Capital Management	Multi-Strategy		122,665,986	0.3%
NISA Investment Advisors	S&P 500 Exposure		699,686,729	1.8%
Och-Ziff Asia	Multi-Strategy		27,427,345	0.1%
Och-Ziff Domestic Partners	Multi-Strategy		171,694,489	0.4%
Owl Creek Overseas Fund	Multi-Strategy		40,305,852	0.1%
Pershing Square	Equity Long/short		91,049,111	0.2%
Renaissance Institutional Equities Fund	Equity Long/short		281,648,943	0.7%
Stark Investments Limited Partners	Equity Long/short		2,377,145	0.0%
UBS O'Connor Multi-Strategy Alpha	Multi-Strategy		193,113,510	0.5%
York Capital Management	Multi-Strategy		71,642,757	0.2%
Zevenbergen Capital	Active All-Cap Growth		106,861,337	0.3%
<b>Total</b>			<b>\$ 2,716,863,609</b>	<b>7.1%</b>

\* Includes manager cash

## Performance

The total return for the Alpha Overlay program was 0.6% compared to the benchmark return of 4.0% for the fiscal year ended June 30, 2016. As shown in the table and graph below, the Alpha Overlay composite has produced significant absolute returns over the last five years while maintaining a risk profile (standard deviation and beta) lower than the benchmark.



Portfolio Characteristics	Fiscal Year	3-Year	5-Year
Annualized Alpha Overlay Return	0.6%	11.7%	12.9%
Annualized Policy Benchmark Return*	4.0%	11.7%	12.1%
Excess Return	-3.4%	0.0%	0.8%
Annualized Standard Deviation of Composite	12.4%	10.4%	11.3%
Annualized Standard Deviation of Policy Benchmark*	14.5%	11.3%	12.1%
Beta to Benchmark*	0.84	0.89	0.92

\*The Alpha Overlay Policy Benchmark is the S&P 500 Index. Ten-year returns are not available due to the age of the asset class.



## Non-U.S. Public Equity Program Summary

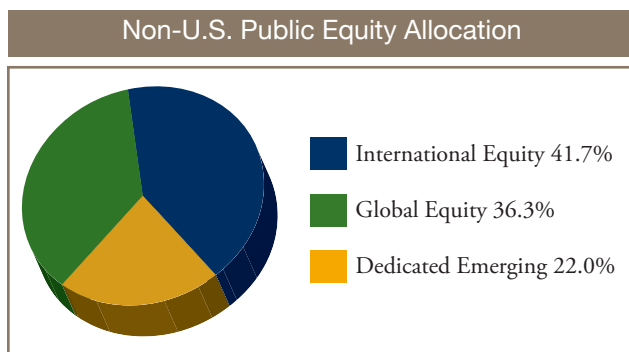
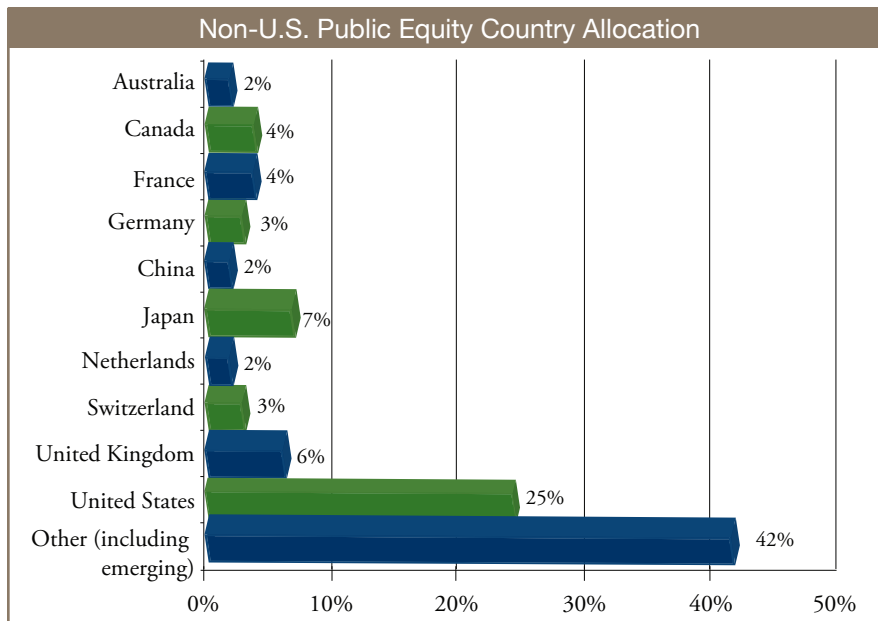
As of June 30, 2016, the Non-U.S. Public Equity assets had a market value of approximately \$5.9 billion, representing 15.4% of total assets.

### Investment Program Description

The Non-U.S. Public Equity program provides long-term capital appreciation and dividend income in excess of inflation through exposure to public equity securities on a global basis. Specific investment strategies approved for the Non-U.S. Public Equity program include passive investment vehicles, traditional long-only active equity management and active long/short approaches. Exposure to the various segments of the global equity market (i.e., U.S., developed non-U.S. and emerging) and to the approved investment strategy types are achieved through the identification, selection and on-going management of SEC-registered investment advisors qualified to serve as fiduciaries to the Systems. The Non-U.S. Public Equity portfolio provides an element of diversification relative to the domestic equity portfolio. Currency is an aspect of international investing that can impact the performance and volatility of the asset class over the short-term. However, over the long-term, the effect from currency is expected to be neutral.

### Structure

As of June 30, 2016, 17.6% of the Non-U.S. Public Equity composite was passively managed. The remainder of the portfolio was actively managed and diversified across capitalization ranges, styles and a number of developed and emerging market countries. The bar graph displays the specific country exposure within the composite while the pie chart indicates broader exposure by investment mandate.

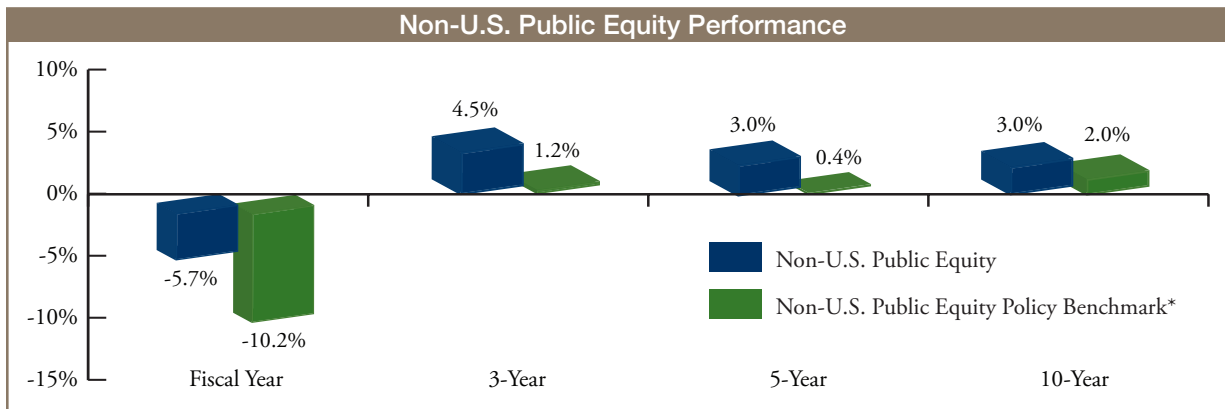


## Market Overview

Global markets decreased substantially in fiscal year 2016 as a result of global economic and monetary policy uncertainty, extreme energy price volatility, and concerns with the British referendum on membership in the European Union. The broad measure for developed international markets (MSCI EAFE Index) decreased 10.2%, emerging markets (MSCI EM Index) decreased 12.1% and global stocks (MSCI World) decreased 2.8%.

## Performance

As shown in the table and graph below, the Systems' Non-U.S. Public Equity composite returns substantially outperformed the benchmark during all time periods. Over long periods of time, the Systems' Non-U.S. Public Equity program is designed to deliver approximately 100-150 basis points of excess return through a combination of active and passive investment strategies.



Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Non-U.S. Public Equity Return	-5.7%	4.5%	3.0%	3.0%
Annualized Policy Benchmark Return*	-10.2%	1.2%	0.4%	2.0%
Excess return	4.5%	3.3%	2.6%	1.0%

\*The Non-U.S. Public Equity Benchmark is the MSCI ACWI ex-USA Index.

The total return for the Non-U.S. Public Equity program was -5.7% compared to the benchmark return of -10.2% for the fiscal year ended June 30, 2016. The absolute return for the fiscal year is negative, but on a relative basis the program outperformed the benchmark by 450 basis points. The positive performance of the portfolio relative to the policy benchmark indicates substantial value added by the internal staff through both strategic asset allocation decisions and manager selection decisions.

## Statistics

The following table displays the top ten global stock holdings as of June 30, 2016.

Non-U.S. Public Equity - Top 10 Holdings		
Top 10 Largest Holdings* June 30, 2016	Fair Value	% of Total Non-U.S. Public Equity
Nestle SA	\$ 65,562,165	1.1%
Roche Holding AG	50,067,524	0.9%
Taiwan Semiconductor Ltd.	31,366,490	0.5%
Bayer AG	29,400,036	0.5%
Compass Group	28,014,721	0.5%
WPP Plc	27,050,634	0.5%
Hoya Corp.	23,782,704	0.4%
AIA Group Ltd.	23,314,953	0.4%
Danone SA	22,868,529	0.4%
ING	22,416,365	0.4%
<b>Total</b>	<b>\$ 323,844,121</b>	<b>5.6%</b>

\* Includes only actively managed separate accounts

A complete list of portfolio holdings is available upon request.

## Investment Advisors

As of June 30, 2016, the Systems had contracts with 11 external investment advisors who managed 15 portfolios within the Non-U.S. Public Equity portfolio. In fiscal year 2016, one new investment portfolio was added: a euro currency hedge assignment managed by NISA Investment Advisors.

