“PSRS/PEERS gives me peace of mind. It would be too easy not to think about retirement so early in my career. But I know the years will fly by, and it’s nice to know I will have financial stability when I retire.”

Adrienne Carson, PSRS Active

Investment Section

Letter from Verus

Verus

October 22, 2020

To the Members of the Board,

During the latter half of 2019, global economies generally exhibited moderate and positive economic growth, inflation remained mild, central bank policies were accommodative, and labor markets had fully recovered from the GFC. In early 2020, this relatively stable environment shifted dramatically when a novel coronavirus began spreading across the globe. The sudden impact of this pandemic on economic activity and markets was unprecedented. The unemployment rate rose from a 50-year low of 3.5% in February to 14.7% in April, and U.S. real GDP contracted sharply during the second quarter. The size and pace of the shutdowns resulted in global stimulus on a massive scale.

As COVID-19 began to course through the U.S., the S&P 500 index plunged 33.8% between February 19th and March 23rd before rebounding strongly in the second quarter. Due to the nature of the crisis, investors piled into mega-cap technology stocks, which powered the rise in both the S&P 500 and NASDAQ 100 indices. By the end of the fiscal year on June 30th the S&P 500 had reached 3,100—placing the index within 10% of the February high water mark of 3,386. After this roller-coaster ride of historical proportions, the S&P 500 Index finished the fiscal year with a respectable 7.5% return.

By contrast, international developed market equities lagged U.S. stocks during the first half of the fiscal year, with the MSCI World ex-US Index posting a 6.9% return. The index fell further than the S&P 500 during the first quarter of 2020, and rebounded less strongly in the second quarter, finishing the fiscal year in negative territory (-5.4%). The MSCI Emerging Markets Index returned -3.4% over the fiscal year. China (MSCI China Index +13.1%) supported emerging market equity performance substantially.

Bonds rallied for much of the fiscal year, and ten-year Treasury yields fell from 2.01% to 0.66%. Holding duration provided a significant downside ballast during the crisis. Credit spreads jumped in the first quarter of 2020. The option-adjusted spreads of the Bloomberg Barclays Aggregate Corporate and Corporate High Yield indices topped out at 3.70% and 11.00%, respectively. As corporate credit facilities announced by the Fed in March became operational, spreads fell back down to 6.26% for high yield credit and 1.50% for investment grade credit. Over the fiscal year, investment grade credit returned 9.5% while high yield credit returned 0.0%.

The combined PSRS/PEERS plans, known collectively as the Missouri Education Pension Trust (MEPT), had a total (net of all fees) return of 3.71%, trailing its Policy Index (5.02%), but ahead of its Peer Median (3.24%). MEPT's peers are other U.S. Public Funds with assets of greater than $1 billion. Much like its peers, MEPT underperformed in U.S. Equity markets. This was somewhat offset by strong returns in Private Equity and Non-U.S. Equity. The plans maintain a lower than median risk profile by design.

MEPT and Verus completed a comprehensive Asset/Liability Study over the fiscal year. The Board opted to moderately increase its allocation to private investments, including co-investments, in order to increase the portfolio's expected return in a cost-effective manner while maintaining sufficient liquidity to meet MEPT's liabilities. Importantly, the portfolio remains diversified and risk focused.

Sincerely,

Margaret Jadallah

Margaret S. Jadallah
Managing Director

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Letter from the Chief Investment Officer

PUBLIC SCHOOL & EDUCATION EMPLOYEE
RETIREMENT SYSTEMS OF MISSOURI

November 13, 2020

To the Members of the Systems:

Throughout this year's Financial Report, you will see the phrase: "***Making a Positive Impact on Members***." The investment staff, under the direction of the Board of Trustees, is solely focused on making a positive impact on our members by providing consistent, long-term investment returns that can support retirement benefits and provide financial security.

Fiscal year 2020 (July 1, 2019 through June 30, 2020) will forever be marked by the coronavirus pandemic. PSRS and PEERS have weathered many challenging investment environments in the last 75 years, including the stock market crash of 1987, the bursting of the dot-com bubble in the early 2000's, the 9/11 attacks in 2001 and the Global Financial Crisis in 2007 and 2008. However, as we move further into the coronavirus pandemic, it is evident that this event is different. Covid-19 is a health crisis that turned into an economic crisis as the procedures that were implemented to slow the pandemic, stopped the economy. From an investment return perspective, the fiscal year can be broken down into two distinct segments: pre-Covid and post-Covid. Interest rates were relatively stable and global stock markets exhibited steady growth into February of this year. However, as the pandemic hit, the S&P 500, a U.S. stock market index, declined 35% in a six-week period, the fastest move ever into a bear market (defined as a decline of 20% or more). Interest rates were immediately pushed lower at the beginning of the pandemic with the yield on the ten-year Treasury bond moving from 1.9% on December 31, 2019 to 0.7% on March 31, 2020. The investment markets improved significantly, beginning the last week of March, after the Federal Reserve announced plans to inject $2 trillion into the markets and Congress passed an additional $2 trillion economic rescue package. The stock market rebounded almost as quickly as it declined, recovering much of its losses by the end of the fiscal year.

PSRS and PEERS benefited from the downward move in interest rates (providing gains in the bond portfolio) and the recovery in the stock market late in the fiscal year. In total, the Systems' assets increased through investment earnings by over $1.6 billion from the previous year with a total fund performance of 3.9% (or 3.7% net of all fees and expenses).

Key Points within this year's Financial Report

As you review the financial information in this report for the fiscal year ended June 30, 2020, it is important to be aware of the following points:

- The Systems generated the 3.9% investment return while taking less risk (as measured by standard deviation) than the policy benchmark[1] and less risk than two-thirds of comparable public funds over all time periods,

[1] *The plan policy benchmark is a standard to measure investment performance and indicates the return of the PSRS/PEERS asset allocation if passive market rates of return were achieved.*

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- The PSRS and PEERS investment return for fiscal year 2020 and for the last five-year and ten-year time periods exceeded 62% of the peer group as defined by the Wilshire TUCS universe of public pension plans with assets in excess of $1 billion,
- Total Systems' assets have increased through investment earnings by approximately $30 billion over the last ten years,
- The PSRS/PEERS internal investment staff and external investment managers added value above the policy benchmark of over $1.2 billion, net of all fees and expenses, over the last ten years. The outperformance was due to portfolio construction and tactical asset allocation decisions by internal investment staff (overweighting and underweighting asset classes around targets) as well as active management on the part of external managers,
- The PSRS and PEERS investment return for the last ten-year time period exceeded the return of a passive portfolio of 60% global stocks and 40% bonds by 1.5% per year resulting in added value above a traditional portfolio of $5.3 billion,
- The PSRS/PEERS investment expenses (including accrued performance-based fees and all internal investment staff expenses) for fiscal year 2020 were 0.95%, or 95¢ 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 was 3.7% for PSRS and PEERS,
- Investment performance throughout this report is calculated using a time-weighted rate of return based on market values, and
- The total invested assets of both PSRS and PEERS were approximately $45.6 billion on June 30, 2020, making the combined entity larger than all other public retirement plans in the state combined, and the 45th largest defined benefit plan in the United States.

Fiscal Year 2020 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. Over time, every specific asset class within the PSRS/PEERS' investment portfolio performs a valuable function.

In fiscal year 2020, the combined asset allocation provided the Systems with low (but positive) absolute returns, led by above average returns from bonds (both Treasury and corporate) and reasonable returns from U.S. stocks. The yield on the ten-year Treasury bond declined from 2.0% at the beginning of the fiscal year to 0.65% on June 30, 2020. This sharp drop in yield contributed to a positive absolute return for all bonds. U.S. Treasury bonds (as measured by the Bloomberg Barclays Treasury Index) increased 10.5% for the fiscal year while corporate bonds (as measured by the Bloomberg Barclays Intermediate Credit Index) increased 7.0%. U.S. stocks (as measured by the Russell 3000 Index) returned 6.5% for the fiscal year ended June 30, 2020. In contrast, non-U.S. stocks produced negative returns for the fiscal year. Non-U.S. developed stocks (as measured by the MSCI EAFE Index), moved 5.1% lower, and emerging market stocks (as measured by the MSCI Emerging Markets Index) declined 3.4%.

Letter from the Chief Investment Officer, continued

The PSRS/PEERS non-traditional asset classes provided mixed returns in fiscal year 2020 amidst the heightened volatility. Specifically, the Private Equity program generated a 6.9% return whereas the Real Estate composite increased 1.4% and the Private Credit composite increased 1.2%. The Hedged Asset composite declined 2.4% in the fiscal year.

This combination of positive and negative absolute returns across these asset classes contributed to the 3.9% return for PSRS and PEERS in fiscal year 2020. The investment returns were also impacted by implementation (security selection) decisions and tactical asset allocation moves. For example, the PSRS/PEERS' Non-U.S. Equity portfolio outperformed its benchmark (MSCI All Country World ex U.S. net Index) by 2.8% in fiscal year 2020. From a portfolio construction and tactical standpoint, the internal investment staff maintained an underweight to bonds (both credit and Treasury) throughout the year (due to historically low interest rates and tight credit spreads) and an overweight to hedged assets. This underweight to bonds diminished total fund performance as both Treasury bonds and credit bonds significantly outperformed hedged assets for the year.

Fiscal Year 2021: Covid-19 and Private Credit

As I write this annual letter on November 13, 2020, we are five months into fiscal year 2021, and investors and epidemiologists agree that Covid-19 troubles are not yet over. Social distancing, mask-wearing and hand washing will continue to be part of everyday life. However, the expected investment outcome for specific asset classes in our new environment is unknown. The path of future investment returns could be based on 1) the virus itself, 2) the continued monetary stimulus from central banks and fiscal stimulus from governments, and 3) the containment response to the virus. Essentially, the virus and the related response in each city, state, and country will affect economic activity, growth and ultimately asset prices. Therefore, as an institutional investor in an uncertain environment, PSRS/PEERS will continue to maintain a highly diversified asset allocation with a long-term focus.

The internal investment staff initiated a private equity co-investment program in 2014 to allow the Systems to make direct investments in private companies alongside private equity managers with whom PSRS/PEERS have an existing relationship. The investment staff implemented a similar program within private credit in fiscal year 2020 that allows the investment staff to lend directly to private operating businesses across various industries. The lending opportunities are researched and vetted by both internal investment staff and an external consultant. The investments are compelling because (like private equity co-investments) they are executed with no direct investment fees and no performance- based fees. As of June 30, 2020, the Systems had committed $211 million to 11 direct credit investments. The internal investment staff will continue this program of private credit direct investing in fiscal year 2021. With the yield on ten-year Treasury bonds below 1%, direct private credit investments provide the Systems with an avenue to earn higher yields at relatively moderate levels of risk.

Asset/Liability Study

The Systems' external investment consultant (Verus) typically conducts an Asset Liability Study every five years for the Systems. Verus conducted the most recent Study in the early part of 2020 and the results were presented to the Board of Trustees in February and ultimately adopted in April. The objective of the Study was to determine the appropriate asset allocation for PSRS and PEERS given the specific liabilities of the Systems.

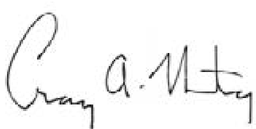
Through the Asset Liability Study, Verus worked closely with the PSRS/PEERS' investment staff to develop a number of potential asset allocation scenarios to present to the Board of Trustees. The most consistent way to compound wealth is to limit both the volatility and the downside (risk of loss) in a portfolio. As such, both staff and Verus 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 be an investor for defined benefit pension assets is the long-term investment horizon. The Systems have embraced this with both staff and Verus 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 10% with a commensurate decrease in the allocation to public credit and public equity. 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.

Under the support and guidance of the Board of Trustees, I am confident that the investment program at PSRS/PEERS will continue to provide the Systems with an excellent opportunity to achieve solid investment returns over future economic and capital market environments. Most importantly, I believe the portfolio is well-positioned to ***make a positive impact*** on the lives of all PSRS/PEERS' members.

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 of 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 62% of every dollar used to pay retirees is generated from investment earnings[1].

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.

[1] *Based on a twenty-five year average for fiscal years 1995-2020.*

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.

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 Verus Advisory, Inc. (Verus) as a general consultant and Albourne America, LLC (Albourne), Pathway Capital Management (Pathway) and The Townsend Group (Townsend) as specialty consultants. Verus 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, Verus 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. The external money managers 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 investment performance reporting and accounting, and serves as an additional layer of risk control in safekeeping the Systems' assets.

Investment Objective

Based on the long-term investment returns available from a well-diversified, prudently invested portfolio, the Board has adopted an objective to achieve a **total nominal investment return of 7.5% with a real rate of return of at least 5.25% per annum over time**.[2] The long-term investment return objective of 7.5% became effective for fiscal year 2019 investment performance. The investment objective was previously 8.0% effective from 1980 through fiscal year 2016, 7.75% effective for fiscal year 2017, and 7.60% effective for fiscal year 2018.

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

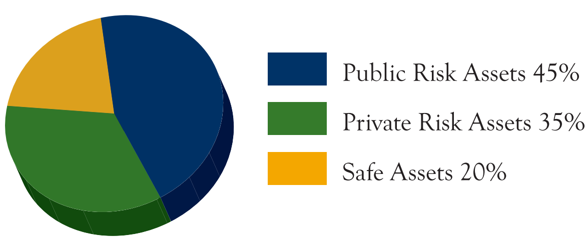
Selection of an appropriate asset allocation is one of the most important decisions made by a retirement plan. Within that asset allocation, it is important to not only consider the expected investment return, but also to understand the risks. The importance of risk consideration for institutional investors 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

[2] 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 as of June 30, 2020 was 2.25% per annum.

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 long-term commitments to specific asset programs. 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 10% and proportionately decreased the Public Risk Assets target. These changes are discussed further in the following Asset Allocation section.

Target Risk-Based Asset Allocation



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 Verus. 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.

2020 Asset Allocation/Liability Study

The internal staff completed an asset allocation/liability study during fiscal year 2020 with the assistance of the Systems' external investment consultant, Verus. 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 asset/liability study was presented at the February 2020 Board of Trustees meeting and adopted at the April 2020 Board meeting and as a result, the Board of Trustees amended the following long-term asset allocation targets: Public Risk Assets decreased 10% and Private Risk Assets increased 10%. Within Public Risk Assets, U.S. Equity decreased from 27% to 23%, Public Credit decreased from 7% to 0% and Non-U.S. Equity increased from 15% to 16%. Within Private Risk Assets, Private Equity increased from 12% to 16%, Real Estate increased from 9% to 11% and Private Credit increased from 4% to 8%. Within Safe Assets, U.S. Treasuries increased from 16% to 20% while U.S. TIPS decreased from 4% to 0%.

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 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 following chart details the interim target asset allocation for fiscal year 2020, as well as, the new long-term asset allocation targets approved by the Board of Trustees as part of the 2020 asset liability study. The interim policy allocations have been established to reflect the continued funding of Private Risk Assets and progress towards the Systems' long-term asset allocation objective. For performance measurement purposes, the interim policy will serve as the basis for establishing the Total Fund policy benchmark until the on-going process of funding Private Risk investments is meaningfully complete.

Target Asset Allocation and Policy Ranges			
	Fiscal Year 2020	As Amended in 2020	
Investment Type	Interim Target	Long-Term Target	Policy Ranges
Public Risk Asset Programs			
U.S. Public Equity	27.00%	23.00%	15% - 45%
Public Credit	9.00%	0.00%	0% - 15%
Hedged Assets	6.00%	6.00%	0% - 25%
Non-U.S. Public Equity	15.00%	16.00%	8% - 28%
Total Public Risk Assets	57.00%	45.00%	35% - 70%
Safe Assets Programs			
U.S. Treasuries	16.00%	20.00%	0% - 40%
U.S. TIPS	4.00%	0.00%	0% - 30%
Cash & Cash Equivalents	0.00%	0.00%	0% - 10%
Total Safe Assets	20.00%	20.00%	10% - 40%
Private Risk Asset Programs			
Private Equity	12.00%	16.00%	4% - 22%
Private Real Estate	9.00%	11.00%	4% - 15%
Private Credit	2.00%	8.00%	0% - 12%
Total Private Risk Assets	23.00%	35.00%	10% - 45%
Total Fund	100.0%	100.0%	

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 previous table). 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 Verus must unanimously agree upon all material strategic changes prior to implementation.

