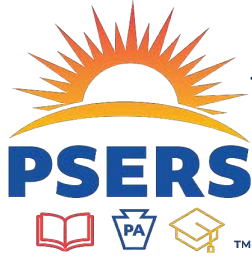


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James H. Grossman Jr., CPA, CFA
Chief Investment Officer

November 6, 2020

Dear PSERS Board of Trustees:

It is a privilege to present to you the Investment Section of the Comprehensive Annual Financial Report for the fiscal year ended June 30, 2020.

Authority and Fiduciary Standard

The Board has the responsibility to invest funds of the System in accordance with guidelines and limitations set forth in the Code and other applicable state law. Pursuant to the Board's enabling legislation, the members of the Board, employees of the Board, and their agents are fiduciaries to the System's members and beneficiaries and must invest and manage the fund for exclusive benefit of the System's members and beneficiaries (24 Pa. C. S. §8521(e)). As such, they must act consistent with the duty of prudence as well as the duty of loyalty.

In performance of their duties, the trustees shall exercise "that degree of judgment, skill and care under the circumstances then prevailing which persons of prudence, discretion and intelligence who are familiar with such matters exercise in the management of their own affairs not in regard to speculation, but in regard to the permanent disposition of the fund, considering the probable income to be derived therefrom as well as the probable safety of their capital." (24 Pa. C.S. §8521(a)).

The System shall at all times be managed in accordance with all applicable state and federal laws, rules, and regulations, as well as this Investment Policy Statement and other applicable policies of the Board.

Policies and Objectives and Investment Philosophy

The Board is responsible for the formulation of investment policies for the System. Professional Staff is responsible for the implementation of those investment policies. The overall investment objectives of the System are as follows:

- to generate returns to support the System's actuarial soundness so it may provide its members with benefits as required by law;
- to earn a long-term total return, net of fees, investment and administrative expenses, that equals or exceeds the actuarial assumed rate approved by the Board (currently 7.25%);
- to earn a long-term total return, net of fees, investment and administrative expenses, that equals or exceeds the Policy Index approved by the Board; and
- to prudently manage investment risks that are related to the achievement of investment goals.

The Board believes the System's assets should be managed in accordance with the System's unique liability stream, funding sources, cash flows, and portfolio size, focusing on the prudent accumulation of wealth over the long term to meet the retirement benefit obligations established by the plan sponsor to its members. The System's assets should be managed based on the following beliefs:

1. Uncertainty - The future is difficult to forecast with any accuracy or certainty, particularly changes in the economic and market environment.
2. Asset Allocation - The strategic asset allocation mix, more than implementation or any other factor or decision, largely determines the portfolio's overall risk and return.
3. Diversification - Diversification is the best approach to addressing future uncertainty and therefore meeting PSERS' long-term investment objectives. Diversification should be across multiple dimensions (asset classes, geography, strategy, etc.). Over any given period, any number of asset classes, geographies, strategies, etc. will underperform others; that is to be expected and accepted.

4. Risk - For an underfunded plan or for a plan with negative external cash flow (benefits paid exceed contributions received), the path of compounding of investment returns – from month to month, quarter to quarter, and year to year -- matters more than for a plan that is fully funded or has positive external cash flow; for the former type of plan, peak-to-trough declines transform unrealized losses into permanent ones. Drawdown risk should be mitigated, especially since the environment in which drawdowns occur is likely to take place when the plan sponsor's willingness and ability to make contributions to the plan are reduced. Liquidity should be managed to reasonably ensure that the fund can meet its obligations during periods of market dislocations.
5. Leverage - Leverage at the total fund level can be an effective tool to enhance diversification, since asset classes, over the long-term, have similar risk-adjusted returns, different correlations to each other, and different responses to changes in the economic and market environment. Leverage can be a vital tool to increase or decrease total fund risk in a diversified manner.
6. Rebalancing - Disciplined rebalancing enhances long term returns as it is an inherently contrarian process. Rebalancing restores strategic asset allocation as the primary driver of return and risk.
7. Portfolio Size - Managing a large pool of assets provides investors unique access to investment opportunities not available to smaller institutional investors or individual investors. PSERS should use its size to its advantage to enhance its net-of-fees return and diversification opportunities.
8. Private Investments - Allocations to Private Equity, Private Credit, Private Real Estate, Private Infrastructure, and other illiquid asset classes may be justified by the illiquidity risk premium available to investors. Allocations to these asset classes may also be justified by the diversification benefit they provide, through exposure to sectors, businesses, and mode of corporate governance not obtainable through public markets.
9. Active Management - Passive investing, rather than active management, is the default choice to be used for any asset class that is highly efficient or where skilled active managers are less likely to be identified. Certain asset classes continue to exhibit information inefficiency, where skilled active management and well-resourced investors such as PSERS can potentially persistently outperform peers and the benchmark for that asset class. There will be short-term periods when a skilled active manager may underperform peers and the benchmark; that is to be expected and accepted; therefore a long-term perspective will be employed.
10. Internal Management - PSERS has developed skilled internal investment managers; as such internal investment management is preferred over external investment management in cases where internal management most likely can match or exceed the long term, net of fees, risk-adjusted returns provided by external managers, provided the internal investment and operational resources are available to do so.
11. Investment Fees - Investment management fees for external management are one of the few aspects of investment management that are certain and over which the investor has control. Investment management and performance fees should be managed to (i) maximize long term, net of fees, risk-adjusted returns, (ii) split the value added fairly between the investment manager and PSERS, and (iii) align the interests of the investment manager with PSERS.