Non-U.S. Public Equity Investment Advisors			
Investment Advisor	Investment Style	Fair Value* As of June 30, 2016	% of Total Fair Value
Acadian Asset Management	Active Emerging Markets	\$ 363,897,684	1.0%
AllianceBernstein Institutional Mgmt.	Active Intl Value	319,482,821	0.8%
Analytic Investors	Active Global	680,152,307	1.8%
AQR Capital Management	Active Intl Core	604,012,261	1.6%
Arrowstreet Capital	Active Emerging Markets	190,360,993	0.5%
Arrowstreet Capital	Active Global	531,168,031	1.4%
Arrowstreet Capital	Global Long/Short	597,578,461	1.6%
Blackrock	Passive Intl Core	706,959,798	1.9%
Coronation Asset Management Limited	Active Emerging Markets	184,243,851	0.5%
MFS Investment Management	Active Intl Core	698,103,136	1.8%
MFS Investment Management	Active Intl Concentrated Core	113,934,173	0.3%
Neon Capital Management	Active Emerging Markets	81,788,737	0.2%
NISA Investment Advisors	ACWI Swaps	320,007,718	0.8%
NISA Investment Advisors	Currency Hedge	(6,806,325)	0.0%
Rock Creek Group	Active Emerging Markets	466,108,300	1.2%
Transition accounts	Transition accounts	174,138	0.0%
<b>Total</b>		<b>\$ 5,851,166,084</b>	<b>15.4%</b>

\* Includes manager cash.

## Public Credit Program Summary

As of June 30, 2016, the Public Credit assets had a market value of approximately \$2.4 billion, representing 6.2% of total assets.

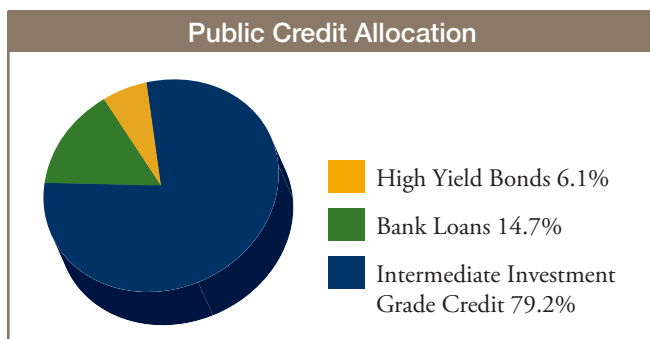
### Investment Program Description

The Public Credit Program is designed to provide a source of income and capital appreciation for the Systems while creating substantial diversification to the total plan with a low correlation to other asset classes. Most securities in this program exhibit high liquidity. Specific investments can include investment grade corporate securities, below investment grade debt instruments, distressed debt securities, convertible bonds, bank loans, agencies, mortgage-backed securities, asset-backed securities, and interest rate sensitive securities (including those issued or guaranteed by the United States government or its agencies). Investments in this program may include debt of both U.S. and non-U.S. issuers.

The performance objective for the Public Credit program is to exceed the returns of the investment grade credit markets through the use of a wide variety of active management approaches while incurring a level of risk that is generally consistent with the policy benchmark.

### Structure

As of June 30, 2016, the Public Credit composite was actively managed and diversified across high quality corporate bonds, bank loans and high yield bonds. The pie chart below presents the strategy allocation of the Systems' Public Credit assets as of June 30, 2016.



The target allocation for the Public Credit program during fiscal year 2016 was 12.0% and the Systems' allocation at the end of the fiscal year was 6.2%. Within the Public Credit composite, the Systems' internal staff has built a diversified portfolio with a base of high quality, shorter duration corporate bonds.

### Market Overview

Interest rates continued to experience significant volatility during fiscal year 2016, with the intermediate and long ends of the treasury yield curve hitting all-time lows. The yield on the 10-year Treasury decreased to 1.49% on June 30, 2016 from 2.35% on June 30, 2015. The significant decrease in interest rates throughout the year positively impacted the price of bonds.

Investment grade credit corporate bonds (Barclays U.S. Intermediate Credit Index) increased 5.0% for the year while a broader measure of the U.S. bond market (Barclays U.S. Aggregate Index) increased 6.0%. High yield, or lower quality, bonds (Merrill Lynch High Yield Master II Index) increased 1.7% for the year and global bonds (Barclays U.S. Global Bond Index) increased 11.2%.

### Statistics

The following table displays the top ten Public Credit holdings as of June 30, 2016.

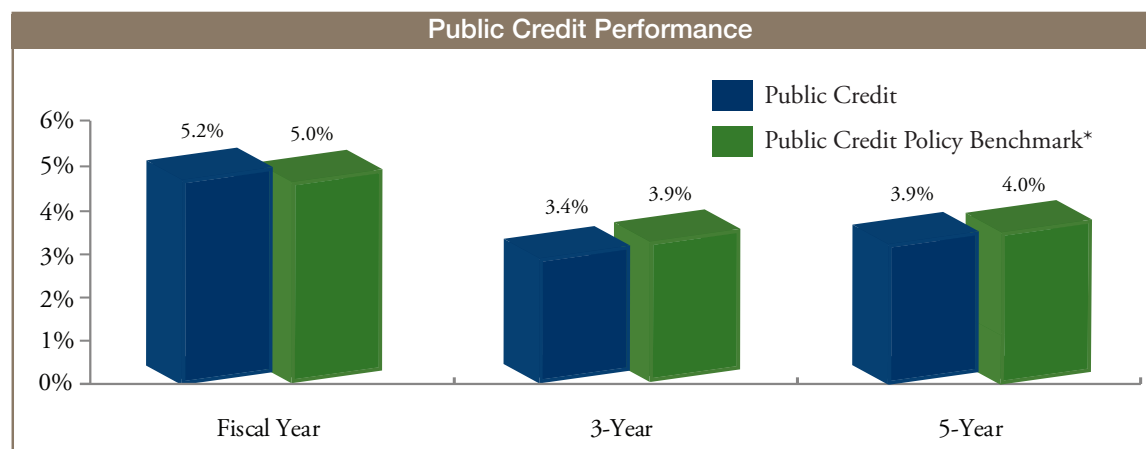
Public Credit - Top 10 Holdings		
Top 10 Largest Holdings* June 30, 2016	Fair Value	% of Total Public Credit
AT&T Inc., 0.00%, 11/27/2022	\$ 50,893,920	2.1%
Pfizer, Inc., 6.2%, 03/15/2019	45,176,400	1.9%
FedEx Corp., 4.75%, 11/15/2045	44,833,117	1.9%
Wells Fargo & Co., 2.5%, 03/04/2021	44,170,828	1.9%
The Southern Co., 3.25%, 07/01/2026	41,548,800	1.8%
VISA Inc., 2.2%, 12/14/2020	41,243,200	1.7%
Anheuser-Busch InBev Finance, Inc., 3.65%, 02/01/2026	40,980,669	1.7%
Oracle Corp., 2.4%, 09/15/2023	40,142,400	1.7%
Sumitomo Mitsui Banking, 1.35%, 7/11/2017	35,001,750	1.5%
MUFG Union Bank, 2.625%, 09/26/2018	34,948,980	1.5%
<b>Total</b>	<b>\$ 418,940,063</b>	<b>17.7%</b>

\* Includes only actively managed separate accounts.

A complete list of portfolio holdings is available upon request.

## Performance

The total return for the Public Credit program was 5.2% compared to the benchmark return of 5.0% for the fiscal year ended June 30, 2016. Over long periods of time, the Systems' Public Credit program is designed to deliver approximately 30-70 basis points of excess return through a combination of active and passive strategies.



**Public Credit Statistical Performance**

Portfolio Characteristics	Fiscal Year	3-Year	5-Year
Annualized Public Credit Return	5.2%	3.4%	3.9%
Annualized Policy Benchmark Return*	5.0%	3.9%	4.0%
Excess Return	0.2%	-0.5%	-0.1%

\*The Public Credit Policy Benchmark is the Barclays U.S. Intermediate Credit Index.

The Public Credit Program was established in December 2008, so ten-year returns are not available.

## Investment Advisors

As of June 30, 2016, the Systems had contracts with three external investment advisors who managed three portfolios in the Public Credit portfolio. The Systems repositioned the portfolio during the fiscal year by terminating two portfolios and adding a new high yield mandate with Pacific Investment Management Co.

**Public Credit Investment Advisors**

Investment Advisor	Investment Style	Fair Value* As of June 30, 2016	% of Total Fair Value
NISA Investment Advisors	Corporate Credit	\$ 1,879,669,377	4.9%
Oaktree Bank Loans	Senior Bank Loans	347,436,617	0.9%
Pacific Investment Management Co.	High Yield	145,712,908	0.4%
<b>Total</b>		<b>\$ 2,372,818,902</b>	<b>6.2%</b>

\*Includes manager cash

## Hedged Assets Program Summary

As of June 30, 2016, the Hedged Assets portfolio had a market value of approximately \$5.1 billion, representing 13.4% of total assets.

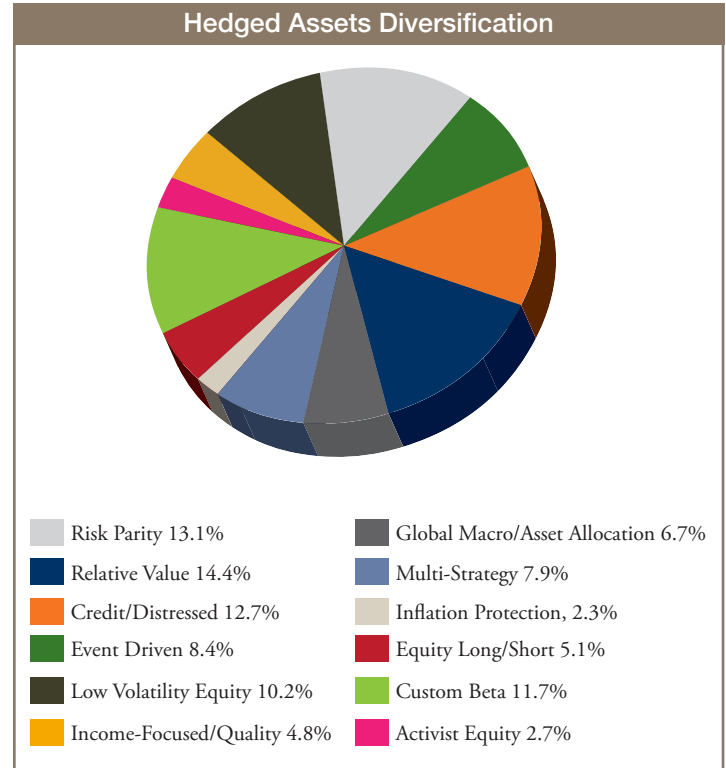
### Investment Program Description

The Hedged Assets program’s objective is to provide diversification to the total portfolio and reduce volatility within the Public Risk composite. The purpose of this program is to enhance the overall risk/return profile of the Public Risk composite through the inclusion of specialized investment strategies that typically generate returns in a different fashion (i.e., absent a high correlation to equities or bonds). These strategies may utilize leverage as allowed within their governing documents. The returns from these strategies have historically had a low-to-moderate correlation with the traditional equity markets, thus providing diversification benefits in addition to portfolio return enhancement. These strategies seek to control risks and maintain a focus on absolute returns. The inherent nature of these vehicles to serve as a “hedge” provides for the expectation that the program will lag the equity market during times when equities are performing above the long-term averages. However, when equities are performing below the long-term averages, the program would be expected to outperform the equity market. In addition, managers within this asset class have historically possessed significantly lower volatility relative to traditional equity managers.