Total Plan Leverage

The Board of Trustees approved the use of total plan leverage in fiscal year 2020. Leverage may be utilized (through futures, swaps, or other derivative instruments) to efficiently implement portfolio rebalancing and/or to apply modest leverage to total plan assets. The total direct leverage at the fund level shall not exceed 10% of the portfolio.

Performance Objectives and Monitoring Process

Generating a total nominal rate of return net of expenses of at least 7.5% and a real rate of return net of expenses of at least 5.25% per annum is 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 Verus 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 asset class or 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

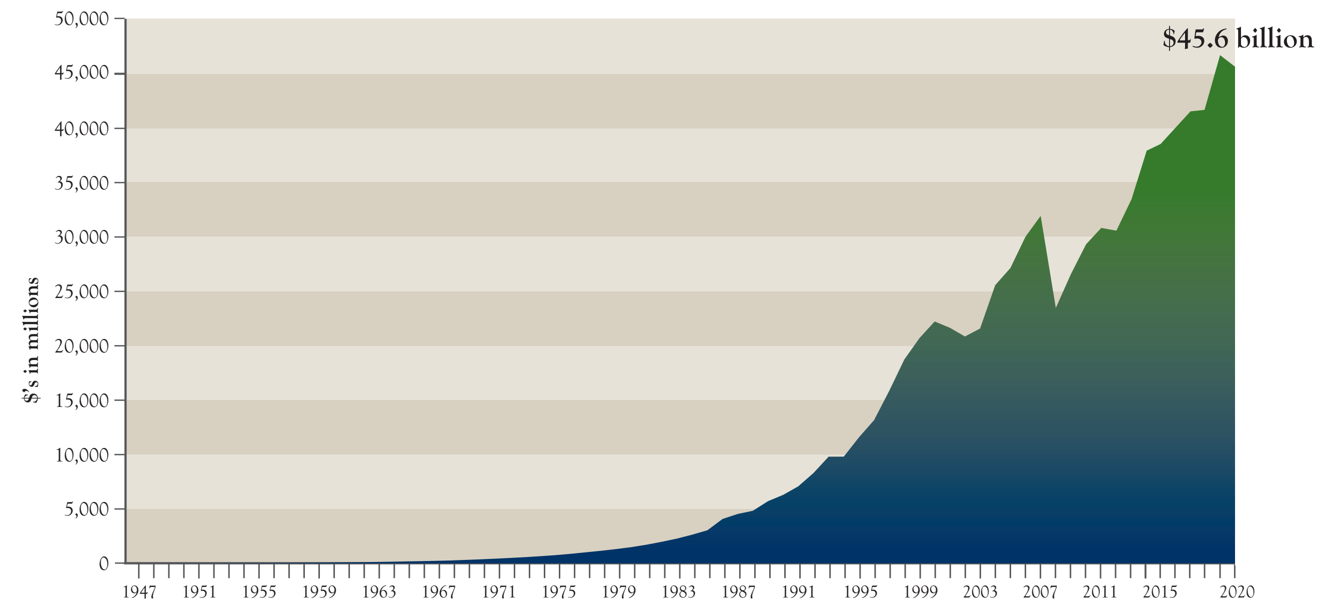
Implementation decisions are manager selection choices made by the internal staff with the approval of a consultant(s) and the Director. The value added through these manager selection decisions is measured by the difference between the actual portfolio return and the strategic benchmark return. An actual 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 in the asset allocation section, an asset/liability study was conducted this year. 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

74 Years of Asset Growth



The Systems' total invested assets were $45.6 billion as of June 30, 2020. 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[3]

The Systems earned an investment return of 3.9% for fiscal year 2020 (3.7% net of all investment expenses and fees) with an ending market value of invested assets at $45.6 billion. The Systems' well-structured and diversified investment portfolio added approximately $1.6 billion in investment earnings to the growth of assets during the year.

As illustrated in the table below, the Systems' Safe Assets program performed especially well for the year driven by strong fixed income markets with the U.S. Treasuries portfolio returning 11.7%. The Private Risk program also did well with Private Equity increasing 6.9%. Within Public Risk Assets, Public Credit returned 7.4% and U.S. Public Equities produced a 4.1% return. Each of these asset classes strongly contributed to the total return of the Systems while providing diversification from the Non-U.S. Public Equity markets and Hedged Assets.

Total Fund Performance

Investment Program	Total Return	Weighted Contribution
U.S. Public Equity	4.1%	1.1%
Public Credit	7.4%	0.4%
Hedged Assets	-2.4%	-0.2%
Non-U.S. Public Equity	-2.0%	-0.3%
Public Risk Assets	1.8%	1.0%
U.S. Treasuries	11.7%	1.7%
U.S. TIPS	5.8%	0.2%
Cash & Cash Equivalents	2.1%	0.0%
Safe Assets	9.5%	1.9%
Private Equity	6.9%	0.9%
Private Real Estate	1.4%	0.1%
Private Credit	1.2%	0.0%
Private Risk Assets	4.4%	1.0%
TOTAL RETURN	3.9%	3.9%

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

Investment Performance Relative to Benchmarks*

	Fiscal Year	3-Year	5-Year	10-Year
Public Risk Assets Program				
U.S. Public Equity	**4.1%**	**8.4%**	**8.7%**	**13.4%**
Russell 3000 Index	6.5%	10.0%	10.0%	13.7%
Public Credit	**7.4%**	**5.3%**	**4.9%**	**4.5%**
Bloomberg Barclays U.S. Intermediate Credit Index	7.0%	4.9%	4.2%	4.2%
Hedged Assets	**-2.4%**	**2.6%**	**3.1%**	**6.0%**
Hedged Assets Benchmark	4.2%	5.5%	5.4%	7.0%
Benchmark consists of:				
50.0% Bloomberg Barclays U.S. Intermediate Credit Index				
25.0% MSCI ACWI ex-USA net Index				
25.0% Russell 3000 Index				
Non-U.S. Public Equity	**-2.0%**	**3.5%**	**4.7%**	**7.2%**
MSCI ACWI ex-USA net Index	-4.8%	1.1%	2.3%	5.1%
Total Public Risk Assets	**1.8%**	**5.8%**	**6.3%**	**9.4%**
Public Risk Assets Policy Benchmark	3.6%	6.5%	6.6%	9.1%
Benchmark consists of:				
50.0% Russell 3000 Index				
28.9% MSCI ACWI ex-USA net Index				
21.1% Bloomberg Barclays U.S. Intermediate Credit Index				
Safe Assets Program				
Total Safe Assets	**9.5%**	**5.1%**	**3.7%**	**3.0%**
Safe Assets Policy Benchmark	9.5%	5.3%	3.9%	3.2%
Benchmark consists of:				
80.0% Bloomberg Barclays U.S. Treasury Index				
20.0% Bloomberg Barclays U.S. TIPS 1-10 Years Index				
Private Risk Assets Program				
Private Equity	**6.9%**	**13.8%**	**13.9%**	**14.7%**
Private Equity Benchmark	4.9%	9.5%	9.7%	13.5%
Benchmark consists of:				
75.0% MSCI ACWI ex-USA net Index				
25.0% Russell 3000 Index				
Private Real Estate	**1.4%**	**5.7%**	**7.3%**	**10.6%**
NFI-ODCE Index	1.3%	4.7%	6.2%	9.4%
Private Credit	**1.2%**	**6.4%**	**6.5%**	**8.2%**
ICE BofAML U.S. High Yield Master II Index	-1.1%	2.9%	4.6%	6.5%
Total Private Risk Assets	**4.4%**	**10.0%**	**10.7%**	**12.6%**
Private Risk Assets Policy Benchmark	3.3%	7.3%	8.1%	11.5%
Benchmark consists of:				
39.1% Russell 3000 Index				
39.1% NFI-ODCE Index				
13.1% MSCI ACWI ex-USA net Index				
8.7% ICE BofAML U.S. High Yield Master II Index				
TOTAL FUND				
Total Fund	**3.9%**	**6.6%**	**6.8%**	**9.0%**
Total Fund Policy Benchmark	5.0%	6.6%	6.5%	8.5%
Benchmark consists of:				
37.5% Russell 3000 Index				
19.5% MSCI ACWI ex-USA net Index				
16.0% Bloomberg Barclays U.S. Treasury Index				
12.0% Bloomberg Barclays U.S. Intermediate Credit Index				
9.0% NFI-ODCE Index				
4.0% Bloomberg Barclays U.S. TIPS 1-10 Years Index				
2.0% ICE BofAML U.S. High Yield Master II Index				
Actuarial Required Rate of Return **	**7.5%**	**7.5%**	**7.7%**	**7.8%**
TUCS Universe Median	**3.2%**	**6.2%**	**6.4%**	**8.8%**

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

***The extended time periods reflect the blended returns of the historical actuarial required rates of return, as previously discussed in the Investment Objective section.*

Investment Performance Relative to Benchmarks

The Board has established a long-term objective (actuarial required rate of return) to achieve a total investment return of at least 7.5% per year and a real rate of return of at least 5.25% per year. The fiscal year 2020 total plan return of 3.9% fell short of the long-term objective as a result of the extreme market volatility related to the global COVID-19 pandemic. However, over long periods of time, PSRS and PEERS continue to produce investment returns that meet or exceed the Systems' objective. The annualized investment return for the Systems is 8.1% (8.0% net of all investment expenses and fees) 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.

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 Statistical Performance section on the following page shows that over the past ten years the total fund return exceeded the strategic benchmark and the strategic benchmark has exceeded the policy benchmark demonstrating added value by internal staff through strategic asset allocation decisions and implementation decisions.

Fiscal year 2020 was a difficult environment for all institutional investors with extreme market volatility over the last two quarters. The fiscal year 2020 return of 3.9% underperformed the policy benchmark return of 5.0% by approximately 110 basis points. The underperformance is primarily due to valuations of illiquid private risks assets being benchmarked to public market indexes during a very strong fourth quarter. 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. In addition, not all of the illiquid valuations are available by the close of fiscal year-end which will result in significant performance differences over short time periods in volatile markets. Despite the difficult year, the total fund return has exceeded the policy benchmark in six of the last ten fiscal years, an indication that internal staff and active investment management have added value to the Systems. Over the past ten years, the total fund return has exceeded the policy benchmark by 50 basis points, on an annualized basis, resulting in over $1.2 billion in excess performance (net of all investment expenses and fees) to the Systems.

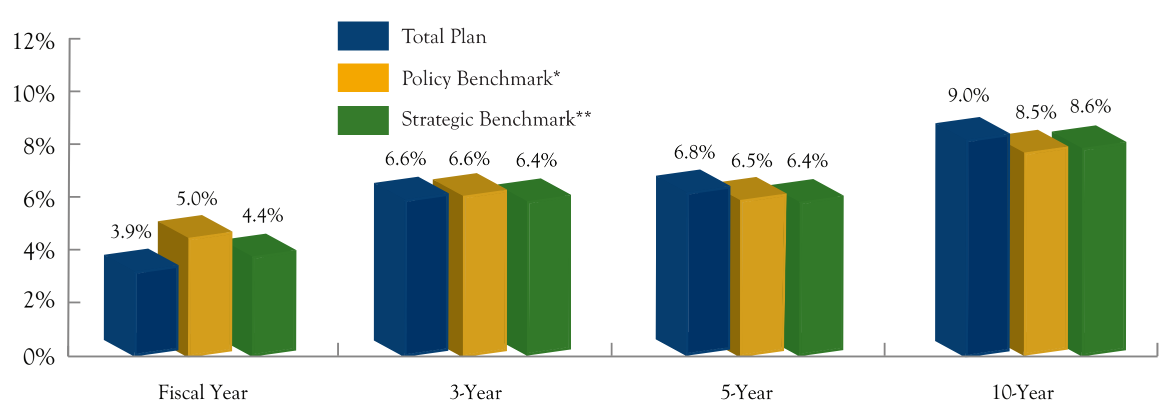
The Systems' fiscal year return was modest on an absolute basis, but strong on a relative basis. The Systems' utilize the Trust Universe Comparison Services (TUCS) to compare the total return and risk levels of the Systems relative to other public pension funds with assets in excess of $1 billion. As the chart on page 72 indicates, the total fund return has exceeded the median return of other large public funds over all reported time periods. The systems have taken substantially less risk than comparable funds during all time periods yet have consistently provided higher investment returns.

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 following table 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 all country world stock index (MSCI ACWI net 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 Performance



Total Plan Statistical Performance

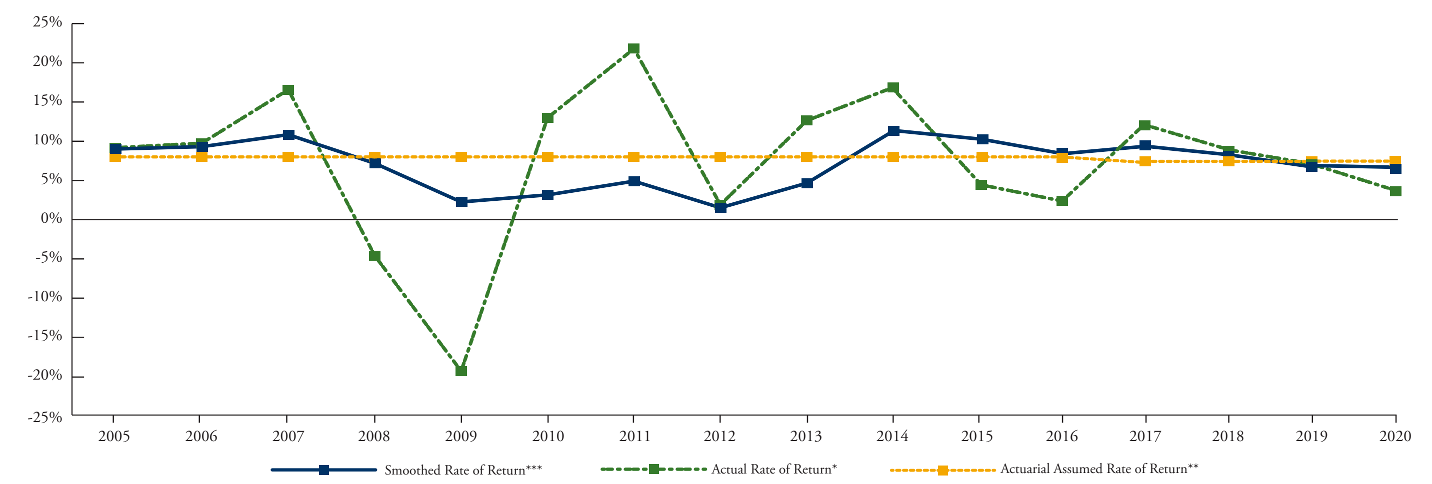
Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Total Plan Return	3.9%	6.6%	6.8%	9.0%
Annualized Policy Benchmark Return*	5.0%	6.6%	6.5%	8.5%
Annualized Strategic Benchmark Return**	4.4%	6.4%	6.4%	8.6%
Excess Return	-1.1%	0.0%	0.3%	0.5%
Annualized Standard Deviation of Composite	9.8%	7.5%	6.7%	6.7%
Annualized Standard Deviation of Policy Benchmark*	13.1%	9.6%	8.5%	7.9%
Beta to Policy Benchmark*	0.75	0.77	0.78	0.84
Beta to MSCI ACWI net Index	0.45	0.46	0.45	0.47

*As of June 30, 2020: 37.5% Russell 3000 Index, 19.5% MSCI ACWI ex-USA net Index, 16% Bloomberg Barclays US Treasury Index, 12% Bloomberg Barclays U.S. Intermediate Credit Index, 9.0% NFI-ODCE, 4% Bloomberg Barclays U.S. TIPS 1-10 Years Index and 2% ICE BofAML U.S. High Yield Master II Index.