To achieve the System's objectives, the Board meets during the second half of the calendar year to review the overall asset allocation plan and investment policies for the System. Implementation of investment policy decisions necessitates asset management. Implementation is accomplished through the use of external investment management firms who act as agents for the System as well as through the use of internal investment managers. The Board also retains various investment consultants to assist with the formulation and implementation of investment policies.

Operations

The Board, via its Investment Committee, provides oversight of investment activities. The Investment Committee generally conducts six meetings per year and may meet more frequently as needed. Investment Office professionals, as well as external investment advisors, Investment Accounting professionals, and Internal Audit professionals, assist the Board in achieving investment objectives and monitoring compliance with investment policies. For the fiscal year ended June 30, 2020, Aon Hewitt Investment Consulting, Inc. (Aon Hewitt) served as the general investment consultant to assist the Board and Professional Staff in formalizing investment objectives, establishing an asset allocation plan, conducting investment advisor searches, reviewing performance, and commenting on compliance with investment policies. In addition, the Board retained Aksia, LLC as an absolute return and private credit consultant and Hamilton Lane Advisors, L.L.C. as an alternative, private credit, private infrastructure, and private real estate investment consultant. Alternative investments generally consist of investments in private debt, private equity, and venture capital limited partnerships. Investment Office professionals implement investment decisions within the guidelines established in the Investment Policy Statement (IPS) regarding asset allocation, manager selection, and other objectives directed by the Board.

Investment Section

The Board employs both external investment management firms and internal investment managers to manage the investment portfolio of the System. At fiscal year-end, 27 external public market investment management firms were managing \$7.9 billion in assets of the System, \$25.0 billion in assets were managed by the System's internal investment managers, and the remaining \$24.9 billion in assets were managed by numerous absolute return, alternative investment, private credit, private infrastructure, and private real estate investment managers. Each asset class shall be measured relative to its designated benchmark index. It is expected that the active management of individual asset classes, if any, will provide an investment return in excess of the index, net of expenses, over the long-term.

Asset Allocation

The asset allocation establishes a framework for PSERS that has a reasonable likelihood, in the judgment of the Board, of realizing PSERS' long-term investment objectives. In establishing the asset allocation for the System, the Board considers capital market expectations for expected return, volatility, and asset class correlations as discussed in the IPS. The Board also establishes Asset Allocation Targets and Ranges and reviews them annually. The Board undertakes a comprehensive strategic asset/liability review designed to assess the continuing appropriateness of the IPS at least every three years or when material changes to the liabilities take place (e.g., plan design changes, material changes in underlying assumptions, etc.). Such review will consider an asset-liability study of future benefit payments, liabilities, required funding, the actuarial assumed rate and the prospective funded status of liabilities. It may also include a study of portfolio design for optimal diversification and comparisons with peer practices.