### Structure

The Systems have retained Albourne America, LLC (Albourne) as its hedged asset consultant. Albourne is an independent global advisory with a significant focus on hedge funds. The Systems utilize direct investments into hedge funds as opposed to incorporating fund-of-funds. The Systems’ internal staff believes the benefits of direct investments, including lower fees, customized portfolio exposures, direct access to manager knowledge, and higher levels of transparency outweighed the benefit of quicker implementation offered by fund-of-funds.

As the chart below indicates, the Hedged Assets program is diversified into Multi-Strategy Managers, Asset Allocation/Global Macro, Diversified Beta/Inflation, Credit/Distressed Specialists and Equity Long/Short. Multi-Strategy Managers include those focused on event-driven, credit, and relative value. The Systems manage the Hedged Assets portfolio to a blended benchmark of 25% Russell 3000 Index, 25% MSCI ACWI ex-USA Index, and 50% Barclays U.S. Intermediate Credit Index.

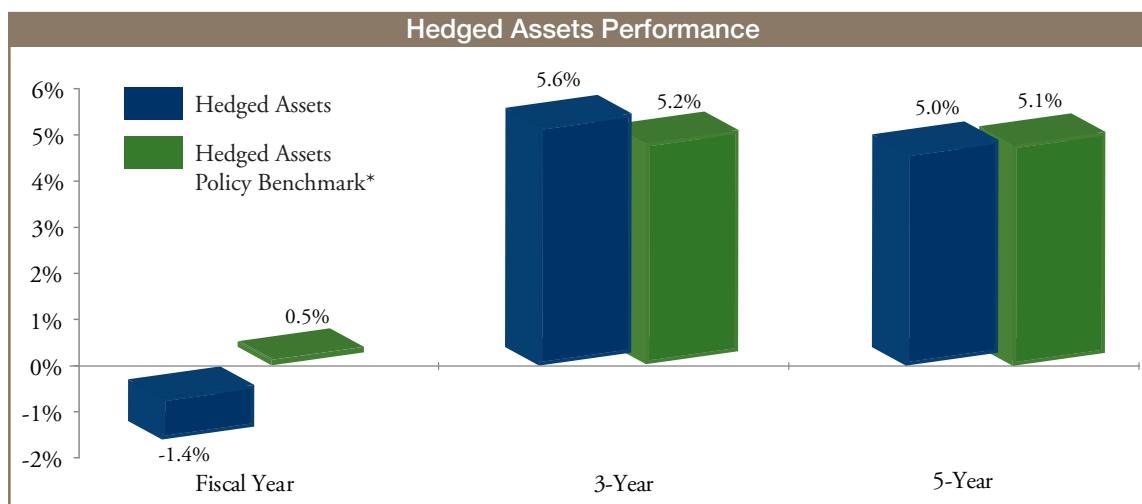


### Performance

The total annualized return on the Systems’ Hedged Assets portfolio was -1.4%, compared to the benchmark return of 0.5% for the fiscal year ended June 30, 2016.

Over the past five years, the Hedged Assets program has performed approximately equal to its policy benchmark of 5.1%. The performance relative to the policy benchmark is particularly significant given the strong performance of equities over the past five years. The Russell 3000 Index was up an annualized 11.6% over the past five years and the MSCI ACWI Index was up an annualized 5.4%. As discussed previously, the hedging characteristics of the Hedged Assets program provide for the expectation that its performance will lag equity markets and/or its policy benchmark during periods of higher-than-normal equity returns. The Hedged

Assets program is expected to outperform in more normal and down markets. As the table indicates, the longer-term performance was accomplished by assuming less than one-half of the volatility of the world stock index and achieving a beta of approximately 0.40 to the index, signifying that the Systems' portfolio moves up or down less than half as much as the world stock index.



Portfolio Characteristics	Fiscal Year	3-Year	5-Year
Annualized Hedged Assets Return	-1.4%	5.6%	5.0%
Annualized Policy Benchmark Return*	0.5%	5.2%	5.1%
Annualized S&P 500 Return	4.0%	11.7%	12.1%
Annualized MSCI ACWI Index	-3.7%	6.0%	5.4%
Annualized Standard Deviation of Composite	4.8%	4.9%	5.9%
Annualized Standard Deviation of Policy Benchmark	8.3%	6.4%	7.4%
Annualized Standard Deviation of S&P 500	14.5%	11.3%	12.1%
Annualized Standard Deviation to MSCI ACWI Index	15.5%	11.8%	13.5%
Beta to Policy Benchmark	0.52	0.68	0.73
Beta to S&P 500	0.30	0.35	0.40
Beta to MSCI ACWI Index	0.28	0.35	0.38

\*The Hedged Assets Policy Benchmark is composed as follows: 50% Barclays U.S. Intermediate Credit Index, 25% MSCI ACWI ex-USA, 25% Russell 3000 Index.

## Investment Advisors

As of June 30, 2016, the Systems had contracts with 17 external investment advisors who managed 25 portfolios. During the fiscal year one new investment mandate was added with HBK Capital Management.

Hedged Assets Investment Advisors			
Investment Advisor	Investment Style	Fair Value*	% of Total
		As of June 30, 2016	Fair Value
AQR Absolute Return Fund	Multi-Strategy	\$ 215,842,505	0.6%
AQR Diversified Beta Fund	Diversified Beta/Inflation	355,046,254	0.9%
AQR Real Asset Fund	Multi-Strategy	47,026,659	0.1%
Bridgewater All Weather	Equity Long/short	316,234,718	0.8%
Bridgewater Inflation Pool	Diversified Beta/Inflation	70,389,391	0.2%
Bridgewater Pure Alpha II	Asset Allocation/Global Macro	136,363,296	0.4%
Bridgewater Pure Alpha Major Markets	Asset Allocation/Global Macro	205,596,921	0.5%
Carlson Black Diamond	Multi-Strategy	243,177,712	0.6%
Davidson Kempner Institutional Partners	Multi-Strategy	259,524,267	0.7%
Davidson Kempner Distressed Opportunities Fund	Distressed Debt/Credit	204,662,967	0.5%
GoldenTree Partners	Distressed Debt/Credit	442,758,411	1.2%
HBK Capital Management	Multi-Strategy	81,777,324	0.2%
Indus Asia Pacific Fund	Equity Long/short	92,488,923	0.2%
Maverick Fund USA	Equity Long/short	166,707,832	0.4%
NISA Investment Advisors	Diversified Beta/Inflation	597,434,303	1.6%
Och-Ziff Domestic Partners	Multi-Strategy	209,848,820	0.6%
Och-Ziff Europe	Multi-Strategy	41,567,089	0.1%
Och-Ziff Asia	Multi-Strategy	155,421,620	0.4%
Owl Creek Overseas Fund	Multi-Strategy	60,458,778	0.2%
Pershing Square	Equity Long/short	136,573,666	0.4%
Renaissance Institutional Equities Fund	Equity Long/short	523,062,323	1.4%
Stark Investments Limited Partners	Equity Long/short	4,414,698	0.0%
UBS O'Connor Multi-Strategy Alpha	Multi-Strategy	193,113,518	0.5%
Westwood Management	Diversified Beta/Inflation	245,509,553	0.6%
York Capital Management	Multi-Strategy	107,464,135	0.3%
<b>Total</b>		<b>\$ 5,112,465,683</b>	<b>13.4%</b>

\*Includes manager cash



## Safe Assets Summary

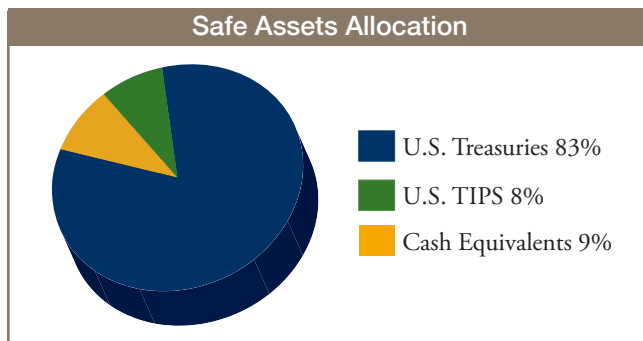
*As of June 30, 2016, Safe Assets had a market value of approximately \$6.6 billion, representing 17.5% of total assets.*

### Investment Program Description

The Safe Assets program is intended to act as a source of safety and income for the Systems. The program is designed to create substantial diversification to the total portfolio and reduce volatility through low correlation to other asset classes. Specifically, the Safe Assets portfolio should provide asset protection at the total fund level in periods of economic stress. The policy benchmark for the Safe Assets allocation is 80% Barclays U.S. Treasury Blended Index (a combination of the Barclays U.S. Treasury: Intermediate Index and the Barclays U.S. Treasury: Long Index) and 20% Barclays U.S. TIPS 1-10 Year Index.

### Structure

As of June 30, 2016, the Systems' entire Safe Assets program was managed by NISA Investment Advisors. The assets held within the program exhibit high liquidity and safety. The pie chart below depicts the Safe Assets Program by showing the sector and composite allocations as of June 30, 2016.



Internal staff continues to maintain a slight underweight to Safe Assets due in part to historically low yields and due to better expected risk/adjusted returns going forward within the Public Risk program. The Systems' allocation to Safe Assets was 17.5% as of June, 30, 2016, as compared to the target weight of 20%.