**As of June 30, 2020: 39.4% Russell 3000 Index, 20.6% MSCI ACWI ex-USA net Index, 15.1% Barclays US Treasury Index, 9.7% Barclays U.S. Intermediate Credit Index, 8.9% NFI-ODCE, 2.7% Barclays U.S. TIPS 1-10 Years Index, 2.5% Merrill Lynch 3- Month U.S. Treasury Bill Index and 1.7% ICE BofAML U.S. 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.

The following chart shows the relationship between market value returns (actual rate of return), 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.

Investment Rates of Return



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 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.*

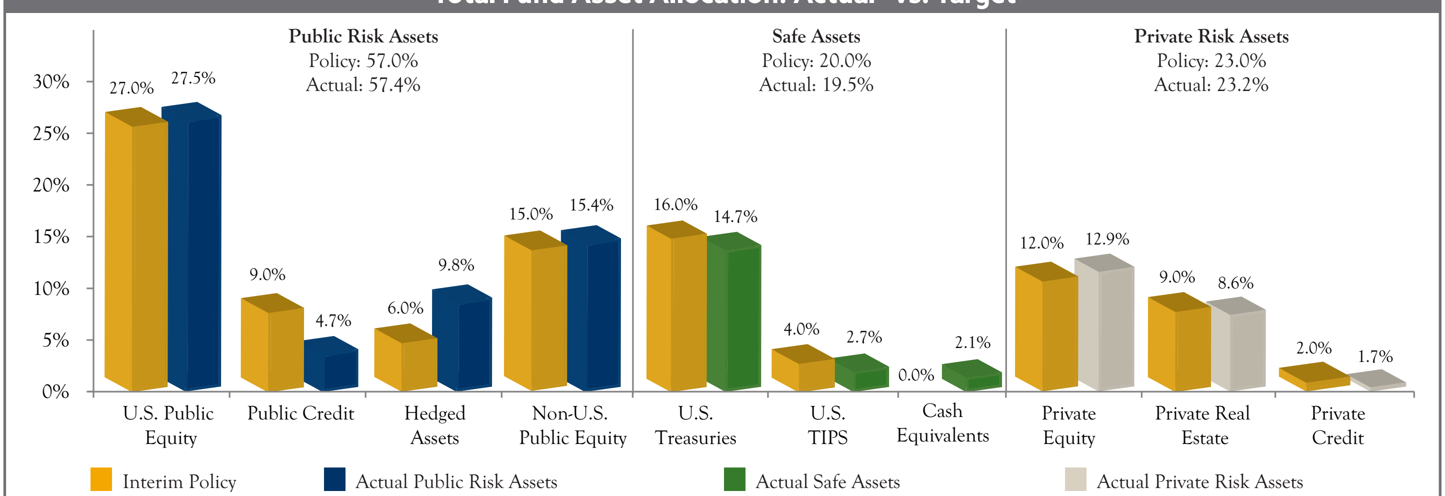
Asset Allocation: Actual Versus Target

The interim policy allocations have been established to reflect meaningful progress towards the new long-term targets and for policy benchmark weights, as discussed in the Investment Policy Summary: Asset Allocation section. As meaningful progress is made, the interim targets will be updated from the prior long-term policy allocations.

The June 30, 2020 interim policy allocation was 57% Public Risk Assets, 20% Safe Assets and 23% Private Risk Assets. In fiscal year 2020 the interim asset class targets were updated to reflect the progress made in funding the Private Equity and Private Real Estate programs. The Public Credit allocation was decreased from 12.0% to 9.0% while Private Equity was increased from 10.5% to 12% and Private Real Estate was increased from 7.5% to 9.0%. These sub-asset class target allocation updates resulted in a 3% decrease in Public Risk Assets from 60% to 57% and a corresponding increase to Private Risk Assets of 3% from 20% to 23%.

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 during the year included the utilization of Total Plan leverage to rebalance into U.S. Public Equities in March 2020 during the severe market selloff from the COVID-19 pandemic. As discussed in the Investment Policy Summary: Asset Allocation section, the Board of Trustees recently approved the use of Total Plan leverage to efficiently implement portfolio rebalancing. The Total Plan leverage as of June 30, 2020 is 0.3% which provided meaningful returns to the Systems in fiscal year 2020.

Total Fund Asset Allocation: Actual* vs. Target



**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, 2020, Public Risk Assets had a fair value of approximately $26.0 billion, representing 57.4% of total plan assets.

Investment Program Description

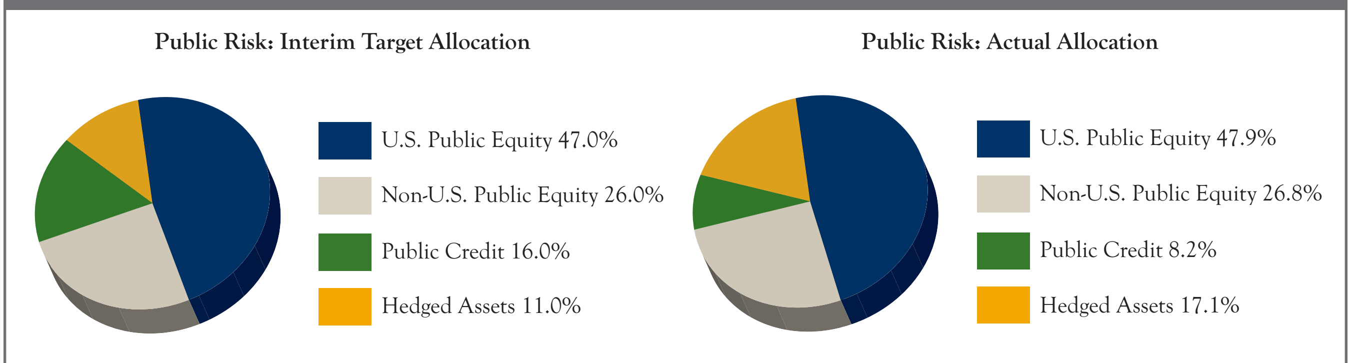
The Board of Trustees has adopted an asset allocation policy that includes a significant allocation to Public Risk Assets. The four programs within the Public Risk Asset composite are U.S. Public Equity, Public Credit, Hedged Assets and Non-U.S. Public Equity. Each program within the Public Risk allocation 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, 2020, 47.9% of the Systems' Public Risk Assets were invested in the U.S. Public Equity program, 26.8% in the Non-U.S. Public Equity program, 8.2% in the Public Credit program and 17.1% in the Hedged Assets program. Each of these programs is discussed in more detail on the following pages.

The internal staff decreased the total plan's overweight to Public Risk Assets during the year. The interim target allocation for Public Risk Assets during fiscal year 2020 was 57.0% and the Systems' allocation at the end of the fiscal year was 57.4%, down from the prior year overweight of 60.6%. Internal staff strategically rebalanced from Public Risk Assets during fiscal year 2020. Within the Public Risk Assets composite, internal staff decreased the overweight to U.S. Public Equity, Non-U.S. Public Equity and Hedged Assets while maintaining an underweight to Public Credit throughout the fiscal year.

Public Risk Assets Allocation



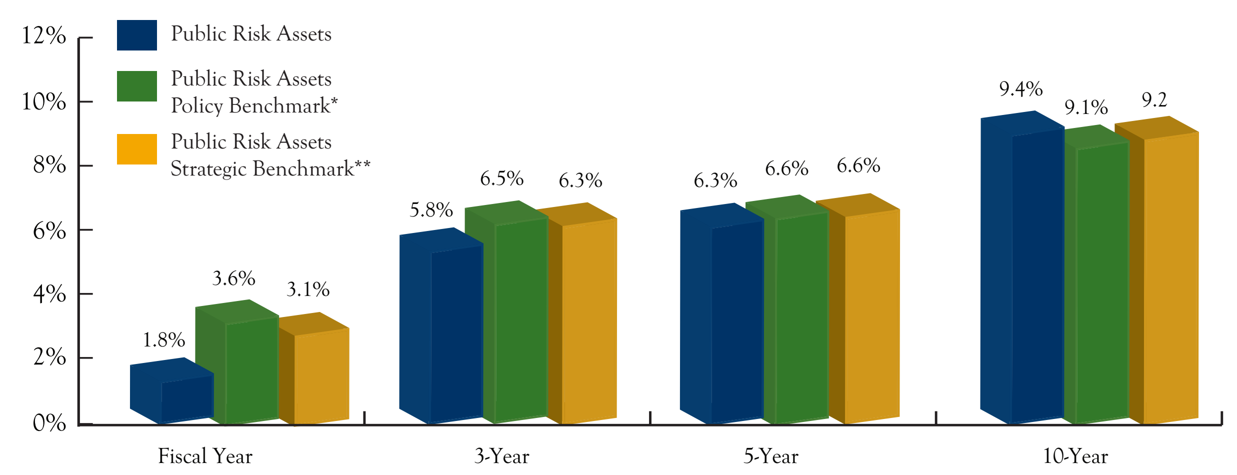
Market Overview

Fiscal year 2020 was a volatile period for the financial markets. Faced with the COVID-19 pandemic, an uncertain economic outlook and an unprecedented government response, the global equity markets went from one of the sharpest market sell-offs in history during the first quarter of 2020 to one of the fastest recoveries ever in the second quarter. Despite the difficult market environment, the Russell 3000 Index (broad measure of the U.S. stock market) produced a positive 6.5% return for the year. The Non-U.S. equity markets did not recover to the same extent, underperforming the U.S. equity markets for the year with the MSCI ACWI ex-USA Index (broad measure of the international stock markets) declining 4.8%. Bond markets also experienced extreme volatility with interest rates declining to historically low levels resulting in strong gains for the Public Credit benchmark (Barclays U.S. Intermediate Credit Index) of 7.0%.

Performance

The total return for the Systems' Public Risk portfolio was 1.8% which underperformed the policy benchmark by 180 basis points. However, as shown in the table and graph below, the Systems' Public Risk composite has performed well over long periods of time with 30 basis points of annualized alpha over the last ten years. The positive performance of the portfolio relative to the policy benchmark indicates value added by the internal staff through both strategic asset allocation decisions and manager selection decisions.

Public Risk Assets Performance



Public Risk Assets Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Return	1.8%	5.8%	6.3%	9.4%
Annualized Policy Benchmark Return*	3.6%	6.5%	6.6%	9.1%
Annualized Strategic Benchmark Return**	3.1%	6.3%	6.6%	9.2%
Excess Return	-1.8%	-0.7%	-0.3%	0.3%
Annualized Standard Deviation of Composite	19.3%	13.6%	11.7%	10.8%
Annualized Standard Deviation of Policy Benchmark*	18.6%	13.4%	11.7%	10.9%
Beta to Policy Benchmark*	1.03	1.01	1.00	0.99
Beta to MSCI ACWI net Index	0.89	0.83	0.80	0.76

**The Public Risk Assets Policy Benchmark is composed as follows: 50% Russell 3000 Index, 28.9% MSCI ACWI ex-USA net Index and 21.1% Bloomberg 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.*

U.S. Public Equity Program Summary

As of June 30, 2020, the U.S. Public Equity program had a fair value of approximately $12.4 billion, representing 27.5% of total plan 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

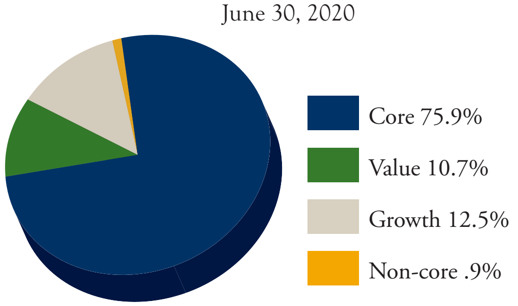
As of June 30, 2020, 36.6% of the U.S. Public Equity composite was passively managed. The remainder of the portfolio was actively managed and diversified across a broad array of capitalization ranges and investment styles, including the Small-Cap and the Alpha Overlay programs. Both programs represent multi-manager pools of assets managed within the overall U.S. Public Equity structure. The Small-Cap program encompasses 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.

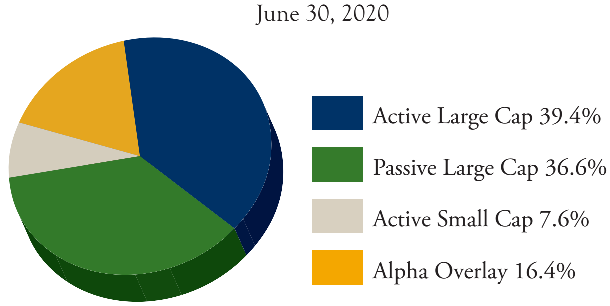
The pie charts below depict the U.S. Public Equity portfolio by presenting the current style structure of the portfolio as well as the allocation by composite and market sector.

U.S. Public Equity Allocations: Style and Composite

Style Allocation
June 30, 2020



Composite Allocation
June 30, 2020



Market Overview

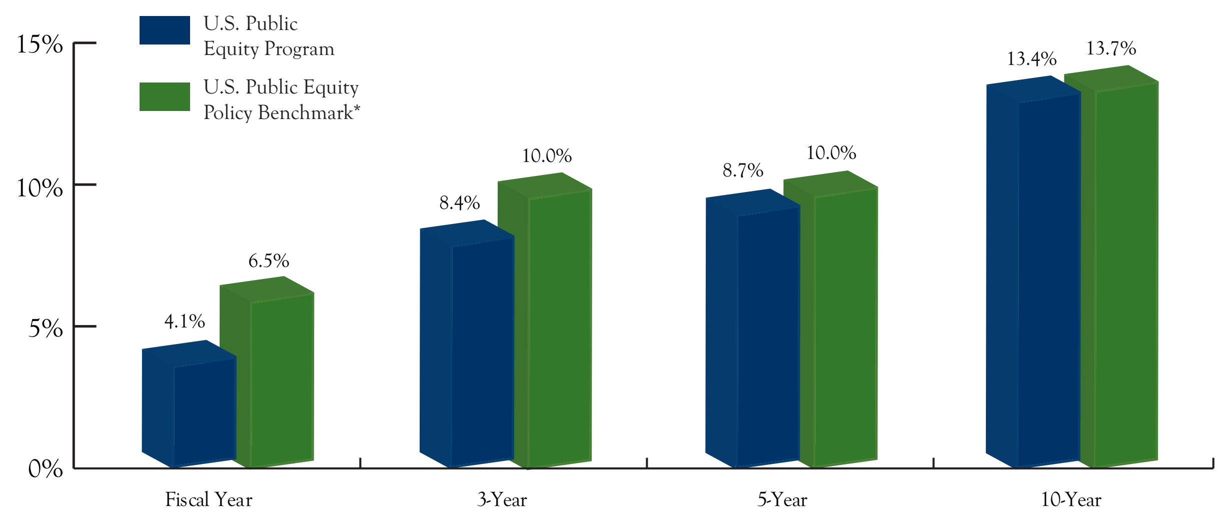
The extreme market volatility during the year resulted in significant return disparities across U.S. equity market capitalizations and styles. For the year, large cap stocks significantly outperformed small cap stocks while growth styles significantly outperformed value styles. The comprehensive measure of the U.S. stock market (Russell 3000 Index) increased 6.5% while large-cap stocks (Russell 1000) increased 7.5% outperforming small-cap stocks (Russell 2000 Index) which declined 6.6% for the year. Large-cap growth stocks (Russell 1000 Growth Index) outperformed large-cap value stocks (Russell 1000 Value Index) with a return of 23.3% compared to -8.8% while small-cap growth stocks (Russell 2000 Growth Index) outperformed small cap value stocks (Russell 2000 Value Index) with a return of 3.5% compared to -17.5%.

Performance

The total return for the U.S. Public Equity program was 4.1% compared to the benchmark return of 6.5% for the fiscal year ended June 30, 2020. Within the U.S. Public Equity program, the Large-Cap program returned 5.4%, Alpha Overlay returned 4.4% and the Small-Cap program returned -8.3% for the year.

As indicated in the table and graph, 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.