The current target allocation as of June 30, 2020, included an equity target allocation of 30.0% consisting of publicly traded stocks (15.0%) and private markets (15.0%). Specific publicly traded stock targets have been established for U.S. equity (4.8%) and non-U.S. equity (10.2%). Within the U.S. equity target, the portfolios are diversified between large and small capitalization investment mandates. The non-U.S. equity exposure includes both developed and emerging markets portfolios as well as large and small capitalization investment mandates. The non-U.S. developed markets equity exposure is 75% currency-hedged back to the U.S. Dollar. The primary vehicle used to invest funds in private markets is the limited partnership. The partnerships are established by individual management groups that have been selected by the System for the purpose of investing in and managing private equity, venture capital, and debt positions on behalf of PSERS and other limited partners.

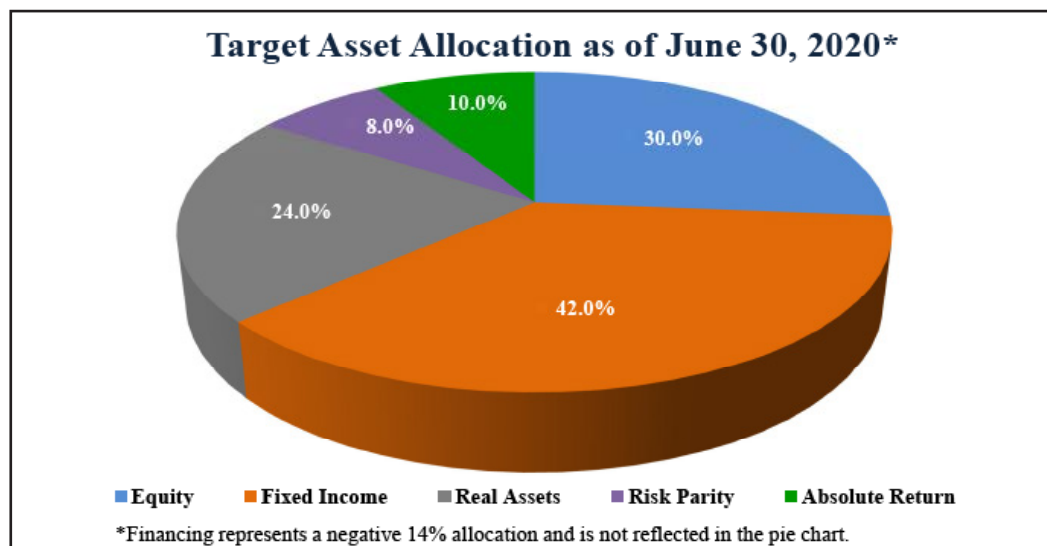
The fixed income target allocation of 42.0% consisted of investment grade exposure (10.0%), public credit-related exposure (1.0%), private credit exposure (10.0%), inflation-protected exposure (15.0%) and cash (6.0%). Investment grade exposure consisted of U.S. core fixed income (4.0%) and U.S. Long-term Treasuries (6.0%). Inflation protected exposure consisted of U.S. and Non-U.S. inflation-linked bonds. Within these categories, all sectors of the fixed income market are represented. The cash allocation consisted of short-duration, high quality government and investment grade securities. The Board, Investment Office professionals, and Aon Hewitt deemed it prudent to have an allocation to cash given the known and potential cash flow requirements of the System.

The real asset exposure of 24.0% consisted of public and private real estate (10.0%), public and private infrastructure (6.0%) and commodities (8.0%, including 3% to gold). The real estate allocation consisted of limited partnerships and publicly-traded real estate securities. The types of partnerships the System invests in include core, value-added, and opportunistic real estate limited partnerships. The commodities allocation consisted primarily of commodity futures, commodity swaps, and commodity-related publicly traded stocks. Commodities are included in the allocation for inflation protection and to diversify the System's total portfolio risk. The Infrastructure allocation targets stable, defensive investments primarily within the energy, power, water, and transportation sectors. Infrastructure plays a strategic role within the System by providing steady returns and cash yields, defensive growth, inflation protection, capital preservation, and diversification benefits. The infrastructure allocation consists primarily of publicly-traded companies.

The absolute return target allocation of 10.0% consisted primarily of investment managers which provide idiosyncratic returns and portfolios that exhibit low correlation to equities, fixed income, commodities, and other sources of low cost beta over a full market cycle. Strategies implemented to achieve this target include, but are not limited to, global macro, event-driven, and relative value strategies such as insurance-linked securities and long/short credit. The absolute return program is included in the allocation to generate positive, absolute returns with low volatility and low correlation to the public financial markets to diversify the System's total portfolio risk.