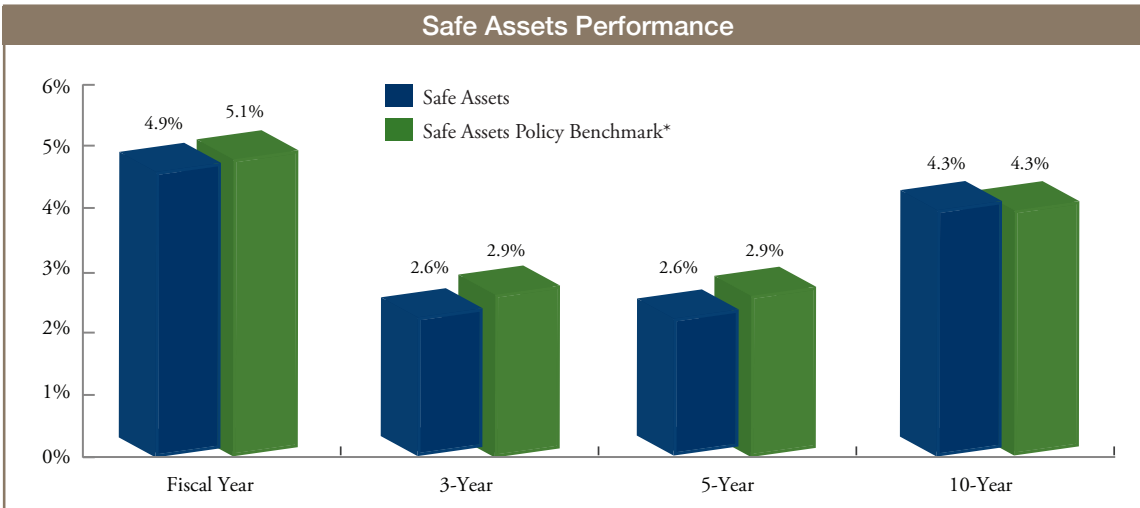
### Market Overview

Interest rates continued to experience significant volatility during fiscal year 2016, with the intermediate and long ends of the treasury yield curve hitting all-time lows. The yield on the 10-year Treasury decreased to 1.49% on June 30, 2016 from 2.35% on June 30, 2015. The significant decrease in interest rates throughout the year positively impacted the price of bonds.

### Performance

The total return for Safe Assets portfolio was 4.9% for the fiscal year ended June 30, 2016. The portfolio underperformed the benchmark for the year by 20 basis points. For the three- and five -year time periods, the Systems' modestly underperformed the Safe Assets benchmark while the portfolio return was equal to benchmark for the ten-year time period.

The absolute return of the Safe Assets portfolio is relatively modest over longer time periods. However, the Safe Assets portfolio continues to provide asset protection at the total fund level in periods of economic stress and ultimate liquidity to the Systems. An allocation to Safe Assets allows the Systems to accept market risk in other portions of the total fund portfolio.



Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Safe Assets Return	4.9%	2.6%	2.6%	4.3%
Annualized Policy Benchmark Return*	5.1%	2.9%	2.9%	4.3%
Excess Return	-0.2%	-0.3%	-0.3%	0.0%
Annualized Standard Deviation of Composite	2.3%	2.5%	2.8%	3.3%
Annualized Standard Deviation of Policy Benchmark*	2.7%	2.8%	2.9%	3.4%
Beta to Policy Benchmark*	0.85	0.88	0.94	0.96
Beta to MSCI World Index	-0.05	-0.06	-0.08	-0.02

\*The Safe Assets Policy Benchmark is composed as follows: 72.0% Barclays U.S. Treasury: Intermediate Index, 20% Barclays U.S. TIPS 1-10 Yrs. Index and 8.0% Barclays U.S. Treasury: Long Index.

The Systems have specifically taken less risk compared to the Policy benchmark more recently with the addition of the cash equivalents portfolio. Additionally, the Systems' portfolios have a beta slightly less than 1.0 relative to the Policy benchmark over all time periods, indicating less market volatility. Most importantly, the Safe Asset portfolio exhibits a beta of approximately zero relative to the world stock index (MSCI ACWI Index), indicating no correlation to risk assets. These statistics support one of the primary objectives of Safe Assets: diversification from other risk assets in the total fund.

## Statistics

The following table displays the statistical characteristics of the Systems' Safe Assets Program as of June 30, 2016 with comparisons shown to the Barclays U.S. Treasury: Intermediate Index. Additionally, the top ten Safe Asset holdings as of June 30, 2016 are shown in the table below the characteristics.

Safe Assets Characteristics		
Characteristics	June 30, 2016 Combined Systems*	June 30, 2016 Barclays U.S. Treasury: Intermediate Index
Number of Securities	92	206
Average Coupon	1.6%	1.8%
Yield to Maturity	0.9%	0.9%
Average Maturity (Years)	6.9	4.2
Duration (Years)	5.0	4.0

Safe Assets - Top 10 Holdings		
Top 10 Largest Holdings* June 30, 2016	Fair Value	% of Total Safe Assets
United States Treasury Note, 1.625%, 11/30/2020	\$ 411,720,000	6.2%
United States Treasury Note, 0.625%, 08/31/2017	403,552,871	6.1%
United States Treasury Bill, 0.00%, 08/25/2016	347,451,826	5.2%
United States Treasury Note, 1.625%, 05/31/2023	276,096,600	4.2%
United States Treasury Note, 0.625%, 05/31/2017	242,157,746	3.6%
United States Treasury Bond, 2.5%, 02/15/2045	216,450,927	3.3%
United States Treasury Note, 3.5%, 05/15/2020	214,299,326	3.2%
United States Treasury Bond, 2.875%, 05/15/2043	200,743,955	3.0%
United States Treasury Note, 2.25%, 11/15/2024	194,676,400	2.9%
United States Treasury Bill, 0.00%, 07/28/2016	189,300,388	2.8%
<b>TOTAL</b>	<b>\$ 2,696,450,039</b>	<b>40.5%</b>

\*Includes only actively managed separate accounts.

A complete list of portfolio holdings is available upon request.

## Investment Advisors

NISA Investment Advisors managed the Safe Assets program as of June 30, 2016. The following table lists the firm's management by investment style.

Safe Assets Investment Advisor			
Investment Advisor	Investment Style	Fair Value* As of June 30, 2016	% of Total Fair Value
NISA Investment Advisors	U.S. Treasuries	\$ 5,535,808,349	14.6%
NISA Investment Advisors	Cash Equivalents	578,407,660	1.5%
NISA Investment Advisors	U.S. TIPS	535,067,846	1.4%
<b>Total</b>		<b>\$ 6,649,283,855</b>	<b>17.5%</b>

\*Includes manager cash

## Private Risk Assets Summary

*As of June 30, 2016, Private Risk assets had a market value of approximately \$6.3 billion, representing 16.6% of total assets.*

### Investment Program Description

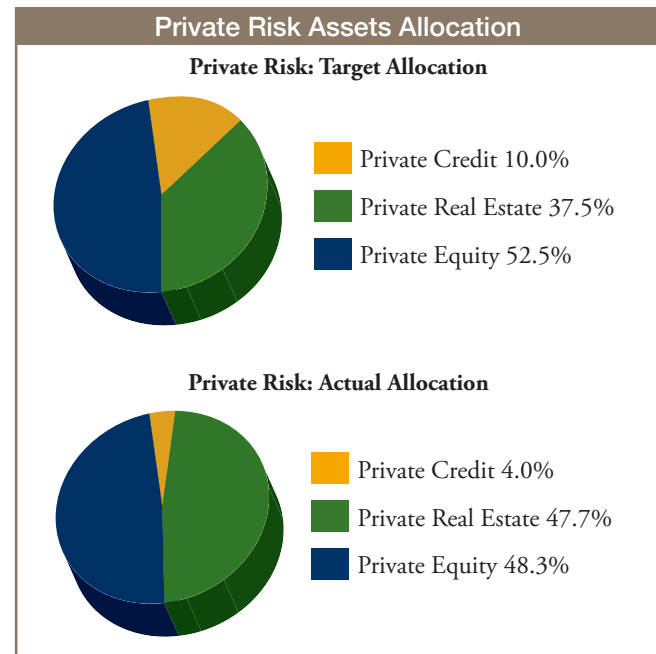
The allocation to Private Risk investments is viewed as a separate asset class for inclusion in the Systems' overall investment portfolios. The process of building the Systems' Private Risk program and fully funding the target allocation is expected to occur over a period of several years. Additional new investments will be necessary beyond the funding period in order to maintain the long-term target allocation. The three programs within the Private Risk Assets composite are Private Equity, Private Real Estate and Private Credit. Each program within the Private Risk allocation is a separate multi-manager composite that is treated generally as a single portfolio. Each program serves a specific and distinct role within the overall Private Risk Composite and also within the overall Total Plan allocation. Over time, the Private Risk Composite serves as a long-term vehicle to supply the underlying beta exposure to a portfolio of private assets.

Investments in Private Risk Assets differ substantially from the Systems' public markets asset classes (Public Risk Assets and Safe Assets) in part because they are typically very long-term in nature, not publicly traded, relatively illiquid, and offer the potential for substantially higher returns (along with a commensurate level of risk). The illiquid nature of Private Risk Assets can result from the form of the asset or security itself, or it can be a function of the investment structure being utilized (e.g., a limited partnership).

Due to the fact that Private Risk Assets are not publicly traded, pricing and performance measurements prior to realization of gains are less reliable than in the traditional publicly traded asset classes. The Systems continually monitor the valuation policies and procedures utilized for such investments.