U.S. Public Equity Performance



U.S. Public Equity Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
U.S. Public Equity Return	4.1%	8.4%	8.7%	13.4%
Annualized Policy Benchmark Return*	6.5%	10.0%	10.0%	13.7%
Excess Return	-2.4%	-1.6%	-1.3%	-0.3%

**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, 2020 with comparisons shown to the portfolio's policy benchmark. In addition, the top ten U.S. Public Equity holdings as of June 30, 2020 are shown in the table following the characteristics.

U.S. Public Equity Characteristics

Characteristics	June 30, 2020 Systems' U.S. Public Equity Program*	June 30, 2020 Russell 3000 Index
Number of Securities	2,396	3,009
Dividend Yield	1.8%	1.8%
Price-to-Earnings Ratio	27.2	22.4
Avg. Market Capitalization	$ 266.8 bil	$ 328.9 bil
Price-to-Book Ratio	4.3	3.4

** 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, 2020	Fair Value	% of Total U.S. Public Equity
Amazon.com Inc.	$ 126,312,574	1.0%
Microsoft Corp.	123,853,744	1.0%
Alphabet Inc.	110,109,947	0.9%
Apple Inc.	91,925,587	0.7%
Facebook Inc.	80,706,128	0.7%
Johnson & Johnson	64,394,758	0.5%
Tesla Inc.	63,076,021	0.5%
Shopify Inc.	60,369,120	0.5%
Nvidia Corp.	50,063,780	0.4%
Netflix Inc.	47,490,250	0.4%
TOTAL	$ 818,301,909	6.6%

Investment Advisors

As of June 30, 2020, the Systems had contracts with 19 external investment advisors who managed 27 portfolios that comprised 83.6% of the U.S. Public Equity portfolio. The remaining 16.4% of the portfolio was in the Alpha Overlay program described in the next section. The Systems repositioned the Large-Cap program during the year by terminating a mandate with Analytic Investors while adding new mandates with Eagle Capital Management and NISA Investment Advisors. The Systems repositioned the Small-Cap program during the year by terminating mandates with Allianz and NISA Investment Advisors while adding new mandates with Chartwell Investment Partners, Greenhouse Funds, RK Capital Management and Russell Investments.

U.S. Public Equity Investment Advisors

Investment Advisor	Investment Style	Fair Value As of June 30, 2020	% of Total Plan Fair Value
Analytic Investors	Quantitative Low Volatility	$ 1,039,964,617	2.3%
AQR Capital Management	Quantitative 140/40 Core	567,427,033	1.2%
Aronson + Johnson + Ortiz	Quantitative 130/30 Value	216,380,015	0.5%
Aronson + Johnson + Ortiz	Quantitative Value	126,715,221	0.3%
Blackrock	Passive Russell 1000 Index	4,348,225,933	9.5%
Coatue Long Only Partners	Concentrated Technology	286,012,428	0.6%
Davis Selected Advisers	Concentrated Finance	70,891,080	0.2%
Eagle Capital Management	Concentrated Core	199,698,640	0.4%
Grantham, Mayo, Van Otterloo & Co.	Concentrated High Quality	447,943,072	1.0%
Lazard Asset Management	Concentrated All-Cap	123,138,142	0.3%
Martingale Asset Management	Quantitative 130/30 Growth	280,648,418	0.6%
NISA Investment Advisors	Passive S&P 500 Index	177,371,867	0.7%
Russell Investments	Completion Portfolio	215,899,182	0.5%
Select Equity Group	Concentrated High Quality	115,263,679	0.2%
Westwood Management	Concentrated Value	398,155,452	0.9%
Westwood Management	Master Limited Partnerships	89,328,012	0.2%
Zevenbergen Capital	Concentrated All-Cap Growth	695,115,770	1.5%
Large-Cap Subtotal		**9,398,178,561**	**20.9%**
AQR Capital Management	Quantitative Core	89,824,138	0.2%
Blackrock	Passive Russell 2000 Index	211,819,783	0.5%
Chartwell Investment Partners	Diversified Value	50,273,257	0.1%
Chartwell Investment Partners	Diversified Small/Midcap Value	33,027,128	0.1%
Greenhouse Funds	Concentrated Core	77,771,629	0.2%
Martingale Asset Management	Quantitative Low Volatility	104,473,143	0.2%
RK Capital Management	Diversified Core	102,576,569	0.2%
Russell Investments	Passive Russell 2000 Growth	27,402,337	0.1%
Russell Investments	Completion Portfolio	136,125,705	0.3%
Systematic Financial Management	Diversified Value	110,782,610	0.2%
Small-Cap Subtotal		**944,076,299**	**2.1%**
Total		**$ 10,342,254,860**	**23.0%**

Alpha Overlay Program Summary

As of June 30, 2020, the Alpha Overlay program had a fair value of approximately $2.0 billion, representing 4.5% of total plan 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 provide 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, 2020, 22.5% 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 69.5% of the portfolio was actively managed across a diversified range of multi-strategy and market neutral hedge fund mandates. The remaining 8.0% 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, 2020.

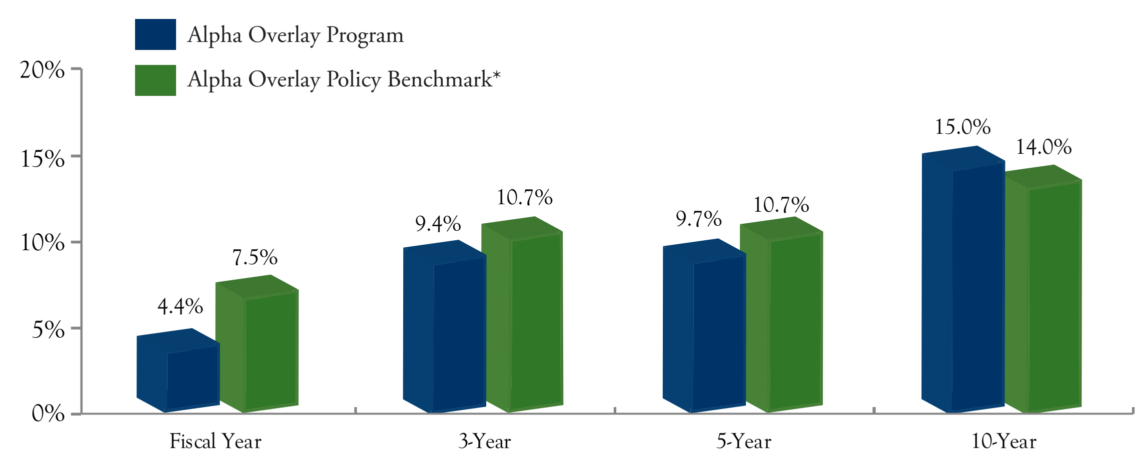
Alpha Overlay Investment Advisors

Investment Advisor	Investment Style	Fair Value As of June 30, 2020	% of Total Plan Fair Value
Analytic Investors	Relative Value	$ 27,593,678	0.1%
AQR Absolute Return Fund	Relative Value	79,703,430	0.2%
Bridgewater Pure Alpha II	Asset Allocation/Global Macro	104,983,941	0.2%
Davidson Kempner Institutional Partners	Event Driven	224,027,733	0.5%
HBK Capital Management	Relative Value	220,848,865	0.5%
NISA Investment Advisors	S&P 500 Exposure	456,423,536	1.0%
Renaissance Institutional Equities Fund	Low Volatility Equity	336,097,079	0.7%
Rock Springs Capital Fund	Long-Biased Equity	60,635,257	0.1%
Sculptor Domestic Partners	Mulit-Strategy	178,869,760	0.4%
Stark Investments Limited Partners	Equity Long/Short	1,170,780	0.0%
UBS O'Connor Multi-Strategy Alpha	Relative Value	176,353,339	0.4%
Zevenbergen Capital	Active All-Cap Growth	161,645,294	0.4%
Total		**$ 2,028,352,692**	**4.5%**

Performance

The fiscal year 2020 return for the Alpha Overlay program was 4.4% underperforming the benchmark return of 7.5% by 310 basis points. However as shown in the table and graph below, the Alpha Overlay composite has produced significant long-term absolute and relative returns while maintaining a risk profile (standard deviation and beta) lower than the benchmark.

Alpha Overlay Performance



Alpha Overlay Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Alpha Overlay Return	4.4%	9.4%	9.7%	15.0%
Annualized Policy Benchmark Return*	7.5%	10.7%	10.7%	14.0%
Excess Return	-3.1%	-1.3%	-1.0%	1.0%
Annualized Standard Deviation of Composite	23.5%	16.4%	14.0%	13.0%
Annualized Standard Deviation of Policy Benchmark*	21.9%	17.0%	14.8%	13.4%
Beta to Benchmark*	1.06	0.95	0.92	0.95

**The Alpha Overlay Policy Benchmark is the S&P 500 Index.*

Non-U.S. Public Equity Program Summary

As of June 30, 2020, the Non-U.S. Public Equity program had a fair value of approximately $7.0 billion, representing 15.4% of total plan assets.

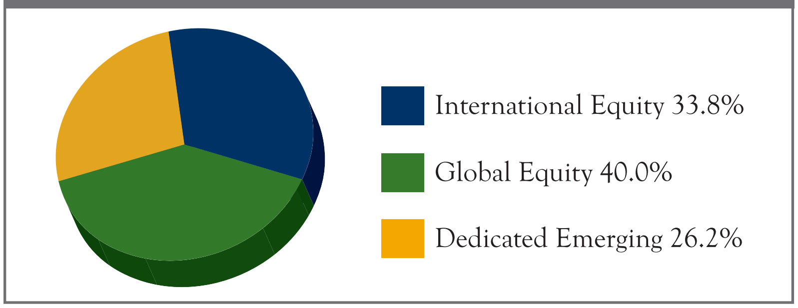
Investment Program Description

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., emerging, 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 Non-U.S. Public Equity portfolios provide an element of diversification relative to the domestic equity portfolios. 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.

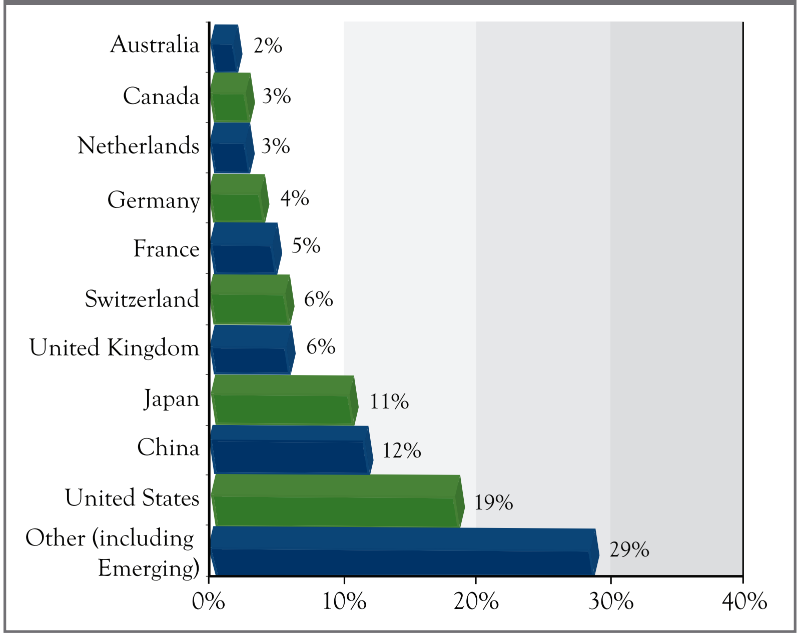
Structure

As of June 30, 2020, 4.9% 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 pie chart below indicates broader exposure by investment mandate within the composite while the bar graph displays the specific country exposure.

Non-U.S. Public Equity Allocation



Non-U.S. Public Equity Country Allocation



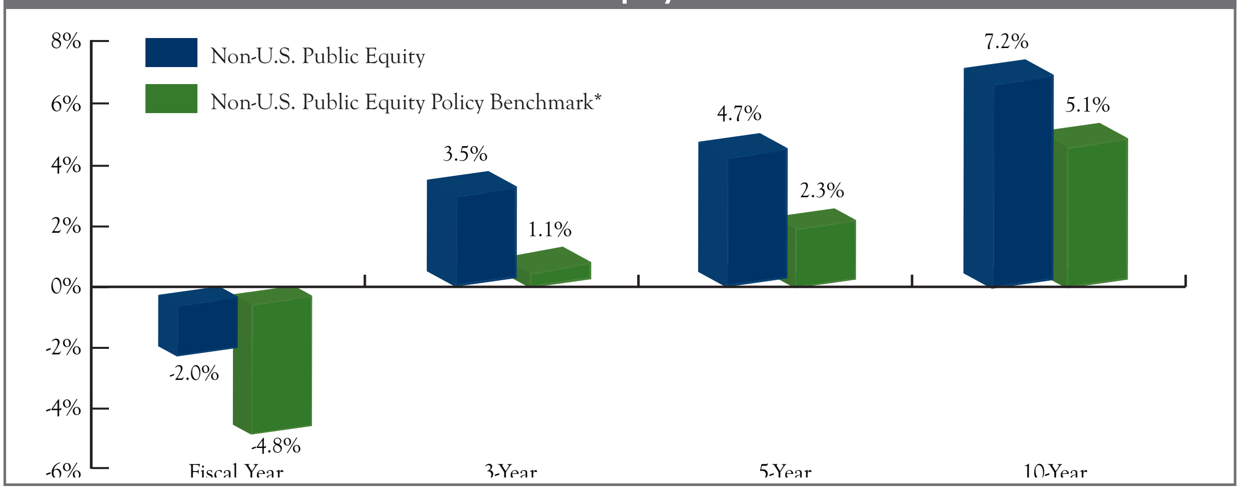
Market Overview

The non-U.S. equity markets experienced extreme volatility during the year due to the global COVID-19 pandemic, similar to the U.S. equity markets, however further weakness in the commodities and foreign exchange markets resulted in underperformance relative to the U.S. For the fiscal year ended June 30, 2020 developed market global stocks (MSCI World net Index) increased 2.8% outperforming emerging markets (MSCI EM net Index) which decreased 3.4% and developed international markets (MSCI EAFE net Index) which decreased 5.1% while the broad measure of the non-U.S. equity markets (MSCI ACWI ex-USA Index) declined 4.8%.

Performance

The total return for the Non-U.S. Public Equity program was -2.0% compared to the benchmark return of -4.8% for the fiscal year ended June 30, 2020. As shown in the table and graph below, the Systems' Non-U.S. Public Equity composite returns substantially outperformed the benchmark in 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 returns through a combination of active and passive investment strategies. The Non-U.S. Public Equity program's returns have exceeded these expectations.

Non-U.S. Public Equity Performance



Non-U.S. Public Equity Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Non-U.S. Public Equity Return	-2.0%	3.5%	4.7%	7.2%
Annualized Policy Benchmark Return*	-4.8%	1.1%	2.3%	5.1%
Excess Return	2.8%	2.4%	2.4%	2.1%

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

Statistics

The following table displays the top ten Non-U.S. Public Equity holdings as of June 30, 2020.

Non-U.S. Public Equity - Top 10 Holdings		
Top 10 Largest Holdings* June 30, 2020	Fair Value	% of Total Non-U.S. Public Equity
Roche Holding AG	$ 82,429,694	1.2%
Nestle SA	62,863,012	0.9%
Microsoft Corp.	54,814,401	0.8%
Alibaba Group	52,128,219	0.8%
Schneider Electric SE	51,813,677	0.7%
SAP SE	48,181,150	0.7%
Taiwan Semiconductor	47,512,857	0.7%
AIA Group Ltd.	43,718,316	0.6%
Hoya Corp.	42,681,448	0.6%
Samsung Electronics Ltd.	37,760,571	0.5%
Total	**$ 523,903,345**	**7.5%**

** Includes only actively managed separate accounts.*

A complete list of portfolio holdings is available upon request.

Investment Advisors

As of June 30, 2020, the Systems had contracts with 12 external investment advisors who managed 17 portfolios within the Non-U.S. Public Equity portfolio. In fiscal year 2020 the Systems terminated one mandate and added an emerging markets mandate with ABS Investment Management.