The risk parity allocation of 8.0% consisted primarily of global equities, global nominal bonds, global inflation-linked securities, and commodities in an allocation that balances risk across these asset classes with structurally offsetting biases to the primary drivers of asset class returns - growth and inflation. Risk parity provides diversification and liquidity to the System.

Leverage was utilized at the asset allocation level to manage total fund risk in a diversified manner. The System utilized 14.0% leverage through use of derivative instruments that allow the System to gain incremental asset class exposure with minimal margin requirements. Leverage is utilized in the fixed income, real asset, and risk parity allocations.

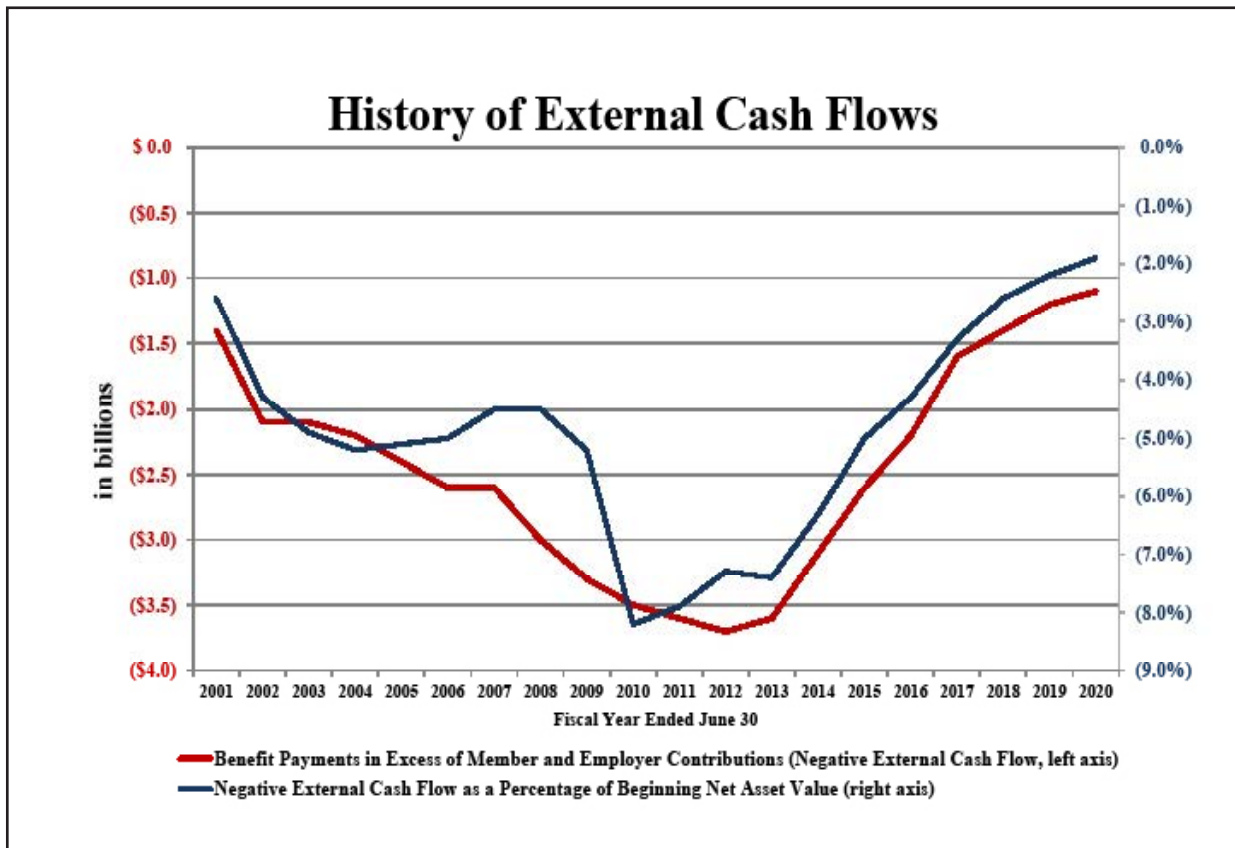


The System also participates in a securities lending program administered by Deutsche Bank AG. This program is designed to provide incremental income to the System by lending publicly-traded securities in the System's portfolio held by the System's custodial bank, The Bank of New York Mellon, to securities dealers in exchange for cash collateral, which can be reinvested to generate income. This program generated \$15.3 million in net income during the year.