### Structure

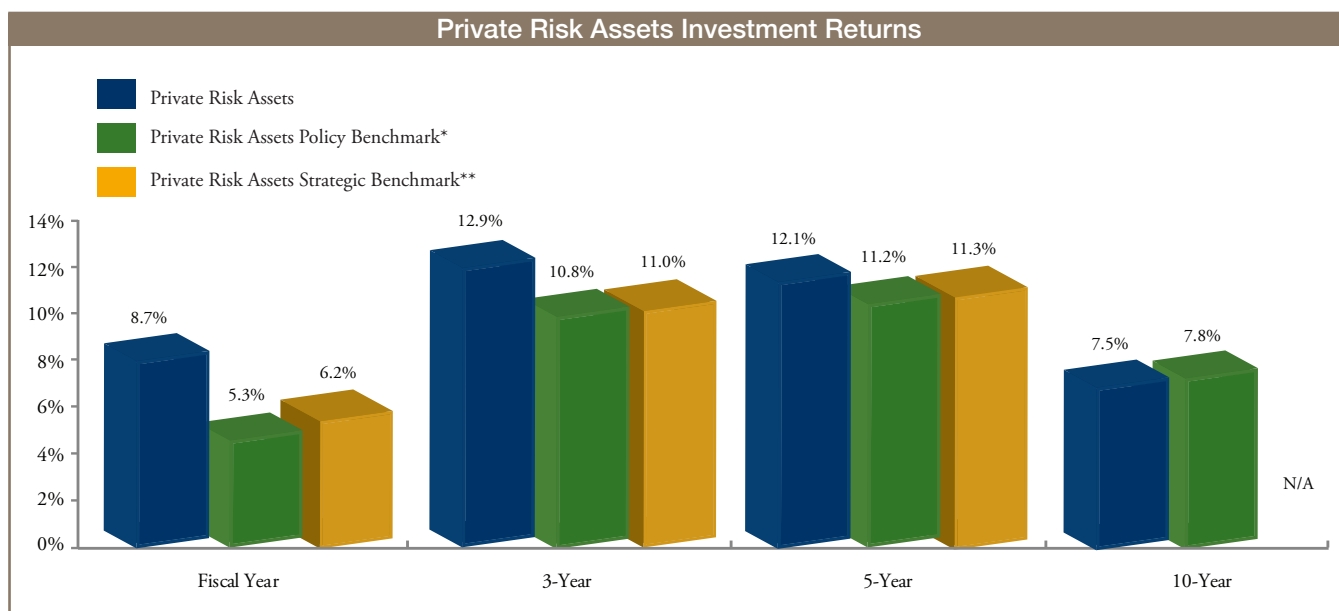
As of June 30, 2016, 48.3% of Private Risk assets were invested in the Private Equity program, 47.7% in the Private Real Estate program, and 4.0% in the Private Credit program. Each of these programs is discussed in more detail on the following pages.



## Performance

The total return for the Private Risk portfolio was 8.7%, compared to the policy benchmark return of 5.3% for the fiscal year ended June 30, 2016. For the three- and five-year time periods, the Systems also significantly outperformed the benchmark. The ten-year return was marginally below the benchmark due to the immaturity of the programs and the impacts of the financial crisis of 2008 and 2009.

The pricing and performance methodology utilized for private assets can provide for significant performance variances over short time periods. For instance, the Systems utilize a liquid benchmark (Russell 3000 Index) to measure an illiquid (private equity) asset class. Thus, there will be significant performance differences over short time periods in volatile markets. Due to the long term nature of Private Risk assets, the performance can be more appropriately judged over a longer timeframe. As the table below indicates, the Private Risk portfolios have produced excellent absolute and relative returns over all time periods.



Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Private Risk Assets Return	8.7%	12.9%	12.1%	7.5%
Annualized Policy Benchmark Return*	5.3%	10.8%	11.2%	7.8%
Excess Return	3.4%	2.1%	0.9%	-0.3%
Annualized Strategic Benchmark Return**	6.2%	11.0%	11.3%	N/A

\* The Private Risk Assets Policy Benchmark is composed as follows: 52.5% Russell 3000 Index, 37.5% NFI-ODCE Index and 10.0% Merrill Lynch High Yield Master II Index.

\*\* The Private Risk Assets Strategic Benchmark changes monthly based on the actual asset allocation at the end of the previous month. It was established more recently so a 10-year return is not available.

## Private Equity Program Summary

*As of June 30, 2016, Private Equity assets had a market value of approximately \$3.0 billion, representing 8.0% of total assets.*

### Investment Program Description

The Private Equity asset class is comprised of investment opportunities not typically included within the public equity and fixed income markets. Private Equity investments provide financing for start-up companies, private middle market companies, firms in financial distress and public and non-public firms seeking buyout financing. Private Equity investments can be classified into three basic sub-asset class categories:

- Venture Capital,
- Buyouts, and
- Debt-Related.

Investments in the sub-asset classes can be made in the U.S. or foreign countries. In total, the allocation to Non-U.S. Private Equity investments will not exceed 40.0% of the overall Private Equity target allocation. The risks associated with Private Equity will be viewed both in isolation and within the context of the entire fund.

In January 2014, the Board of Trustees approved the development and implementation of a Private Equity Co-Investment Program. The Co-Investment Program is expected to further advance the goals and objectives of the overall Private Equity Program by obtaining additional exposure to underlying portfolio company investments through direct equity investments made on a side-by-side basis with private equity funds where the Systems have an existing relationship. Co-investments serve to increase exposure to the Private Equity asset class with little or no additional fees and/or performance carry paid to the underlying private equity partnerships. The objective of the Co-Investment Program is to leverage existing, high-quality relationships with private equity managers in order to increase commitments to the asset class in a format that does not materially increase overall risk, while simultaneously helping to lower fees and performance carry.

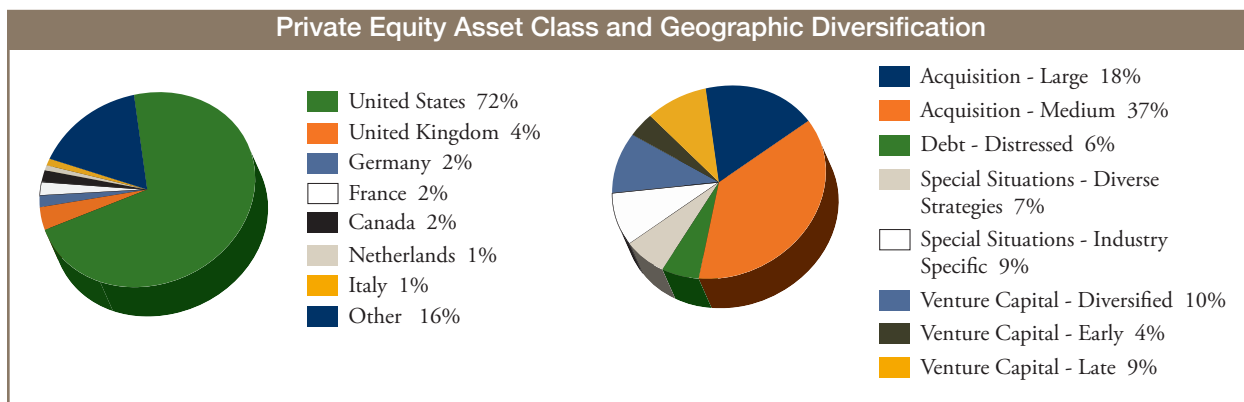
### Structure

As of June 30, 2016, Private Equity assets committed\* for investment were \$7.0 billion. The market value of funds that had been drawn down and actually invested as of June 30, 2016 was approximately \$3.0 billion, representing 8.0% of total assets. The Systems private equity investment commitments that have not yet been funded were approximately \$2.6 billion as of June 30, 2016.

The objective for the Systems' allocation to Private Equity is to achieve returns that are higher than those attainable in the public equity markets with the added benefit of diversification. The target allocation to Private Equity during 2016 was 10.5%. However, as of June 30, 2016, the actual allocation for the Systems was just 8.0% because the long-term and illiquid nature of the private equity asset class dictates that capital must be invested at a measured pace. In addition, private equity investments have made record distributions in recent years. Pathway Capital Management has been retained by the Systems to provide private equity investment management services through three structures; a discretionary fund-of-funds relationship, an advisory relationship and a co-investment program. Additionally, the Systems have invested in private equity secondary funds and also utilize Albourne America, LLC to provide private equity advisory services.

The pie charts on the following page show the diversification (utilizing the market value of the assets that have been invested) of the Systems' private equity holdings as of June 30, 2016 from both strategy and country perspectives.

*\* Committed capital reflects the total amount of capital that the Systems are legally obligated to supply to the partnerships and funds as the capital is needed to invest in underlying holdings. Market value reflects capital that has actually been drawn and invested by the partnerships and funds.*

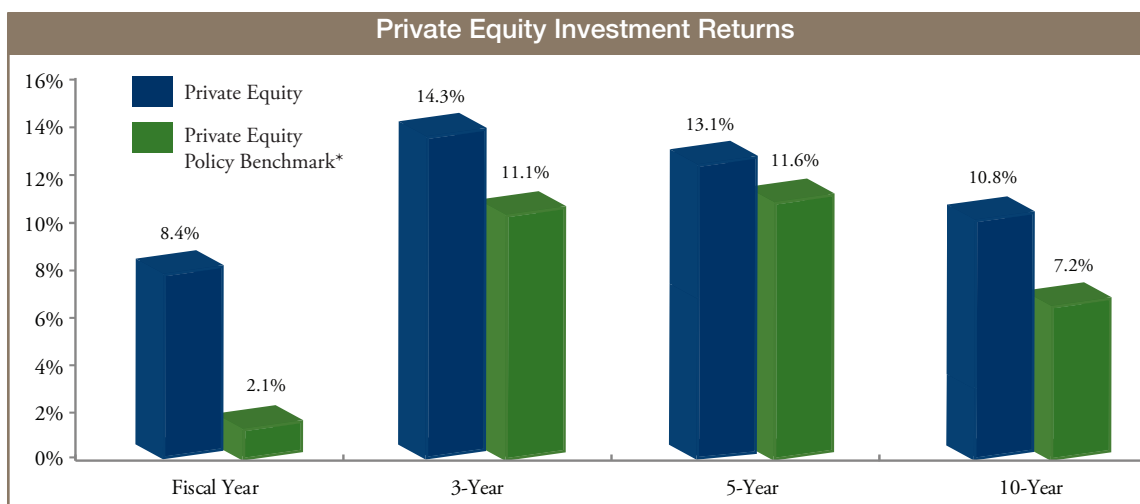


## Market Overview

The Private Equity Program performed extremely well in fiscal year 2016. Despite the volatility in the financial markets and heightened global macroeconomic uncertainty, private equity firms continued to have success. Private equity firms capitalized on opportunities to sell their portfolio companies and continued to deploy capital in attractive investment opportunities.