Non-U.S. Public Equity Investment Advisors			
Investment Advisor	Investment Style	Fair Value As of June 30, 2020	% of Total Plan Fair Value
Acadian Asset Management	Quantitative Emering Markets Low Volatility	$ 478,662,755	1.0%
Acadian Asset Management	Quantitative International Small Cap	119,070,498	0.3%
ABS Investment Management	Local Emerging Markets	215,955,668	0.5%
AllianceBernstein Institutional Mgmt.	Global Low Volatility	274,656,798	0.6%
Analytic Investors	Quantitative Global Low Volatility	649,626,077	1.4%
AQR Capital Management	Quantitiative International Core	502,284,111	1.1%
Arrowstreet Capital	Quantitative Emerging Markets	257,722,848	0.6%
Arrowstreet Capital	Quantitative Global	833,012,753	1.8%
Arrowstreet Capital	Quantitiative Global Long/Short	1,054,988,365	2.3%
Blackrock	Passive EAFE Index	316,237,784	0.7%
Blackrock	Passive Emerging Markets Index	25,901,130	0.1%
Coronation Asset Management Limited	Global Emerging Markets	309,816,336	0.7%
Invesco	Quantitative International Low Volatility	194,663,143	0.4%
MFS Investment Management	Diversifed International Core	962,562,309	2.1%
MFS Investment Management	Concentrated International Core	277,448,615	0.6%
Neon Capital Management	Emerging Markets Small Cap	103,611,970	0.2%
Rock Creek Group	Local Emerging Markets	447,545,823	1.0%
Total		**$ 7,023,766,983**	**15.4%**

Public Credit Program Summary

As of June 30, 2020, the Public Credit program had a fair value of approximately $2.2 billion, representing 4.7% of total plan assets.

Investment Program Description

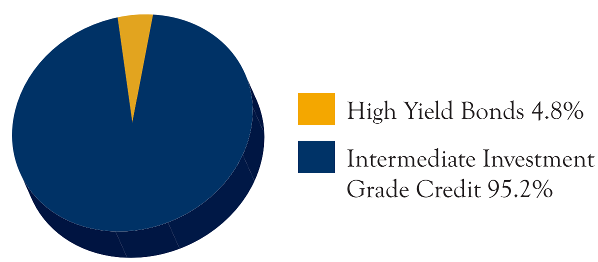
The Public Credit program is designed to provide a source of income and capital appreciation for the Systems while creating substantial diversification to the total plan with a low correlation to other asset classes. Most securities in this program exhibit high liquidity. Specific investments can include 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, 2020, the Public Credit composite was actively managed and diversified across high yield bonds with a base of high-quality corporate bonds. The following pie chart presents the strategy allocation of the Systems' Public Credit assets as of June 30, 2020.

Public Credit Allocation



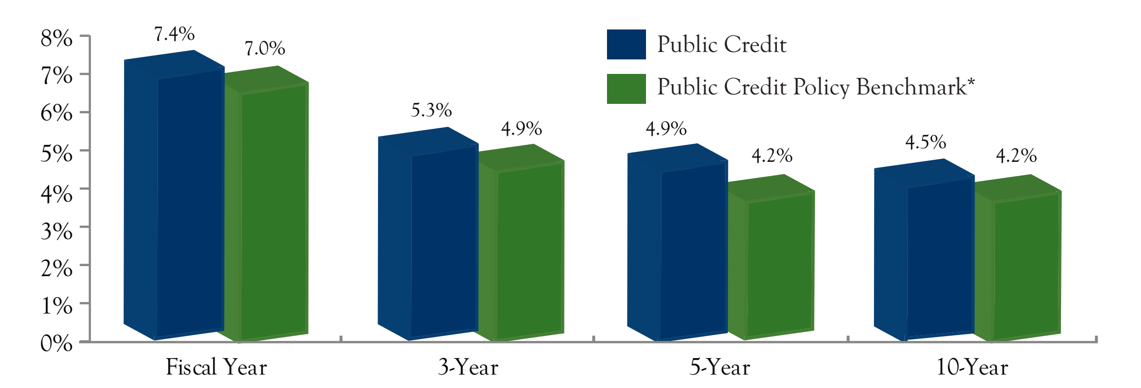
Market Overview

For fiscal year 2020, investment grade credit outperformed high yield bonds as the yield on the 10-year Treasury decreased to 0.7% on June 30, 2020 from 2.0% on June 30, 2019. The significant decrease in interest rates throughout the year positively impacted the price of bonds. The comprehensive measure of the U.S. Treasury market (Bloomberg Barclays U.S. Treasury Index) increased 10.5%, investment grade credit corporate bonds (Bloomberg Barclays U.S. Intermediate Credit Index) increased 7.0% while a broader measure of the U.S. bond market (Bloomberg Barclays U.S. Aggregate Index) increased 8.7% for the year. High yield, or lower quality bonds (ICE BofAML U.S. High Yield Master II Index), decreased 1.1% for the year and global bonds (Bloomberg Barclays Global Agg. Ex-US Index) increased 1.0%.

Performance

The Public Credit program produced strong absolute and relative returns for fiscal year 2020. The fiscal year return of 7.4% was above the benchmark return of 7.0% by 40 basis points. As indicated in the table and graph, the Public Credit portfolio has produced moderate absolute and relative returns in all reported time periods. Over long periods of time, the Systems' Public Credit program is designed to deliver approximately 50-100 basis points of excess return through a combination of active and passive strategies.

Public Credit Performance



Public Credit Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Public Credit Return	7.4%	5.3%	4.9%	4.5%
Annualized Policy Benchmark Return*	7.0%	4.9%	4.2%	4.2%
Excess Return	0.4%	0.4%	0.7%	0.3%

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

Statistics

The following table displays the top ten Public Credit holdings as of June 30, 2020.

Public Credit - Top 10 Holdings

Top 10 Largest Holdings* June 30, 2020		Fair Value	% of Total Public Credit
Transcontinental Gas Pipe Line Co. LLC, 7.85%, 02/01/2026	$	43,021,165	2.0%
Goldman Sachs Group Inc., 3.8%, 03/15/2030		42,000,550	1.9%
Morgan Stanley, Floating, 01/20/2023		37,083,858	1.7%
Republic Services Inc., 2.5%, 08/15/2024		31,757,062	1.5%
New York Life Global Funding, 2.0%, 01/22/2025		31,498,949	1.5%
Cintas Corp No. 2, 3.25%, 06/01/2022		30,419,119	1.4%
Raytheon Technologies Corp, 3.5%, 06/01/2022		30,122,943	1.4%
Anheuser-Busch Inbev, 4.70%, 02/01/2036		29,451,750	1.4%
Cameron Lng, LLC, 3.40%, 01/15/2038		29,078,585	1.3%
AT&T Inc, 0.00%, 11/27/2022		28,377,950	1.3%
Total	**$**	**332,811,931**	**15.4%**

**A complete list of portfolio holdings is available upon request.*

Investment Advisors

As of June 30, 2020, the Systems had contracts with three external investment advisors who managed three portfolios in the Public Credit program. During the year, the Systems continued to wind down the Oaktree Bank Loans portfolio.

Public Credit Investment Advisors

Investment Advisor	Investment Style		Fair Value As of June 30, 2020	% of Total Plan Fair Value
NISA Investment Advisors	Corporate Credit	$	2,051,744,752	4.5%
Oaktree Bank Loans	Senior Bank Loans		933,043	0.0%
Pacific Investment Management Co.	High Yield		102,696,680	0.2%
Total		**$**	**2,155,374,475**	**4.7%**

Hedged Assets Program Summary

As of June 30, 2020, the Hedged Assets program had a fair value of approximately $4.5 billion, representing 9.8% of total plan assets.

Investment Program Description

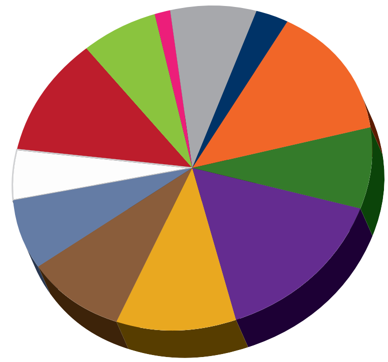
The Hedged Assets program's objective is to provide diversification to the total portfolio and reduce volatility within the Public Risk composite. The purpose of this program is to enhance the overall risk/return profile of the Public Risk composite through the inclusion of specialized investment strategies 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 firm 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.

The following chart indicates the strategy diversification of the Hedged Assets program as of June 30, 2020. The Systems manage the Hedged Assets portfolio to a blended benchmark of 25% Russell 3000 Index, 25% MSCI ACWI ex-USA net Index, and 50% Bloomberg Barclays U.S. Intermediate Credit Index.

Hedged Assets Diversification

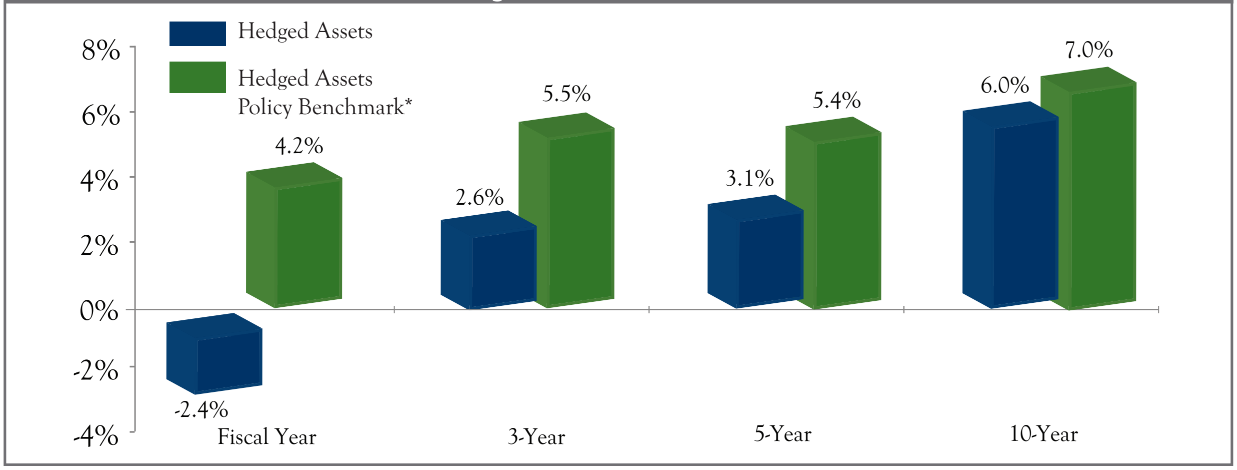


Performance

The total annualized return on the Systems' Hedged Assets portfolio was -2.4%, compared to the benchmark return of 4.2% for the fiscal year ended June 30, 2020.

Over the past ten years, the Hedged Assets program has underperformed its policy benchmark of 7.0%. The performance relative to the policy benchmark is reasonable however, given the significant performance of equities over this time period. The Russell 3000 Index was up an annualized 13.7% over the past ten years and the MSCI ACWI net Index was up an annualized 9.2%. 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 all country 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.

Hedged Assets Performance



Hedged Assets Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Hedged Assets Return	-2.4%	2.6%	3.1%	6.0%
Annualized Policy Benchmark Return*	4.2%	5.5%	5.4%	7.0%
Annualized S&P 500 Return	7.5%	10.7%	10.7%	14.0%
Annualized MSCI ACWI net Index	2.1%	6.1%	6.5%	9.2%
Annualized Standard Deviation of Composite	12.0%	7.5%	6.3%	6.3%
Annualized Standard Deviation of Policy Benchmark*	13.7%	10.0%	8.4%	7.9%
Annualized Standard Deviation of S&P 500	21.9%	17.0%	14.8%	13.4%
Annualized Standard Deviation of MSCI ACWI net Index	21.6%	16.3%	14.5%	14.0%
Beta to Policy Benchmark*	0.83	0.72	0.67	0.72
Beta to S&P 500	0.49	0.37	0.35	0.38
Beta to MSCI ACWI net Index	0.52	0.41	0.38	0.39

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

Investment Advisors

As of June 30, 2020, the Systems had contracts with 18 external investment advisors who managed 24 portfolios. During the fiscal year two investment mandates were terminated while one investment mandate with Rock Springs Capital was added to the program.

Hedged Assets Investment Advisors			
Investment Advisor	Investment Style	Fair Value As of June 30, 2020	% of Total Plan Fair Value
AQR Absolute Return Fund	Relative Value	$ 148,020,657	0.3%
AQR Adaptive Multi-Strategy	Risk Parity	200,489,355	0.4%
AQR Diversified Beta Fund	Risk Parity	43,272,642	0.1%
AQR Real Asset Fund	Inflation Protection	25,671,459	0.1%
Bridgewater All Weather	Risk Parity	104,627,212	0.2%
Bridgewater Inflation Pool	Inflation Protection	26,872,534	0.1%
Bridgewater Pure Alpha II	Asset Allocation/Global Macro	419,935,756	0.9%
Davidson Kempner Institutional Partners	Event Driven	336,041,600	0.7%
Davidson Kempner Distressed Opportunities Fund	Distressed Debt/Credit	226,884,124	0.5%
GoldenTree Partners	Distressed Debt/Credit	455,107,424	1.0%
HBK Capital Management	Relative Value	220,848,866	0.5%
Hillhouse China Value Fund	Long-Biased Equity	178,322,400	0.4%
Indus Asia Pacific Fund	Equity Long/Short	6,323,441	0.0%
Maverick Fund USA	Equity Long/Short	128,167,667	0.3%
NISA Investment Advisors	Custom Beta	509,623,227	1.1%
Owl Creek Overseas Fund	Event Driven	4,533,073	0.0%
Renaissance Institutional Equities Fund	Low Volatility Equity	624,180,290	1.4%
Rock Springs Capital Fund	Long-Biased Equity	40,423,505	0.1%
Stark Investments Limited Partners	Equity Long/Short	2,174,305	0.0%
Sculptor Domestic Partners	Multi-Strategy	332,186,697	0.7%
Sculptor Europe Domestic Partners	Multi-Strategy	765,468	0.0%
UBS O'Connor Multi-Strategy Alpha	Relative Value	117,568,882	0.3%
Westwood Management	Income Focused/Quality	299,713,229	0.7%
York Capital Management	Event Driven	14,595,853	0.0%
Total		**$ 4,466,349,666**	**9.8%**

Safe Assets Summary

As of June 30, 2020, Safe Assets had a fair value of approximately $8.9 billion, representing 19.5% of total plan assets.

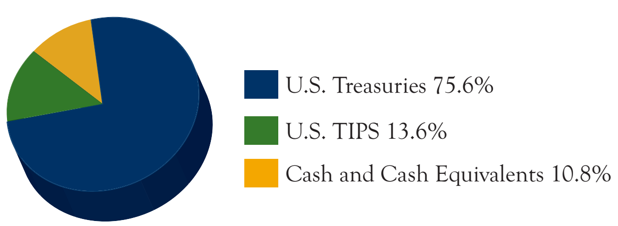
Investment Program Description

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 fund 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.

Structure

As of June 30, 2020, NISA Investment Advisors was the only external investment manager within the Safe Assets program. Additionally, the Safe Assets program includes an FDIC insured interest-bearing account with a competitive yield at J.P. Morgan. The assets held within the program exhibit high liquidity and safety. The pie chart below depicts the Safe Assets program by showing the composite allocations as of June 30, 2020.

Safe Assets Allocation



The Systems' slightly increased its allocation to Safe Assets from 18.9% as of June 30, 2019 to 19.5% as of June 30, 2020.