Liquidity and Asset Allocation

The System's risk profile is, in part, driven by its liquidity needs. Liquidity should be managed to reasonably ensure that the System can meet its obligations during periods of market dislocations. For an underfunded plan or for a plan with negative external cash flow (benefits paid in excess of contributions received) such as PSERS, the path of compounding of investment returns matters more than for a plan that is fully funded or has positive external cash flow; for the former type of plan, peak-to-trough declines transform unrealized losses into permanent ones. Over the past twenty fiscal years, the System has paid out \$49.4 billion more in benefits than it has received in member and employer contributions (i.e., the System has experienced negative external cash flow). The average negative external cash flow was approximately \$2.5 billion per year during this period. This annual funding deficiency has amounted to 1.9% or more of beginning net assets each year and represents the amount of investment return needed each year to make up the shortfall (i.e., if the System earned 3.0% in a given year with a 3.0% external cash flow shortfall, then the net assets of the System will be unchanged). The negative annual external cash flow has improved significantly since fiscal year 2012 due to the implementation of Act 120 in 2010 (see chart below). Act 120 provided for increased employer contributions to the actuarial required contribution levels. The annual external cash flow shortfall, while much improved, will continue over the next few years and necessitates a larger liquidity position and lower risk profile than a retirement system that has smaller liquidity requirements.

Given the significant net cash outflows, the Board has prudently reduced the risk profile of the System since the financial crisis in 2008. It has done so by decreasing its return dependence on the equity markets and increasing its risk exposures to asset classes that are less correlated to equity markets such as inflation-linked bonds, commodities, and absolute return. The goal of such an allocation is to generate the desired return profile with less volatility. While such an allocation will not provide for a large upside in returns, it is expected to minimize downside risks to the System's assets in the event of a large equity market drawdown as experienced during the financial crisis in 2008.



The Economy During The Past Fiscal Year

The Year in Review

The first half of the fiscal year was highlighted by strong equity markets globally. The strength in these markets was derived from the U.S. Federal Reserve and the European Central Bank easing monetary policy and the “phase one” trade deal between the U.S. and China. However, things quickly changed in the first quarter of 2020 when a highly contagious virus, emanating from Wuhan, China, spread across the globe. The coronavirus, called COVID-19, resulted in a global pandemic with many economies in the world completely shutting down and forcing those who could work from home to do so while others were laid off. Airline travel had essentially ground to a halt as did other leisure activities such as going out to a restaurant or to a movie. Economies were shut down in an attempt to slow the progression of the virus, or flatten the curve. Global economies began to re-open at various paces starting in the second quarter of 2020. The following paragraphs will provide more detailed analysis of the U.S. and select Non-U.S. economies.

The U.S. Economy

As noted above, the U.S. economy was severely impacted by the COVID-19 pandemic. Given the severe impact the pandemic had on the economy, fiscal and monetary actions in the U.S. were swift and aggressive, unlike anything ever seen in magnitude. The Federal Reserve dropped the Federal Funds target rate range by 2.25% during the fiscal year to a range of 0.00% to 0.25%. In addition, the Federal Reserve implemented numerous liquidity programs, such as the Primary Dealer Credit Facility, to support the smooth functioning of fixed income markets. In addition, the Federal Reserve for the first time in their history established programs to support the corporate credit market to ensure that bond issuers have continued access to credit and to promote an orderly functioning of the corporate bond market. The Federal Government approved over \$3 trillion of fiscal spending in the form of tax rebates, a Payroll Protection Program, unemployment insurance benefits, and other forms of fiscal relief, primarily through the Coronavirus Aid, Relief, and Economic Security (CARES) Act signed into law on March 27, 2020. While these measures may have helped the economy from falling into a depression, they did not prevent a severe contraction in the U.S. economy which went into a recession. The U.S. real Gross Domestic Product (GDP) increased in the third quarter of 2019 by 2.6% and fourth quarter of 2019 by 2.4%. The GDP subsequently fell by 5.0% in the first quarter of 2020, and fell by an unprecedented 34.5% in the second quarter of 2020.