## Performance

The total return for the Private Equity program was 8.4%, compared to the benchmark return of 2.1% for the fiscal year ended June 30, 2016. While short-term returns are not overly insightful for the Private Equity Program in comparison to its benchmark, the one-year return exceeded the benchmark by 630 basis points. The private equity benchmark utilizes a liquid public equity index (Russell 3000 Index) to measure an illiquid (private equity) asset class. As such, there could be significant performance differences over short time periods in volatile markets. Due to the long term nature of the asset class, the performance of a private equity portfolio can be more appropriately judged over a longer timeframe. As the table below indicates, the Private Equity portfolio has produced excellent absolute and relative returns over all time periods. The ten-year return exceeded the benchmark by 360 basis points.



### Private Equity Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Private Equity Return	8.4%	14.3%	13.1%	10.8%
Annualized Policy Benchmark Return*	2.1%	11.1%	11.6%	7.2%
Excess return	6.3%	3.2%	1.5%	3.6%

\*The Private Equity Policy Benchmark is the Russell 3000 Index.

**Investment Advisors**

As of June 30, 2016, the Systems had committed to 100 separate partnerships with 48 firms within the Private Equity asset class. In fiscal year 2016, the Systems committed to 9 new partnerships for \$334.7 million. Additionally, the Systems received total distributions from the private equity partnerships in excess of \$668 million in fiscal year 2016.

Private Equity Investment Advisors				
Investment Advisor	Investment Style	Fair Value*	As of June 30, 2016	% of Total Fair Value
Advent International GPE VII-B	Acquisition - Medium	\$	45,898,243	0.1%
Baring Asia VI	Acquisition - Medium		9,119,154	0.0%
BC European IX	Acquisition - Medium		26,495,307	0.1%
Blackstone Capital Partners V and VI	Acquisition - Large		36,734,455	0.1%
Canaan Partners IX and X	Venture Capital		29,764,472	0.1%
Carlyle Europe Partners III	Acquisition - Medium		12,735,308	0.0%
Carlyle Partners IV, V and VI	Acquisition - Large		40,791,119	0.1%
Centerbridge Capital Partners I, II and III	Acquisition & Debt		60,697,820	0.2%
Centerbridge Capital Special Credit Partners II and III	Debt - Distressed		27,386,768	0.1%
Coller International Partners VII	Secondary Fund		5,782,515	0.0%
CVC Capital Partners VI	Acquisition - Large		18,862,463	0.0%
CVC European Equity Partners IV and V	Acquisition - Large		18,463,799	0.0%
CVC European Equity Tandem Fund	Acquisition - Large		1,251,025	0.0%
Encap VIII Co-Investors, IX, Flatrock III and Energy fund X	Acquisition - Energy		55,739,157	0.1%
Exponent Partners II	Acquisition - Medium		6,315,445	0.0%
First Reserve Fund XI and XII	Acquisition - Energy		13,179,559	0.0%
Genstar Capital Partners V	Acquisition - Medium		4,017,558	0.0%
Glendon Opportunities Fund	Debt - Distressed		19,091,493	0.1%
GTCR Fund IX, XI and X	Acquisition - Medium		54,007,093	0.1%
Hellman & Friedman Capital Partners VI and VII	Acquisition - Large		39,269,813	0.1%
Insight Venture Partners IX	Acquisition - Technology		10,932,173	0.0%
Institutional Investment Partners XV	Venture Capital		5,652,898	0.0%
Kelso Investment Associates VIII	Acquisition - Medium		25,453,022	0.1%
KKR 2006 Fund	Acquisition - Large		21,437,570	0.1%
KRG Fund IV	Acquisition - Medium		14,771,515	0.0%
Lexington Capital Partners VI-B, VII and VIII	Secondary Fund		161,855,701	0.4%
Madison Dearborn VI	Acquisition - Large		15,237,577	0.0%
Montagu III and IV	Acquisition - Medium		25,647,007	0.1%
Nordic VII and VIII	Acquisition - Medium		46,065,744	0.1%
New Enterprise Associates 13, 14 and 15	Venture Capital		111,106,602	0.3%
Oak Investment Partners XIII	Venture Capital		26,560,664	0.1%
OCM Principal Opportunities Fund IV, VII, VIIIb and IX	Debt - Distressed		44,279,838	0.1%
Odyssey Investment Partners IV and V	Acquisition - Medium		22,013,907	0.1%
Onex Partners II, III and IV	Acquisition - Medium		44,518,943	0.1%
Pantheon Global Secondary Fund III and IV	Secondary Fund		71,174,002	0.2%
Pathway Capital Management	Fund-of-Funds		1,388,887,775	3.6%
Paul Capital Partners IX	Secondary Fund		23,062,077	0.1%
Permira IV and V	Acquisition - Large		24,259,032	0.1%
Providence Equity Partners VI	Acquisition - Medium		19,158,186	0.1%
Quad-C Partners VIII	Acquisition - Medium		44,258,330	0.1%
Quantum Energy Partners V, V-C, V1 and V1-C	Acquisition - Energy		39,369,172	0.1%
The Resolute Fund II and III	Acquisition - Medium		31,808,748	0.1%
Silver Lake Partners III	Acquisition - Technology		18,485,503	0.0%
Spectrum Equity Investors VI and VII	Acquisition - Medium		21,945,103	0.1%
TA XI and XII	Acquisition - Large		27,563,802	0.1%
TCV VI, VII and VIII	Venture Capital		70,949,325	0.2%
Thoma Bravo Discover Fund	Acquisition - Medium		1,482,985	0.0%
Thoma Bravo Fund XII	Acquisition - Large		1,950,136	0.0%
Thoma Bravo Special Opps Fund II	Acquisition - Medium		26,487,802	0.1%
Thoma Cressey Fund VIII	Acquisition - Medium		908,746	0.0%
TPG Partners V and VI	Acquisition - Large		29,976,880	0.1%
Vista Equity Partners V and VI	Acquisition - Medium		39,065,581	0.1%
Wayzata Opportunities Fund I, II and III	Debt - Distressed		25,521,975	0.1%
Wind Point Partners VI and VII	Acquisition - Medium		40,062,553	0.1%
Cash and cash equivalents	Cash and cash equivalents		156	0.0%
Stock distribution account	Public Stocks		2,672,857	0.0%
<b>Total</b>		<b>\$</b>	<b>3,050,186,453</b>	<b>8.0%</b>

\*Market values are reported by the Systems' Private Equity advisors. Market values reflect the most current net asset values. In instances where the most current net asset values were not as of June 30, 2016, the net asset values utilized were cash flow adjusted through June 30, 2016.



## Private Credit Program Summary

As of June 30, 2016, Private Credit assets had a market value of approximately \$251 million, representing 0.7% of total assets.

### Investment Program Description

Investments in Private Credit are similar to Private Equity investments in that they are typically very long-term in nature, not publicly traded, relatively illiquid, and offer the potential for substantially higher returns (along with a commensurate level of risk). The Private Credit portfolio also differs from the Private Equity portfolio, and is a separate and distinct composite within Private Risk Assets. The Private Credit asset class is comprised primarily of debt-related investments that provide a current yield along with equity participation (usually warrants) referred to as an 'equity kicker.' Primary strategies are distressed debt, bankruptcy restructurings, mezzanine debt, bank loans, and other credit-driven or debt-related investment strategies. Investments can be made in the U.S. or foreign countries. In total, the allocation to Non-U.S. Private Credit investments will not exceed 40% of the overall Private Credit target allocation. The risks associated with Private Credit will be viewed both in isolation and within the context of the entire fund.

### Structure

As of June 30, 2016, Private Credit assets committed\* for investment were \$917 million. The market value of funds that have been drawn down and actually invested as of June 30, 2016 was approximately \$251 million, representing 0.7% of total assets. The Systems' private credit investment commitments that have not yet been funded were approximately \$201 million as of June 30, 2016.

The objective for the Systems' allocation to Private Credit is to achieve returns that are higher than those attainable in the public markets with the added benefit of diversification. The long-term and illiquid nature of the Private Credit asset class dictates that capital must be invested at a measured pace. Pathway Capital Management has been retained

\*Committed capital reflects the total amount of capital that the Systems are legally obligated to supply to the partnerships and funds as the capital is needed to invest in underlying holdings. Market value reflects capital that has actually been drawn and invested by the partnerships and funds.

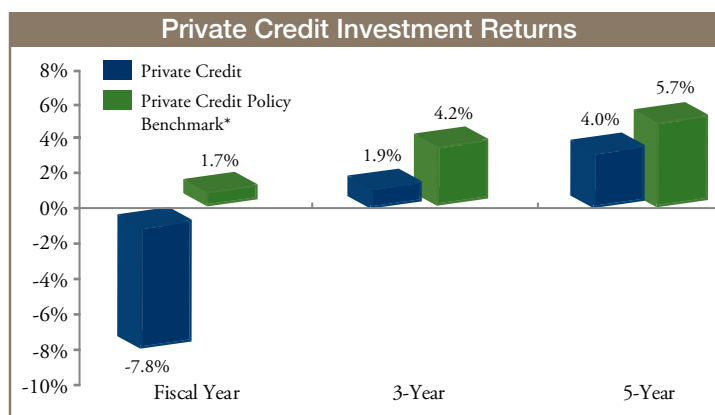
by the Systems to provide private credit investment management services through two structures; a discretionary fund-of-funds relationship and an advisory relationship. Albourne America, LLC has also been retained to provide private credit advisory services.

### Market Overview

Private Credit markets experienced increased volatility and negative returns as credit spreads widened throughout most of fiscal year 2016. Significant volatility in energy prices was a large negative contributing factor. Indicators of distress in the high yield market peaked in February and have since rebounded as energy prices have stabilized since earlier in the fiscal year. The recent uncertainty and volatility in financial markets is expected to lead to attractive future investment opportunities in the private credit space.

### Performance

The total return for the Private Credit program was -7.8%, compared to the benchmark return of 1.7% for the fiscal year ended June 30, 2016. Short-term returns can be volatile for the Private Credit Program in comparison to a public benchmark, as discussed previously; private assets are more appropriately evaluated over longer time frames.



**Private Credit Statistical Performance**

Portfolio Characteristics	Fiscal Year	3-Year	5-Year
Annualized Private Credit Return	-7.8%	1.9%	4.0%
Annualized Policy Benchmark Return*	1.7%	4.2%	5.7%
Excess Return	-9.5%	-2.3%	-1.7%

\*The Private Credit Policy Benchmark is the Merrill Lynch High Yield Master II Index.