Market Overview

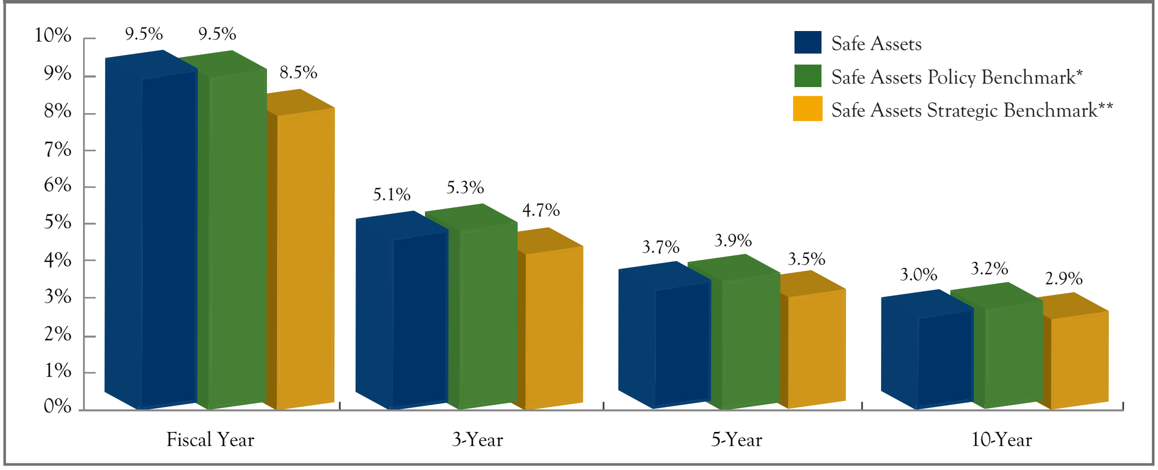
The Treasury markets produced very strong returns for the year as the yield on the 10-year Treasury decreased to 0.7% on June 30, 2020 from 2.0% on June 30, 2019. The Federal Reserve took unprecedented measures in response to COVID-19, aggressively cutting interest rates and initiating new emergency lending programs. The large decrease in interest rates and strong demand for lower risk assets positively impacted the price of Treasuries. The comprehensive measure of the U.S. Treasury market (Bloomberg Barclays U.S. Treasury Index) increased 10.5% while the TIPS market (Bloomberg Barclays U.S. TIPS 1-10 Years) increased 5.8% for the year.

Performance

The total return for the Safe Assets portfolio was 9.5%, producing a very strong absolute return for the fiscal year ended June 30, 2020. The fiscal year 2020 performance highlights the benefit of diversification from other risk assets during periods of significant volatility.

The absolute return of the Safe Assets portfolio is relatively modest over longer time periods. However, the Safe Assets portfolio is designed 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.

Safe Assets Performance



Safe Assets Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Safe Assets Return	9.5%	5.1%	3.7%	3.0%
Annualized Policy Benchmark Return*	9.5%	5.3%	3.9%	3.2%
Annualized Strategic Benchmark Return**	8.5%	4.7%	3.5%	3.0%
Excess Return	0.0%	-0.2%	-0.2%	-0.2%
Annualized Standard Deviation of Composite	4.4%	3.4%	3.1%	3.0%
Annualized Standard Deviation of Policy Benchmark*	4.4%	3.6%	3.3%	3.1%
Beta to Policy Benchmark*	1.00	0.93	0.93	0.94
Beta to MSCI ACWI net Index	-0.13	-0.10	-0.08	-0.07

**The Safe Assets Policy Benchmark is composed as follows: 80.0% Bloomberg Barclays U.S. Treasury Index and 20.0% Bloomberg Barclays U.S. TIPS 1-10 Yrs. Index.*

***The Safe Assets Strategic Benchmark changes monthly based on the actual asset allocation at the end of the previous month.*

The Systems have specifically taken less risk compared to the policy benchmark due to the inclusion of the cash and cash equivalents portfolios. Additionally, the Safe Assets program had a beta slightly less than 1.0 relative to the policy benchmark over extended time periods, indicating less market volatility. Most importantly, the Safe Assets portfolio exhibits a beta of approximately zero relative to the all country world stock index (MSCI ACWI net 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, 2020 with comparisons shown to the Bloomberg Barclays U.S. Treasury Index. Additionally, the top ten Safe Assets holdings as of June 30, 2020 are shown in the table below the characteristics.

Safe Assets Characteristics

Characteristics	June 30, 2020 Systems' Safe Assets Program	June 30, 2020 Bloomberg Barclays U.S. Treasury Index
Number of Securities	121	260
Average Coupon	2.0%	2.1%
Yield to Maturity	0.3%	0.5%
Average Maturity (Years)	7.2	7.7
Duration (Years)	6.5	7.0

Safe Assets - Top 10 Holdings

Top 10 Largest Holdings* June 30, 2020	Fair Value	% of Total Safe Assets
United States Treasury Note, 2.75%, 08/15/2021	$ 313,952,005	3.5%
United States Treasury Note, 3.00%, 05/15/2047	274,927,185	3.1%
United States Treasury Note, 2.875%, 08/15/2028	268,273,558	3.0%
United States Treasury Note, 2.75%, 07/31/2023	241,728,044	2.7%
United States Treasury Note, 1.875%, 07/31/2022	239,499,034	2.7%
United States Treasury Note, 1.625%, 05/15/2026	227,807,018	2.6%
United States Treasury Note, 2.25%, 11/15/2025	214,535,655	2.4%
United States Treasury Note, 2.75%, 05/31/2023	199,575,306	2.2%
United States Treasury Note, 2.25%, 11/15/2024	192,969,125	2.2%
United States Treasury Note, 1.75%, 05/31/2022	182,872,053	2.0%
Total	$ 2,356,138,983	26.4%

**A complete list of portfolio holdings is available upon request.*

Investment Advisors

NISA Investment Advisors was the only external investment advisor within the Safe Assets program, managing three portfolios as of June 30, 2020. The Safe Assets program also includes an interest-bearing cash account with the Systems' master custodian J.P. Morgan.

Safe Assets Investment Advisors

Investment Advisor	Investment Style	Fair Value As of June 30, 2020	% of Total Plan Fair Value
NISA Investment Advisors	U.S. Treasuries	$ 6,736,254,016	14.7%
NISA Investment Advisors	U.S. TIPS	1,214,910,720	2.7%
NISA Investment Advisors	Cash Equivalents	543,653,048	1.2%
J.P. Morgan	Interest Bearing Cash Account	414,765,015	0.9%
Total		$ 8,909,582,799	19.5%

Private Risk Assets Summary

As of June 30, 2020, Private Risk Assets had a fair value of approximately $10.6 billion, representing 23.2% of total plan assets.

Investment Program Description

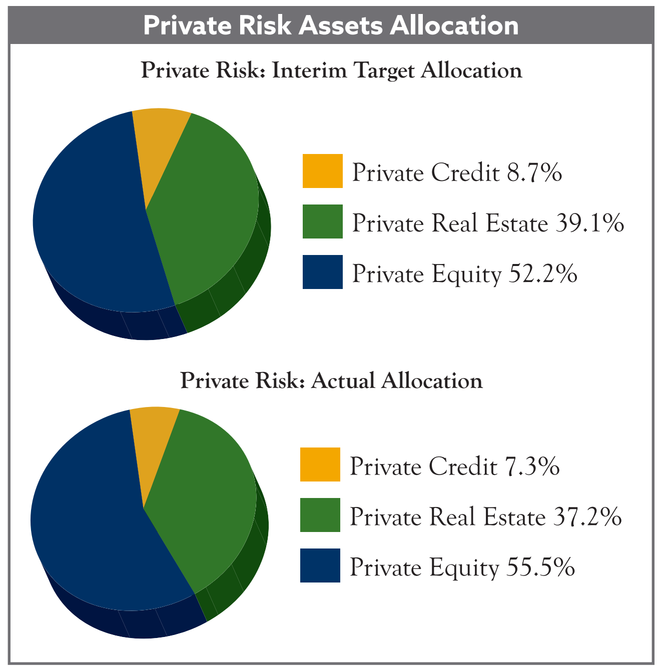
The allocation to Private Risk investments is viewed as a separate asset class for inclusion in the Systems' overall investment portfolios. The process of building the Systems' Private Risk program and fully funding the target allocation is expected to occur over a period of several years. Additional 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 the 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

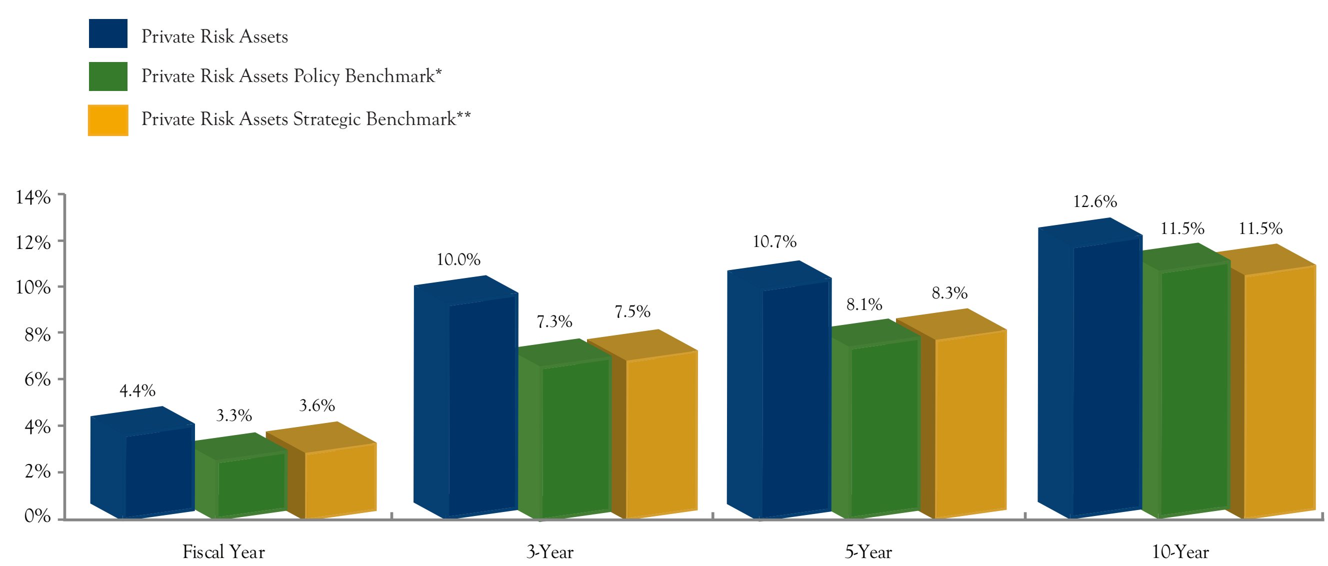
As of June 30, 2020, 55.5% of Private Risk Assets were invested in the Private Equity program, 37.2% in the Private Real Estate program and 7.3% in the Private Credit program. Each of these programs is discussed in more detail on the following pages.



Performance

The total return for the Private Risk portfolio was 4.4%, compared to the policy benchmark return of 3.3% for the fiscal year ended June 30, 2020. 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 portfolio has produced excellent absolute and relative returns over all time periods. The ten-year return exceeded the benchmark by 110 basis points. These excess returns are net of fees and expenses.

Private Risk Assets Performance



Private Risk Assets Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Private Risk Assets Return	4.4%	10.0%	10.7%	12.6%
Annualized Policy Benchmark Return*	3.3%	7.3%	8.1%	11.5%
Annualized Strategic Benchmark Return**	3.6%	7.5%	8.3%	11.5%
Excess Return	1.1%	2.7%	2.6%	1.1%

** The Private Risk Assets Policy Benchmark is composed as follows: 39.1% Russell 3000 Index, 39.1% NFI-ODCE Index, 13.1% MSCI ACWI ex-USA net Index and 8.7% ICE BofAML U.S. 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.*

Private Equity Program Summary

As of June 30, 2020, the Private Equity program had a fair value of approximately $5.9 billion, representing 12.9% of total plan 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 50.0% 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

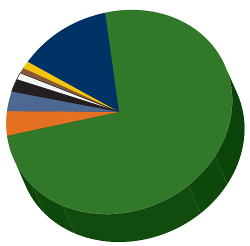
As of June 30, 2020, Private Equity assets committed* for investment were $11.9 billion. The fair value of funds that had been drawn down and actually invested as of June 30, 2020 was approximately $5.9 billion, representing 12.9% of total plan assets. The Systems' private equity investment commitments that have not yet been funded were approximately $4.0 billion as of June 30, 2020.

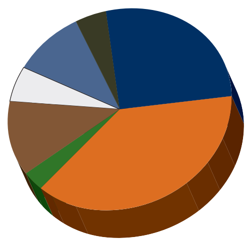
The objective of the Systems' allocation to Private Equity is to achieve returns that are higher than those attainable in the public equity markets with the added benefit of diversification. The long-term target allocation to Private Equity is 16.0%. However, as of June 30, 2020, the actual allocation for the Systems was 12.9% 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 following pie charts show the diversification (utilizing the market value of invested assets) of the Systems' Private Equity holdings as of June 30, 2020 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. Fair value reflects capital that has actually been drawn and invested by the partnerships and funds.*

Private Equity Strategy and Diversification





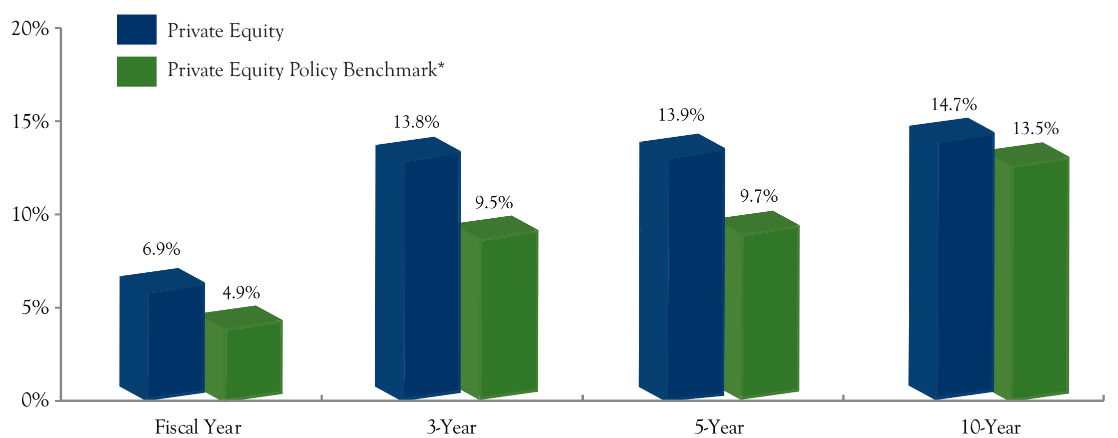
Market Overview

Private Equity funds continued to perform very well in fiscal year 2020. Although it was a very difficult and uncertain investment climate, the program's buyout and venture capital investments were especially successful in generating strong results for the year. The Private Equity program produced the strongest asset class returns for the Systems behind the U.S. Treasuries and Public Credit fixed income asset classes.

Performance

The total return for the Private Equity program was 6.9%, compared to the benchmark return of 4.9% for the fiscal year ended June 30, 2020. 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 200 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 120 basis points. These excess returns are net of fees and expenses.

Private Equity Performance



Private Equity Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Private Equity Return	6.9%	13.8%	13.9%	14.7%
Annualized Policy Benchmark Return*	4.9%	9.5%	9.7%	13.5%
Excess Return	2.0%	4.3%	4.2%	1.2%

**Effective October 1, 2019 the Private Equity Policy Benchmark is 75% Russell 3000 and 25% MSCI ACWI ex-USA net Index. The Russell 3000 Index is used for prior periods.*

Investment Advisors

As of June 30, 2020, the Systems were invested in 187 separate partnerships with 78 firms within the Private Equity asset class. In fiscal year 2020 the Systems committed to 21 new partnerships for $455 million. Additionally, the Systems received total distributions from the private equity partnerships of approximately $886 million in fiscal year 2020.