Given the mass shutdown of the economy, the official unemployment rate (otherwise known as the U3 unemployment rate) rose during the fiscal year from 3.7% in June 2019 to 11.1% as of June 2020. The more encompassing U6 unemployment rate, which measures not only people without work seeking full-time employment (U3 unemployment rate) but also counts “marginally attached workers and those working part-time for economic reasons”, skyrocketed to 18.0% as of fiscal year end, up from 7.2% at the end of the last fiscal year.

The U.S. economy was languishing in contraction territory for most of the fiscal year as measured by the manufacturing Institute of Supply Management (ISM) Purchasing Managers Index (PMI), an indicator of activity in the sector. During the fiscal year, the ISM PMI fell from 51.6 at June 30, 2019 to a low of 41.5 on April 30, 2020 before recovering to 52.6 on June 30, 2020. While finishing the year in expansionary territory (a contraction/expansion is indicated whenever the index is below 50/above 50), that represented a bounce back from the economy which essentially shut down for the months of April and May. Concurrently, U.S. consumer confidence, as measured by the Conference Board’s Consumer Confidence Index, decreased from 124.3 at June 2019 to 98.1 at June 2020.

With the economy shut down a portion of the year, inflation collapsed below the Fed’s target inflation rate of 2.0%. The past fiscal year saw inflation significantly fall, with the U.S. Core Consumer Price Index (CPI) decreasing to 1.2% year-over-year as of June 2020 from 2.1% one year ago.

Select Non-U.S. Economies

The Euro Area’s response to the COVID-19 pandemic was more modest than the U.S. response. The European Central Bank increased its original asset purchase program by \$135 billion and adopted a \$842 billion Pandemic Emergency Purchase Program and the European Union adopted a \$607 billion program. The Euro Area economy was struggling prior to the pandemic and it only worsened since that time. As of the second quarter 2020, the Euro Area was contracting at a 14.5% annual pace, meaningfully down from the 1.3% growth one year earlier. The unemployment rate remained relatively stable at 7.7% as of June 2020 from 7.5% a year earlier. It is important to note that fiscal stimulus in Eurozone countries is focused on getting money to companies who are encouraged to keep people on payroll while in the U.S. fiscal stimulus is focused on individuals, not companies, so there is an increase in unemployment. Eurozone inflation trends weakened during the past fiscal year, with Eurozone Core Inflation falling from 1.1% on an annualized basis in June 2019 to 0.8% in June 2020, well below the European Central Bank (ECB) target of 2.0%. The Euro Area economy remained in contraction territory this past fiscal year as evidenced by the Markit Eurozone Manufacturing PMI measurement of 47.4 in June 2020 from 47.6 last June (a contraction/expansion is indicated whenever the index is below 50/above 50), falling as low as 33.4 during the depth of the pandemic. Aggressive actions by the ECB have generated improvements in employment but have failed to sustain economic growth and inflation. The ECB continued its policy of very accommodative overnight interest rates (negative 0.5%, down from negative 0.4% at June 30, 2019).

Japan’s economy was not spared difficulties from the COVID-19 pandemic, although from a health perspective Japan had little in the way of COVID-19 cases relative to the U.S. and Europe. For the second quarter 2020, Japan’s real GDP fell by a year-over-year rate of 9.9% versus a 0.9% year-over-year rate for the year-over-year period ended June 2019. Japan’s demographics are poor as the population ages which generally means that robust growth will be difficult to sustain over the long term. However, since the size of the working age population is decreasing, unemployment has been very low compared to the U.S. and Europe and was 2.8% in June 2020, up from 2.3% last fiscal year. The inflation rate in Japan was positive 0.1% over the past year, down from 0.7% one year earlier. Japanese policy makers continue to aggressively attempt to stimulate their economy through a combination of low interest rates (the Bank of Japan policy rate is negative 0.1%), the purchase of higher risk assets by the Bank of Japan, coordinated diversification into higher risk assets by large public investors, and fiscal spending policies to encourage liquidity to move into riskier assets. Economic conditions deteriorated and the Japanese manufacturing sector followed Europe into contraction territory as evidenced by the Jibun Bank Japan Manufacturing PMI falling 6.9 points from 50.8 at June 2019 to 43.9 at June 2020 (a contraction/expansion is indicated whenever the index is below 50/above 50), falling as low as 25.8 in April 2020. Japanese fiscal and monetary authorities continue to have a difficult time finding the appropriate economic and structural reforms to put in place to enable a sustained period of economic prosperity.