The Private Credit Program was established in December 2007, so ten-year returns are not available.

## Investment Advisors

As of June 30, 2016, the Systems had committed to 13 separate partnerships with 10 firms within the Private Credit asset class. One new commitment for \$50 million was made to the Private Credit asset class during fiscal year 2016. The Systems received total distributions from the private credit partnerships of approximately \$64 million in fiscal year 2016.

Private Credit Investment Advisors			
Investment Advisor	Investment Style	Fair Value* As of June 30, 2016	% of Total Fair Value
Avenue Capital Group Fund V	Debt - Distressed	\$ 1,736,608	0.0%
Caltius IV	Debt - Mezzanine	2,235,432	0.0%
Centerbridge Special Capital Partners	Debt - Distressed	5,472,448	0.0%
EIG Energy Fund XVI	Debt - Energy	36,563,171	0.1%
Encap Fund VII	Acquisition - Energy	3,528,712	0.0%
Encap Fund VIII	Acquisition - Energy	18,855,872	0.1%
Indigo Capital V	Debt - Mezzanine	8,108,616	0.0%
Lone Star Real Estate Fund II	Debt - Distressed	10,337,147	0.0%
OCM Opportunities Fund VIII	Debt - Distressed	11,533,262	0.0%
OCM Opportunities Fund VIII b	Debt - Distressed	21,524,119	0.1%
Pathway Capital Management	Funds-of-Funds	108,306,388	0.3%
TA Subordinated Debt Fund III	Debt - Mezzanine	19,299,750	0.1%
TA Subordinated Debt Fund IV	Debt - Mezzanine	3,024,383	0.0%
<b>Total</b>		<b>\$250,525,908</b>	<b>0.7%</b>

\*Market values are reported by the Systems' Private Credit advisors. Market values reflect the most current net asset values. In instances where the most current net asset values were not as of June 30, 2016, the net asset values utilized were cash flow adjusted through June 30, 2016.

## Private Real Estate Program Summary

As of June 30, 2016, Private Real Estate assets had a market value of approximately \$3.0 billion, representing 7.9% of total assets.

### Investment Program Description

The Real Estate allocation is intended to provide exposure to a diversified portfolio of institutional quality private real estate investments that will provide meaningful, consistent returns, and act as a hedge against inflation and as a diversifier to the overall investment portfolio. The specific objectives of the real estate allocation will be to optimize yield and return, preserve capital and enhance portfolio value across market cycles. The risks associated with Private Real Estate will be viewed both in isolation and within the context of the entire fund.

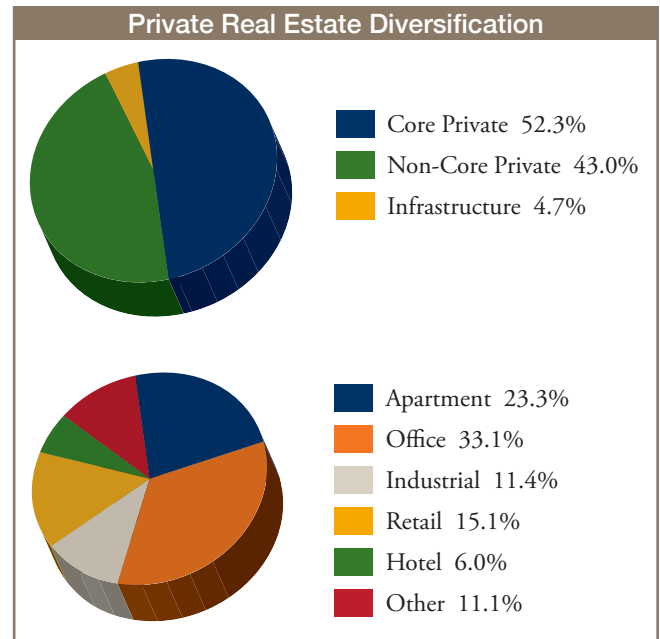
### Structure

As of June 30, 2016, the Systems' private real estate assets committed\* for investment were \$4.0 billion. The market value of funds that had been drawn down and actually invested as of June 30, 2016 was approximately \$3.0 billion, representing 7.9% of total assets. The Systems' private real estate investment commitments that had not yet been funded were approximately \$737 million as of June 30, 2016.

Within the overall Real Estate allocation, the Systems have established a 55% target allocation to non-core real estate and a 45% allocation to core private real estate. Non-Core investments represent those properties and/or investment strategies that require specialized acquisition and management expertise or skill to mitigate the business and leasing risk that may be associated with individual investments. Non-Core investments have greater associated risk compared to Core investments. Core investments include existing, substantially leased income-producing properties located mainly in metropolitan areas that exhibit reasonable economic diversification and growth.

\*Committed capital reflects the total amount of capital that the Systems are legally obligated to supply to the partnerships and funds as the capital is needed to invest in underlying holdings. Market value reflects capital that has actually been drawn and invested by the partnerships and funds.

The following pie charts indicate the current allocation to real estate investment strategies utilizing the market value of the Systems' invested real estate assets and the diversification within the real estate composite by property type.



### Market Overview

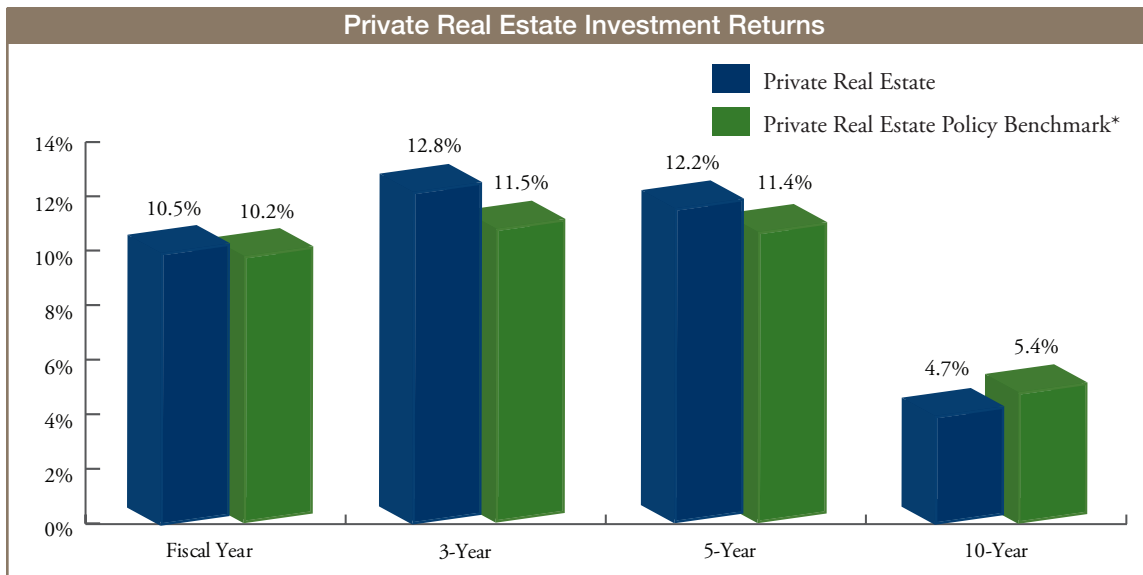
Real estate fundamentals continued to improve for most property types in fiscal year 2016. Economic and employment growth slowed but continued to support positive net absorption (more leasing than vacancy). This led to a rise in occupancy levels and additional rent growth for most property types. Overall, it was a strong fiscal year for the real estate markets with the NCREIF Fund Index – Open Diversified Core Equity (NFI-ODCE) Index returning over 10% for the fiscal year.

The Systems maintain a sizable allocation to high-quality, stabilized real estate assets (core) held in primary markets due to the secure income return. Additionally, the Systems have an allocation to non-core assets to participate in the distressed sector of the real estate market. The Systems will continue to focus real estate efforts going forward on investments that complement the existing portfolio.

**Performance**

The total return for the Private Real Estate program was 10.5%, compared to the benchmark return of 10.2% for the fiscal year ended June 30, 2016. The Systems Private Real Estate program has produced excellent absolute and relative returns for all time periods as noted below, with the exception of the 10-year time period. The underperformance for the 10-year time period was primarily due to the significant downward pressure on real estate valuations during the credit crisis of 2008 and 2009.

The Board of Trustees approved a new real estate benchmark effective January 1, 2016. The real estate benchmark was modified from the property level NCREIF Property Index (NPI) to the fund level NFI-ODCE index. The NFI-ODCE index better reflects the PSRS/PEERS investment portfolio given that it is an investable index and includes leverage. The historical real estate benchmark will reflect the NPI returns prior to 2016 with NFI-ODCE returns being linked to this series following January 1, 2016.



Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Private Real Estate Return	10.5%	12.8%	12.2%	4.7%
Annualized Policy Benchmark Return*	10.2%	11.5%	11.4%	5.4%
Excess Return	0.3%	1.3%	0.8%	-0.7%

*\*Effective January 1, 2016 the Real Estate Policy Benchmark is the NCREIF Open End Diversified Core Equity Index (NFI-ODCE). The NCREIF Property Index is used for prior periods.*

## Investment Advisors

As of June 30, 2016, the Systems had committed to 56 separate partnerships with 29 firms within the Private Real Estate asset class. In fiscal year 2016, the Systems committed to two new partnerships totaling \$182 million. Additionally, the Systems received total distributions from the real estate partnerships of approximately \$477 million in fiscal year 2016.