Private Equity Investment Advisors

Investment Advisor	Investment Strategy	Fair Value* As of June 30, 2020	% of Total Plan Fair Value
Advent International GPE IX, VII-B and VIII	Acquisition - Medium	$ 96,740,921	0.2%
Alchemy Special Opportunities Fund IV	Debt - Distressed	864,139	0.0%
Baring Asia VI	Acquisition - Medium	35,564,120	0.1%
Battery Ventures XII, XII Side Fund, XIII and XIII Side Fund	Venture Capital	8,631,901	0.0%
BC European IX	Acquisition - Large	26,773,300	0.1%
Blackstone Capital Partners V and VI	Acquisition - Large	19,031,324	0.0%
Canaan Partners IX, X and XI	Venture Capital	81,228,330	0.2%
Carlyle Europe Partners III	Acquisition - Medium	1,924,085	0.0%
Carlyle Partners V and VI	Acquisition - Large	47,545,881	0.1%
Centerbridge Capital Partners I, II and III	Special Situations - Diverse Strategies	53,314,448	0.1%
Centerbridge Capital Special Credit Partners II, III and III-Flex	Debt - Distressed	53,058,873	0.1%
Charlesbank Equity Fund IX and Overage Allocation Program	Acquisition - Medium	9,069,608	0.0%
Chequers Capital XVII	Acquisition - Medium	3,117,203	0.0%
Cinven VII Fund	Acquisition - Medium	4,953,492	0.0%
Clayton, Dubilier & Rice Fund X	Acquisition - Medium	19,956,491	0.1%
Clearlake Capital Partners V, VI and Opportunities Partners II	Special Situations - Diverse Strategies	17,810,384	0.0%
Coller International Partners VII and VIII	Secondary Fund	151,780,915	0.3%
CVC Capital Partners VI and VII	Acquisition - Large	67,054,850	0.2%
CVC European Equity Partners IV, V and Tandem Fund	Acquisition - Large	3,193,570	0.0%
DEFY Partners I and II	Venture Capital	5,661,683	0.0%
Encap Energy IX, X, XI and VIII Co-Investors	Special Situations - Industry Specific	50,002,487	0.1%
EnCap Flatrock Midstream III and IV	Special Situations - Industry Specific	15,876,144	0.0%
Energy Spectrum Partners VIII	Acquisition - Medium	8,324,694	0.0%
EQT VIII	Acquisition - Medium	28,130,638	0.1%
Exponent Partners II	Acquisition - Medium	396,325	0.0%
First Reserve Fund XI and XII	Special Situations - Industry Specific	2,774,172	0.0%
General Catalyst Group IX	Venture Capital	24,169,978	0.1%
General Catalyst X - Early, Endurance and Growth Ventures	Venture Capital	2,932,763	0.0%
Genstar Capital Partners V, VIII and IX	Acquisition - Medium	20,557,767	0.1%
Glendon Opportunities Fund and II	Debt - Distressed	24,413,839	0.1%
GTCR Fund X, XI and XII	Acquisition - Medium	61,669,651	0.1%
Harvest Partners VIII	Acquisition - Medium	10,955,716	0.0%
Hellman & Friedman VI, Spock 1, VII, VIII and IX	Acquisition - Large	118,439,045	0.3%
H.I.G. Growth Buyouts & Equity Fund III	Acquisition - Large	1,367,534	0.0%
Hillhouse Fund IV	Acquisition - Large	38,171,894	0.1%
Huron Fund V	Acquisition - Medium	6,141,197	0.0%
Insight Venture Partners IX, X and XI	Special Situations - Diverse Strategies	102,992,094	0.2%
Institutional Investment Partners XV and XVI	Venture Capital	59,659,150	0.1%
Kelso Investment Associates VIII	Acquisition - Medium	5,537,701	0.0%
KKR 2006 Fund	Acquisition - Large	9,341,062	0.0%
KRG Fund IV	Acquisition - Medium	1,271,090	0.0%
Lexington Capital Partners VI-B, VII, VIII, IX	Secondary Fund	223,583,696	0.5%
Lone Star Fund X	Debt - Distressed	71,984,833	0.2%
Madison Dearborn VI, VII and VII Auxiliary SPV	Acquisition - Large	104,502,112	0.2%
Marlin Equity V and Heritage II	Acquisition - Medium	19,322,072	0.0%
Mayfair Equity Partners II and Sidecar	Acquisition - Medium	7,097,054	0.0%
Montagu IV	Acquisition - Medium	6,244,620	0.0%
Nautic Partners IX	Acquisition - Medium	1,483,864	0.0%
New Enterprise Associates 13, 14, 15, 16 and 17	Venture Capital	170,204,001	0.4%
New Horizon VI: Advantech II and Redview II	Special Situations - Diverse Strategies	4,367,291	0.0%
New Mountain Partners V	Acquisition - Medium	27,777,102	0.1%
Nordic VII, CVI Alpha, IX Beta and VIII	Acquisition - Medium	66,906,494	0.2%
NorthEdge Capital SME I	Acquisition - Medium	888,375	0.0%
Oak Investment Partners XIII	Venture Capital	17,233,266	0.0%
OCM Principal Opportunities Fund IV, VII, VIIb, IX and Xb	Debt - Distressed	24,310,143	0.1%
Odyssey Investment Partners IV and V	Acquisition - Medium	53,045,803	0.1%
Onex Partners II, III, IV, V and ONCAP IV	Acquisition - Medium	40,750,177	0.1%
Pamlico Capital IV	Acquisition - Medium	23,122,702	0.1%
Pantheon Global Secondary Fund III and IV	Secondary Fund	16,410,573	0.0%
Pathway Capital Management	Fund-of-Funds	2,646,905,906	5.8%
Paul Capital Partners IX	Secondary Fund	19,825,629	0.0%
Permira V, VI and VII	Acquisition - Medium	98,293,258	0.2%
Providence Equity Partners VI and Strategic Growth IV	Special Situations - Industry Specific	9,786,624	0.0%
Quad-C Partners VIII and IX	Acquisition - Medium	38,533,278	0.1%
Quantum Energy Partners V, V-C, VI, VI-C, VII and VII-C	Special Situations - Industry Specific	60,703,418	0.1%
Ridgemont Equity Partners III	Acquisition - Medium	7,496,545	0.0%
Riverside Micro-Cap Fund V	Acquisition - Medium	5,377,478	0.0%
The Resolute Fund II, III and IV	Acquisition - Medium	63,607,286	0.1%
Sentinel Capital Partners VI and Junior Capital I	Debt - Mezzanine	5,100,331	0.1%
Silver Lake Partners III and SPV-2	Special Situations - Industry Specific	7,559,691	0.0%
Siris Partners IV	Acquisition - Medium	22,640,481	0.1%
Spectrum Equity Investors VI, VII and VIII	Special Situations - Diverse Strategies	58,790,417	0.1%
Summit Partners Growth Equity Fund X	Special Situations - Diverse Strategies	1,793,973	0.0%
TA XI, XII and XIII-A	Special Situations - Diverse Strategies	76,327,677	0.2%
TCV VI, VII, VIII, IX and X	Venture Capital	169,832,577	0.4%
Thoma Bravo Discover Fund I and II	Acquisition - Medium	30,069,647	0.1%
Thoma Bravo Fund XII and XIII	Acquisition - Large	86,702,395	0.2%
Thoma Bravo Special Opps Fund II	Acquisition - Medium	40,345,364	0.1%
TPG Partners V and VI	Acquisition - Large	6,119,763	0.0%
Trident Capital Fund VII	Acquisition - Medium	40,011,837	0.1%
Veritas Capital Fund VII	Acquisition - Medium	390,641	0.0%
Vista Equity Partners V, VI, VII and Foundation III	Acquisition - Medium	160,462,210	0.4%
Wayzata Opportunities Fund II and III	Debt - Distressed	8,504,480	0.0%
Wind Point Partners VI, CV1 and VII	Acquisition - Medium	12,536,107	0.0%
Wynnchurch Capital Partners V	Acquisition - Medium	292,511	0.0%
Stock distribution account	Public Stocks	900,894	0.0%
Total		$ 5,858,545,055	12.9%

Fair values are reported by the Systems' Private Equity advisors. Fair values reflect the most current net asset values. In instances where the most current net asset values were not as of June 30, 2020, the net asset values utilized were cash flow adjusted through June 30, 2020.

Private Credit Program Summary

As of June 30, 2020, the Private Credit program had a fair value of approximately $774 million, representing 1.7% of total plan 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 50% 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.

In October 2019 the Board of Trustees approved the development and implementation of a Private Credit Direct Investment program. The Direct Investment program is expected to further advance the goals and objectives of the overall Private Credit program by obtaining additional exposure to underlying credit and credit-related investments through co-investments made on a side-by-side basis with private credit funds where PSRS/PEERS is an investor or by investing in debt-oriented securities associated with private equity portfolio companies where the original equity investment occurred through private equity funds where the Systems' have an existing relationship. The Direct Investments serve to increase exposure to the Private Credit asset class with little or no additional fees and/or performance carry paid to the underlying private equity or private credit partnerships. The objective of the Direct Investment Program is to leverage existing, high-quality relationships with private credit and 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, 2020, Private Credit assets committed* for investment were $3.2 billion. The fair value of funds that have been drawn down and actually invested as of June 30, 2020 was approximately $774 million, representing 1.7% of total assets. The Systems' private credit investment commitments that have not yet been funded were approximately $1.9 billion as of June 30, 2020.

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

Market Overview

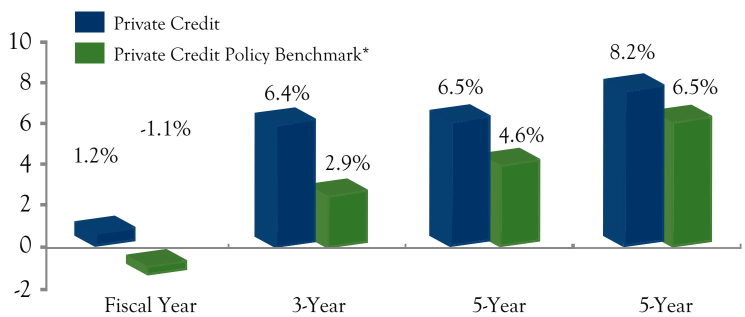
The private credit markets experienced extreme volatility and challenging financial conditions as a result of the global COVID-19 pandemic. Similar to the equity markets, credit market conditions improved considerably in the 2nd quarter of 2020. However, over the course of fiscal year 2020, credit spreads widened, default rates increased and significant economic uncertainty remains leading to negative high yield returns. The high yield market as measured by the private credit benchmark, ICE BofAML U.S. High Yield Master II Index, returned -1.1% for the year compared to a 7.6% return for fiscal year 2019.

Performance

The total return for the Private Credit program was 1.2% compared to the benchmark return of -1.1% for the fiscal year ended June 30, 2020. 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. As the table below indicates, the Private Credit portfolio has produced very strong absolute and relative returns over all extended time periods. The ten-year return exceeded the benchmark by 170 basis points. These excess returns are net of fees and expenses.

** 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. Fair value reflects capital that has actually been drawn and invested by the partnerships and funds.*

Private Credit Performance



Private Credit Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Private Credit Return	1.2%	6.4%	6.5%	8.2%
Annualized Policy Benchmark Return*	-1.1%	2.9%	4.6%	6.5%
Excess Return	2.3%	3.5%	1.9%	1.7%

**The Private Credit Policy Benchmark is the ICE BofAML U.S. High Yield Master II Index.*

Investment Advisors

As of June 30, 2020, the Systems were invested in 29 separate partnerships with 18 firms within the Private Credit asset class. Seven new commitments were made to the Private Credit asset class during fiscal year 2020 for $1.6 billion. The Systems received total distributions from the private credit partnerships of approximately $125 million in fiscal year 2020.

Private Credit Investment Advisors

Investment Advisor	Investment Strategy	Fair Value* As of June 30, 2020	% of Total Plan Fair Value
Bayview Opportunity Domestic V	Debt - Distressed	$ 74,943,509	0.2%
Benefit Street Partners Debt Fund IV	Debt - Lending	39,027,874	0.1%
Caltius IV	Debt - Mezzanine	1,287,742	0.0%
EIG Energy Fund XVI	Debt - Energy	61,751,514	0.1%
Encap Fund VII	Special Situations - Industry Specific	1,032,818	0.0%
Encap Fund VIII	Special Situations - Industry Specific	6,244,487	0.0%
GSO Capital Solutions Fund III	Debt - Distressed	7,832,630	0.0%
GSO Energy Select Opportunities Fund II	Debt - Distressed	5,223,121	0.0%
GSO European Senior Debt Fund II	Debt - Distressed	4,138,959	0.0%
H.I.G Capital Bayside IV	Debt - Distressed	17,834,904	0.0%
H.I.G Capital Bayside V	Debt - Distressed	9,442,724	0.0%
H.I.G Capital Bayside VI	Debt - Distressed	3,086,632	0.0%
H.I.G Capital Whitehorse	Debt - Distressed	45,120,523	0.1%
HPS Mezzanine Partners 2019	Debt - Mezzanine	21,780,887	0.1%
HPS Specialty Loan Fund 2016	Debt - Mezzanine	78,674,235	0.2%
Hayfin Direct Lending Fund III	Debt - Lending	29,210,962	0.1%
Hayfin Special Opportunities Fund III SCSp	Debt - Lending	722,198	0.0%
HealthCare Royalty Partners IV	Debt - Lending	2,329,890	0.0%
Indigo Capital V	Debt - Mezzanine	485,009	0.0%
Lone Star Real Estate Fund II	Debt - Distressed	1,338,331	0.0%
Oberland Capital Healthcare Fund II	Debt - Distressed	2,877,828	0.0%
OCM Opportunities Fund VIII	Debt - Distressed	652,210	0.0%
OCM Opportunities Fund VIII b	Debt - Distressed	7,794,683	0.0%
Pathway Capital Management	Funds-of-Funds	226,875,422	0.5%
Summit Partners Credit Fund III	Debt - Lending	26,524,145	0.1%
TA Subordinated Debt Fund III	Debt - Mezzanine	13,378,744	0.0%
TA Subordinated Debt Fund IV	Debt - Mezzanine	32,302,303	0.1%
TSSP Adjacent Opportunities Partners	Debt - Multi Strategy	43,583,434	0.1%
TSSP Opportunities Partners IV	Debt - Multi Strategy	9,000,099	0.0%
Total		$ 774,497,817	1.7%

**Fair values are reported by the Systems' Private Credit advisors. Fair values reflect the most current net asset values. In instances where the most current net asset values were not as of June 30, 2020, the net asset values utilized were cash flow adjusted through June 30, 2020.*

Private Real Estate Program Summary

As of June 30, 2020, the Private Real Estate program had a fair value of approximately $3.9 billion, representing 8.6% of total plan 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

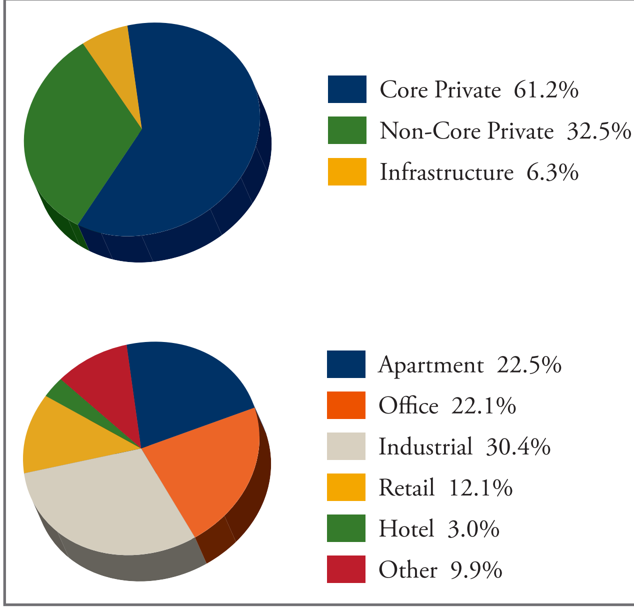
As of June 30, 2020, the Systems' Private Real Estate assets committed* for investment were $5.8 billion. The fair value of funds that had been drawn down and actually invested as of June 30, 2020 was approximately $3.9 billion, representing 8.6% of total assets. The Systems' private real estate investment commitments that had not yet been funded were approximately $1.2 billion as of June 30, 2020.