Private Real Estate Investment Advisors			
Investment Advisor	Investment Style	Fair Value* As of June 30, 2016	% of Total Fair Value
Alinda Infrastructure Fund I	Infrastructure	\$ 44,998,153	0.1%
Alterna Core Capital Assets Fund II	Infrastructure	46,675,627	0.1%
AMB Alliance III	Non-Core - Private	65,311,356	0.2%
AEW Core Property Fund	Core - Private	95,058,806	0.3%
Blackstone R.E. Partners V, VI, VII, VIII, and Real Estate Partners Asia	Non-Core - Private	256,037,490	0.7%
Brockton Capital II	Non-Core - Private	28,733,308	0.1%
Carlyle Europe Real Estate Partners III	Non-Core - Private	17,068,090	0.1%
Carlyle Property Investors	Core - Private	48,566,950	0.1%
Carlyle Realty V, VI and VII	Non-Core - Private	110,207,304	0.3%
CBRE Fund IV, US Value 5, US Value 6, US Value 7	Non-Core - Private	99,153,639	0.3%
CIM Fund III and VIII	Non-Core - Private	90,639,434	0.2%
CIM Urban REIT	Non-Core - Private	43,029,024	0.1%
Colony Investors VIII	Non-Core - Private	14,964,900	0.0%
CPI Capital Partners Europe	Non-Core - Private	2,622,924	0.0%
Dune Real Estate Fund I	Non-Core - Private	14,963,202	0.0%
Forum Asian Realty Income II	Non-Core - Private	2,766,364	0.0%
Heitman Value Partners II and III	Non-Core - Private	34,889,097	0.1%
JPMorgan Special Situation Property Fund	Non-Core - Private	129,387,114	0.3%
JPMorgan Strategic Property Fund	Core - Private	325,823,942	0.9%
KKR Real Estate Partners America	Non-Core - Private	46,181,079	0.1%
LaSalle Asia Opportunity Fund II and III	Non-Core - Private	8,073,651	0.0%
LaSalle Income & Growth V	Non-Core - Private	732,970	0.0%
LaSalle Japan Logistics Fund II	Non-Core - Private	301,925	0.0%
LaSalle Property Fund	Core - Private	176,558,783	0.5%
Lone Star V and VI	Non-Core - Private	17,701,697	0.1%
Lone Star Real Estate Fund	Non-Core - Private	2,424,485	0.0%
Macquarie Infrastructure Partners	Infrastructure	50,459,122	0.1%
MSREF V International	Non-Core - Private	1,534,859	0.0%
Morgan Stanley Prime Property Fund	Core - Private	374,094,056	1.0%
NREP Real Estate Debt Fund	Non-Core - Private	410,391	0.0%
Noble Hospitality Fund I and III	Non-Core - Private	42,016,688	0.1%
Principal Enhanced Property Fund	Core - Private	45,513,339	0.1%
Prudential PRISA Fund	Core - Private	175,023,105	0.5%
Prudential PRISA III	Non-Core - Private	83,523,333	0.2%
RREEF America REIT III	Non-Core - Private	3,160,225	0.0%
Standard Life European Real Estate Fund I and II	Non-Core - Private	79,624,920	0.2%
Starwood Hospitality Fund	Non-Core - Private	10,078,664	0.0%
UBS Trumbull Property Fund	Core - Private	337,310,559	0.9%
Westbrook R.E. Fund VII, VIII and IX	Non-Core - Private	89,203,211	0.2%
Cash and cash equivalents	Cash and cash equivalents	521	0.0%
<b>Total</b>		<b>\$ 3,014,824,307</b>	<b>7.9%</b>

\*Market values are reported by the Systems' Private Real Estate advisors. Market values reflect the most current net asset values. In instances where the most current net asset values were not as of June 30, 2016, the net asset values utilized were cash flow adjusted through June 30, 2016.

**U.S. Public Equity Broker Commissions Report**

<b>Brokerage Firm</b>	<b>Shares Traded</b>	<b>Dollars Traded</b>	<b>Commissions Paid</b>	<b>Cost Per Share</b>
Capital Institutional Services	8,978,061	\$ 301,506,629	\$ 314,681	\$ 0.04
Instinet, LLC	22,058,388	626,410,679	219,260	0.01
Deutsche Bank	36,352,427	1,107,290,553	215,583	0.01
Weeden & Co	24,290,961	1,104,490,398	212,906	0.01
Merrill Lynch	25,236,990	759,610,825	189,906	0.01
Investment Technology Group	21,384,352	922,628,512	163,879	0.01
Barclays Capital, Inc.	13,556,481	559,464,701	150,201	0.01
SG Cowen & Co	20,617,963	687,404,214	130,904	0.01
UBS Securities, LLC	5,552,230	161,228,961	112,808	0.02
Bear Stearns & Co	8,974,137	219,015,336	102,839	0.01
Other (<\$100,000)	107,443,909	3,219,233,775	1,544,624	0.01
<b>Total</b>	<b>294,445,899</b>	<b>\$ 9,668,284,583</b>	<b>\$ 3,357,591</b>	<b>\$ 0.01</b>

**Non-U.S. Public Equity Broker Commissions Report**

<b>Brokerage Firm</b>	<b>Shares Traded</b>	<b>Dollars Traded</b>	<b>Commissions Paid</b>	<b>Cost (Basis Points)</b>
Goldman Sachs and Company	116,283,270	\$ 491,175,867	\$ 242,151	4.9
Instinet, LLC	164,860,943	646,038,083	230,097	3.6
Merrill Lynch	97,989,756	407,952,350	187,718	4.6
Deutsche Bank	42,790,544	237,761,736	176,729	7.4
JP Morgan Chase	27,427,404	177,535,788	98,993	5.6
Investment Technology Group	36,849,181	244,339,001	92,834	3.8
Citigroup Global Markets, Inc.	15,505,536	86,198,882	88,040	10.2
UBS Securities, LLC	37,434,766	139,274,164	85,121	6.1
Morgan Stanley & Co Incorporated	32,743,558	216,686,953	82,812	3.8
Credit Suisse Securities, LLC	18,739,162	85,347,864	76,662	9.0
Other (<\$50,000)	127,272,052	600,084,322	348,987	5.8
<b>Total</b>	<b>717,896,172</b>	<b>\$ 3,332,395,010</b>	<b>\$ 1,710,144</b>	<b>5.1</b>

Investment Summary as of June 30, 2016			
Asset Type	Fair Value	Percent of Total Fair Value	
		FY 2016	FY 2015
<i>Public Risk Assets</i>			
U.S. Public Equity	\$ 11,694,788,885	30.7%	30.0%
Non-U.S. Public Equity	5,851,166,084	15.4%	15.7%
Public Credit	2,372,818,902	6.2%	6.4%
Hedged Assets	5,112,465,683	13.4%	14.1%
<b>Total Public Risk Assets</b>	<b>25,031,239,554</b>	<b>65.7%</b>	<b>66.2%</b>
<i>Safe Assets</i>			
U.S. Treasuries	5,535,808,349	14.6%	14.4%
U.S. TIPS	535,067,846	1.4%	1.3%
Cash Equivalents	578,407,660	1.5%	2.5%
<b>Total Safe Assets</b>	<b>6,649,283,855</b>	<b>17.5%</b>	<b>18.2%</b>
<i>Private Risk Assets</i>			
Private Real Estate	3,014,824,307	7.9%	7.2%
Private Equity	3,050,186,453	8.0%	7.5%
Private Credit	250,525,908	0.7%	0.8%
<b>Total Private Risk Assets</b>	<b>6,315,536,668</b>	<b>16.6%</b>	<b>15.5%</b>
<b>Securities Lending Collateral</b>	<b>(968)</b>	<b>0.0%</b>	<b>0.0%</b>
<b>Cash &amp; Equivalents*</b>	<b>69,553,172</b>	<b>0.2%</b>	<b>0.1%</b>
<b>Total Investments**</b>	<b>\$ 38,065,612,281</b>	<b>100.0%</b>	<b>100.0%</b>
<i>Reconciliation with Financial Statements</i>			
Total from above	\$ 38,065,612,281		
Accrued payable for investments purchased	2,147,826,551		
Accrued income payable	171,190		
Accrued receivable for investments sold	(1,639,938,617)		
Accrued income receivable	(70,936,667)		
Securities lending collateral	968		
Short-term investments designated for benefits	(66,012,254)		
<b>Statements of Fiduciary Net Position</b>	<b>\$ 38,436,723,452</b>		

\*Managers may hold cash or cash equivalents as part of an active management strategy. Cash or cash equivalents held as part of an active management strategy are not separately listed.

\*\* Total Investments includes accrued income and securities lending collateral as of June 30, 2016.

**Investment Expenses for the Fiscal Year Ended June 30, 2016**
**Investment Managers**
**Investment Management Fees**

NISA Investment Advisors - Core	\$ 4,083,216
NISA Investment Advisors - TIPS	<u>334,573</u>

**Safe Assets Fees** 4,417,789

NISA Investment Advisors - Corporate	1,148,662
Oaktree Bank Loans	1,697,263
Pacific Investment Management Company	<u>929,538</u>

**Public Credit Fees** 3,775,463

Analytic Investors, LLC	2,082,387
AQR Capital Management -140/40	2,353,810
Aronson & Johnson & Ortiz	2,015,586
BlackRock Investment Management	182,630
Columbia Management	1,032,113
Lazard Asset Management	284,491
Martingale Asset Management	1,274,956
Westwood Management	1,668,617
Zevenbergen Capital	<u>1,281,967</u>

**U.S. Public Equity Fees** 12,176,557

Acadian Asset Management	877,687
Alliance Bernstein Institutional Management	1,107,041
Analytic Investors, LLC - Global Low Vol	911,036
AQR Capital Management	2,074,810
Arrowstreet Capital	6,212,270
BlackRock - ACWI EX US	416,534
Coronation Asset Management (Proprietary) Limited	1,265,305
MFS Institutional Advisors	3,043,409
Neon Capital Management	1,009,857
NISA Investment Advisors	150,022
The Rock Creek Group	<u>2,776,956</u>

**Non-U.S. Public Equity Fees** 19,844,927

Allianz	966,191
AQR Capital Management	746,524
Chartwell Investment Partners	566,072
Columbus Circle	623,235
NISA Investment Advisors	102,105
Next Century Growth Investors	620,167
RBC Global Asset Management	<u>989,590</u>

**S-Cap Fees** 4,613,884

**Alpha Overlay Fees** 32,300,305

**Hedged Assets Fees** 74,679,176

**Private Real Estate Fees** 51,690,003

**Private Credit Fees** 3,338,446

**Private Equity Fees** 128,173,201

**Commission Recapture Income** (135,480)

**Investment Management Expense** 334,874,274

**Custodial Services**

JP Morgan Chase, NA	<u>1,112,856</u>
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**Custodial Fees** 1,112,856

**Investment Consultants**

Albourne America, LLC	762,500
Pathway Consulting	3,025,750
Institutional Shareholder Services, Inc.	74,500
Willis Towers Watson	418,604
Townsend	<u>350,000</u>

**Investment Consultant Fees** 4,631,354

**Legal Expenses** 8,074,157

**Staff Investment Expenses** 3,168,390

**Total Investment Expenses** \$ 351,861,028