Within the overall Real Estate allocation, the Systems have established a 55% target allocation to non-core real estate (inclusive of infrastructure) 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. Fair value reflects capital that has actually been drawn and invested by the partnerships and funds.*

The following pie charts indicate the diversification (utilizing the market value of invested assets) of the Systems' Real Estate holdings as of June 30, 2020 from both the strategy and property type perspectives.

Private Real Estate Diversification



Market Overview

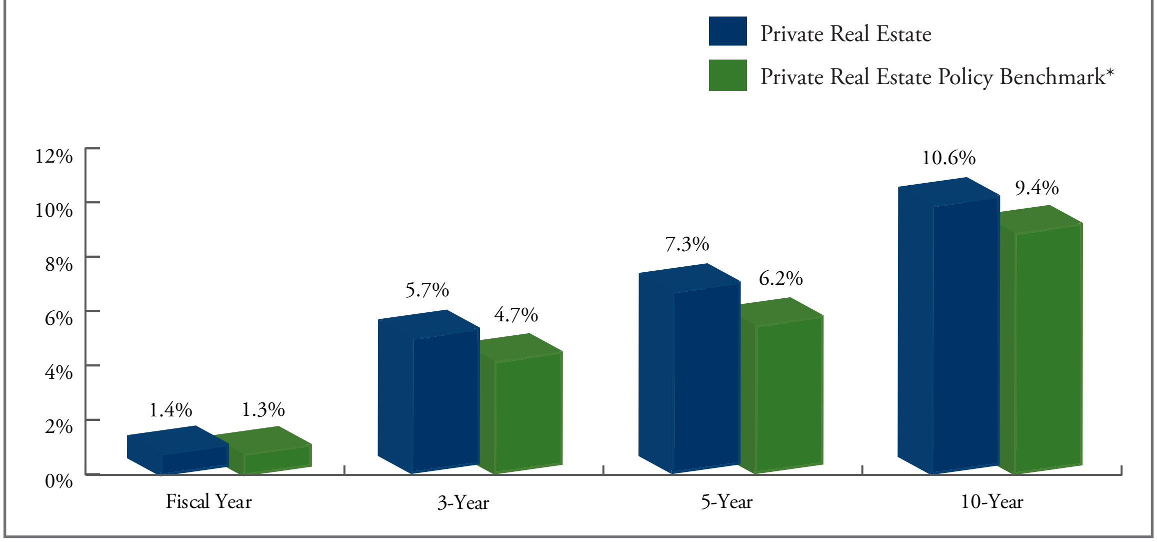
The Private Real Estate benchmark, NCREIF Fund Index – Open Diversified Core Equity (NFI-ODCE), returned 1.3% for fiscal year 2020 compared to a 5.5% return for fiscal year 2019. The total return of 1.3% consisted of 4.1% income and -1.8% appreciation, gross of fees. The negative appreciation for the year is the first decline in market value since the global financial crisis and is a result of the COVID-19 pandemic causing considerable market disruption and uncertainty across the real estate market. Real estate values declined across most property types for the year except for industrial which produced a modest gain.

The Systems maintain a sizable allocation to high-quality, stabilized real estate assets (core) due to the secure income return. Additionally, the Systems have an allocation to non-core assets to enhance return to the overall real estate portfolio. 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 1.4% compared to the benchmark return of 1.3% for the fiscal year ended June 30, 2020. Despite modest returns for the year, the Systems' Private Real Estate program has produced very strong absolute and relative long-term returns as noted below. The ten-year return exceeded the benchmark by 120 basis points. These excess returns are net of fees and expenses.

Private Real Estate Performance



Private Real Estate Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Private Real Estate Return	1.4%	5.7%	7.3%	10.6%
Annualized Policy Benchmark Return*	1.3%	4.7%	6.2%	9.4%
Excess Return	0.1%	1.0%	1.1%	1.2%

**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, 2020, the Systems were invested in 69 separate partnerships with 33 firms within the Private Real Estate asset class. In fiscal year 2020 the Systems committed to two new partnerships totaling $175 million. Additionally, the Systems received total distributions from the real estate partnerships of approximately $498 million during the year.

Private Real Estate Investment Advisors

Investment Advisor	Investment Strategy	Fair Value* As of June 30, 2020	% of Total Plan Fair Value
AEW Core Property Fund	Core - Private	$ 99,121,024	0.2%
Almanac Realty Securities VIII	Non-Core - Private	11,367,503	0.0%
Alterna Core Capital Assets Fund II	Infrastructure	57,717,919	0.1%
Angelo Gordon Realty Value Fund X	Non-Core - Private	23,891,217	0.1%
Asana Partners Fund I and II	Non-Core - Private	88,787,112	0.2%
Black Creek Industrial Fund	Non-Core - Private	104,534,087	0.2%
Blackstone R.E. Partners V, VI, VII, VIII and IX	Non-Core - Private	171,902,224	0.4%
Blackstone Real Estate Partners Europe VI (Cayman)	Non-Core - Private	15,989,450	0.0%
Blackstone Real Estate Partners Asia I and II	Non-Core - Private	75,283,910	0.2%
Brockton Capital II	Non-Core - Private	4,604,263	0.0%
Carlyle Europe Real Estate Partners III	Non-Core - Private	2,858,192	0.0%
Carlyle Property Investors	Core - Private	149,867,603	0.3%
Carlyle Realty V, VI, VII and VIII	Non-Core - Private	88,856,574	0.2%
CBRE US Value 6 and 7	Non-Core - Private	1,827,454	0.0%
CIM Fund III and VIII	Non-Core - Private	94,231,211	0.2%
CIM Urban REIT	Non-Core - Private	6,888	0.0%
Colony Investors VIII	Non-Core - Private	1,314,256	0.0%
CPI Capital Partners Europe	Non-Core - Private	685,237	0.0%
Dune Real Estate Fund I	Non-Core - Private	241,485	0.0%
Exeter Industrial Value Fund IV	Non-Core - Private	70,509,591	0.2%
Global Energy & Power Infrastructure Fund III F	Infrastructure	16,846,941	0.0%
Heitman Value Partners III and IV	Non-Core - Private	41,067,003	0.1%
IFM Global Infrastructure (US) L.P. Class A Interests	Infrastructure	101,458,654	0.2%
JPMorgan Special Situation Property Fund	Non-Core - Private	172,272,931	0.4%
JPMorgan Strategic Property Fund	Core - Private	298,992,603	0.7%
KKR Real Estate Partners America I and II	Non-Core - Private	48,512,908	0.1%
LaSalle Asia Opportunity Fund II and III	Non-Core - Private	917,571	0.0%
LaSalle Japan Logistics Fund II	Non-Core - Private	1,245	0.0%
LaSalle Property Fund	Core - Private	364,610,859	0.8%
Lone Star V and VI	Non-Core - Private	10,220,115	0.0%
Lone Star Real Estate Fund	Non-Core - Private	1,403,060	0.0%
Lone Star V Co-Investment Fund	Non-Core - Private	44	0.0%
Macquarie Infrastructure Partners I and IV	Infrastructure	71,465,879	0.2%
MetLife Core Property Fund	Core - Private	150,920,902	0.3%
Morgan Stanley Prime Property Fund	Core - Private	412,471,608	0.9%
North Haven Real Estate Fund V International	Non-Core - Private	1,167,918	0.0%
Noble Hospitality Fund I, III, IV-Income and IV-Value Added	Non-Core - Private	39,050,024	0.1%
Principal Enhanced Property Fund	Core - Private	149,711,882	0.3%
Prologis Targeted U.S. Logistics Holdings	Core - Private	350,392,389	0.8%
Prudential PRISA Fund	Core - Private	190,293,359	0.4%
Prudential PRISA III	Non-Core - Private	88,325,627	0.2%
Standard Life European Real Estate Fund I, II and III	Non-Core - Private	21,619,040	0.1%
Starwood Hospitality Fund	Non-Core - Private	2,083,923	0.0%
UBS Trumbull Property Fund	Core - Private	238,390,617	0.5%
Westbrook R.E. Fund VII, VIII, IX and X	Non-Core - Private	90,565,879	0.2%
Total		**$ 3,926,360,181**	**8.6%**

**Fair values are reported by the Systems' Private Real Estate advisors. Fair values reflect the most current net asset values. In instances where the most current net asset values were not as of June 30, 2020, the net asset values utilized were cash flow adjusted through June 30, 2020.*

U.S. Public Equity Broker Commissions Report				
Brokerage Firm	Shares Traded	Dollars Traded	Commissions Paid	Cost Per Share
Instinet, LLC	49,687,160	$ 1,809,216,433	$ 352,392	$ 0.01
Morgan Stanley & Co.	32,054,478	1,022,075,670	291,262	0.01
Bank of America	38,204,084	1,048,308,876	288,697	0.01
JP Morgan Chase	19,428,618	745,031,193	228,461	0.01
Cap Institutional Services	6,677,955	451,569,937	200,150	0.03
UBS Securities, LLC	8,436,802	377,687,310	161,823	0.02
Goldman Sachs & Co.	33,808,696	981,565,113	154,290	0.01
Auerbach Grayson & Co.	14,644,245	620,428,885	152,451	0.01
Piper Jaffray & Co.	20,853,363	1,328,381,145	139,801	0.01
Jefferies & Co.	10,968,568	337,336,057	129,803	0.01
Other (<$120,000)	139,826,440	5,680,625,719	1,289,683	0.01
Total	374,590,409	$14,402,226,338	$ 3,388,813	$ 0.01

Non-U.S. Public Equity Broker Commissions Report				
Brokerage Firm	Shares Traded	Dollars Traded	Commissions Paid	Cost (Basis Points)
JP Morgan Chase	2,752,101,542	$ 1,139,972,170	$ 384,281	3.4
Instinet, LLC	219,845,863	749,160,291	210,371	2.8
Goldman Sachs & Co.	95,241,123	722,780,465	151,793	2.1
Morgan Stanley & Co.	82,728,802	561,413,746	136,878	2.4
UBS Securities, LLC	93,954,736	617,495,245	131,162	2.1
Bank of America	18,931,871	597,183,310	107,894	1.8
HSBC Bank	1,085,977,530	397,597,632	107,316	2.7
Citigroup Global Markets, Inc.	47,224,906	443,230,475	103,962	2.3
Investment Technology Group	38,092,606	488,905,036	97,090	2.0
Merrill Lynch	71,066,441	365,203,450	94,454	2.6
Other (<$90,000)	3,032,155,729	2,985,833,460	789,448	2.6
Total	7,537,321,149	$ 9,068,775,280	$ 2,314,649	2.6

Investment Summary as of June 30, 2020						
		Percent of Total Fair Value			Percent of Market Exposure	
Asset Type	Fair Value	FY 2020	FY 2019	Market Exposure	FY2020	FY2019
Public Risk Assets						
U.S. Public Equity	$ 12,370,607,552	27.2%	28.2%	$ 12,520,333,355	27.5%	28.2%
Non-U.S. Public Equity	7,023,766,983	15.4%	16.3%	7,023,766,983	15.4%	16.3%
Public Credit	2,155,374,475	4.7%	4.3%	2,155,374,475	4.7%	4.3%
Hedged Assets	4,466,349,666	9.8%	11.8%	4,466,349,666	9.8%	11.8%
Total Public Risk Assets	***26,016,098,676***	***57.1%***	***60.6%***	***26,165,824,479***	***57.4%***	***60.6%***
Safe Assets						
U.S. Treasuries	6,736,254,016	14.7%	12.3%	6,736,254,016	14.7%	12.3%
U.S. TIPS	1,214,910,720	2.7%	3.2%	1,214,910,720	2.7%	3.2%
Cash & Cash Equivalents	958,418,063	2.1%	3.4%	958,418,063	2.1%	3.4%
Total Safe Assets	***8,909,582,799***	***19.5%***	***18.9%***	***8,909,582,799***	***19.5%***	***18.9%***
Private Risk Assets						
Private Real Estate	3,926,360,181	8.6%	7.9%	3,926,360,181	8.6%	7.9%
Private Equity	5,858,545,055	12.9%	11.4%	5,858,545,055	12.9%	11.4%
Private Credit	774,497,817	1.7%	1.0%	774,497,817	1.7%	1.0%
Total Private Risk Assets	***10,559,403,053***	***23.2%***	***20.3%***	***10,559,403,053***	***23.2%***	***20.3%***
Securities Lending Collateral	***42,650***	***0.0%***	***0.0%***	***42,650***	***0.0%***	***0.0%***
Cash & Equivalents*	***111,005,030***	***0.2%***	***0.2%***	***111,005,030***	***0.2%***	***0.2%***
Total Investments**	$45,596,132,208	100.0%	100.0%	$ 45,745,858,011	100.3%	100.0%
Reconciliation with Financial Statements						
Total from above	$ 45,596,132,208					
Accrued payable for investments purchased	2,676,154,017					
Accrued income payable	436,259					
Accrued receivable for investments sold	(2,339,897,452)					
Accrued income receivable	(90,246,960)					
Securities lending collateral	(42,650)					
Short-term investments designated for benefits	(521,414,678)					
Statements of Fiduciary Net Position	$45,321,120,744					

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, 2020.*

Investment Expenses for the Fiscal Year Ended June 30, 2020

Investment Managers	
Investment Management Fees	
NISA Investment Advisors - Core	$ 4,229,373
NISA Investment Advisors - TIPS	863,470
Safe Assets Fees	5,092,843
NISA Investment Advisors - Corporate	1,139,181
Oaktree Bank Loans	45,000
Pacific Investment Management Company	506,790
Public Credit Fees	1,690,971
Analytic Investors, LLC	1,557,284
AQR Capital Management	950,897
Aronson & Johnson & Ortiz	712,852
BlackRock Investment Management	211,102
Coatue Long Only Partners	24,805,989
Davis Selected Advisers	456,365
Eagle Capital Management	401,554
Grantham, Mayo, Van Otterloo & Co.	1,760,316
Lazard Asset Management	987,366
Martingale Asset Management	1,075,813
NISA Investment Advisors	27,289
Rock Springs Capital	1,802,930
Russell Investments	240,744
Select Equity Group	153,384
Westwood Management	1,911,144
Zevenbergen Capital	1,410,729
U.S. Public Equity Fees	38,465,758
ABS Investment Management	1,103,064
Acadian Asset Management	2,203,968
Alliance Bernstein Institutional Management	851,809
Analytic Investors, LLC	1,365,779
AQR Capital Management	1,490,290
Arrowstreet Capital	10,871,949
BlackRock Investment Management	155,787
Coronation Asset Management (Proprietary) Limited	1,067,236
Invesco Advisers, Inc	596,016
MFS Institutional Advisors	4,286,265
Neon Capital Management	1,462,261
NISA Investment Advisors	81,085
The Rock Creek Group	2,930,967
Non-U.S. Public Equity Fees	28,466,476
Allianz	670,784
AQR Capital Management	195,454
BlackRock Investment Management	65,066
Chartwell Investment Partners	486,191
Greenhouse Funds	1,724,371
Martingale Asset Management	594,251
NISA Investment Advisors	19,612
Russell Investments	99,386
Systematic Financial Management	1,022,526
S-Cap Fees	4,877,641
Alpha Overlay Fees	**36,166,848**
Hedged Assets Fees	**80,679,153**
Private Real Estate Fees	**38,687,201**
Private Credit Fees	**13,907,479**
Private Equity Fees	**172,397,509**
Commission Recapture Income	(196,920)
Investment Management Expense	420,234,959
Custodial Services	
JP Morgan Chase, NA	1,698,060
Custodial Fees	1,698,060
Investment Consultants	
Albourne America, LLC	750,000
Institutional Shareholder Services, Inc.	74,500
Pathway Consulting	4,009,567
RVK, Inc.	15,000
Townsend	350,000
Verus Advisory Inc	450,000
Investment Consultant Fees	5,649,067
Legal Expenses	1,141,861
Staff Investment Expenses	5,046,629
Total Investment Expenses	$ 433,770,576