China had robust growth compared to the other developed regions of the world and their aggressive actions fighting the COVID-19 virus allowed them to recover more quickly economically. China’s real GDP increased by 3.2% over the past year, significantly slower than the 6.2% pace for the year ended June 2019 due to the weak 2020 first quarter when the economy was shut down due to the pandemic. Inflation in China remained relatively stable over the past year at 2.5%

Investment Section

compared to 2.7% last year. Economic conditions modestly strengthened as evidenced by the China Manufacturing PMI increasing 1.5 from 49.4 at June 2019 to 50.9 at June 2020 (a contraction/expansion is indicated whenever the index is below 50/above 50), but hit a low of 35.7 in February 2020 due to the pandemic. As noted in previous years, China continued its struggle to rebalance its economy from an investment-oriented economy to a consumer-oriented economy, while maintaining political stability. However, a “phase one” trade deal with the United States entered into in late 2019 alleviated some economic pressure that was on China from the trade war.

Investment Results

Aon Hewitt calculates the total investment return of the System as well as the performance of each external investment management firm and each internal investment manager retained by the Board to invest the System’s assets. Performance is calculated using a time-weighted return methodology.

For the one-year period ended June 30, 2020, the System generated a total net of fee return of 1.11%. This return fell short of the total fund Policy Index return of 2.74% by 161 basis points. Annualized total net of fee returns for the three-, five- and ten-year periods ended June 30, 2020 were 5.62%, 5.64% and 7.70%, respectively. The three-, five- and ten-year returns ended June 30, 2020 exceeded (underperformed) the total fund Policy Index returns by (64), (44) and 20 basis points, respectively.

PSERS’ asset classes that were significant positive contributors to performance this past fiscal year included:

- Gold was up 25.7% due to investors looking for safe haven investments;
- U.S. Long Treasuries were up 25.1%, driven by a decrease in long term interest rates during the fiscal year;
- Emerging Markets Equities were up 8.8% due to strong performance from active managers; and
- U.S. Core Fixed Income was up 8.8% due to falling interest rates.

PSERS’ asset classes that were significant detractors from performance this past fiscal year included:

- Diversified commodities which were down over 7.0%; due primarily to weakness in oil prices which fell roughly 9% during the fiscal year;
- MLPs which were down 35.4% due to falling oil prices;
- Public Real Estate was down 18.4% due to price depreciation from sectors negatively impacted by the global pandemic such as hotels and office;
- Private Credit was down 4.3%; and
- Private Equity was down 4.2% as a result of performance being reported on a quarter-lag.

The fiscal year was really the tale of two halves. The first half of the fiscal year was highlighted by strong equity markets globally. The strength in these markets was derived from the U.S. Federal Reserve and the European Central Bank easing monetary policy and the “phase one” trade deal between the U.S. and China. However, things quickly changed in the first quarter of 2020 when, due to COVID-19, economies in the world completely shut down, forcing those who could work from home to do so while others were laid off. Equity, credit, and energy markets were very negatively impacted during the first quarter of 2020. However, towards the end of the first quarter, central banks and fiscal authorities provided copious amounts of stimulus to the economy and markets causing a strong rally off the bottom, recovering a significant portion of the market losses from the first quarter in the second quarter of 2020.

Diversification is Undeniably Effective

Diversification into asset classes such as diversified commodities, absolute return, and non-U.S. equities were a drag on overall performance this past fiscal year. As noted by Ben Hunt in his newsletter Epsilon Theory, “Diversification isn’t a pretty bird. Diversification doesn’t make my heart skip a beat like a flock of goldfinches in July. Diversification, by design, is going to have winners and losers simultaneously. Diversification, by design, is never going to look pretty doing its job, because if your portfolio is all working in unison, swooping through the market in a beautiful glint of gold...well, you may be making money, but you sure aren’t diversified. Diversification is undeniably effective...” Many investment professionals discuss diversification using terms such as standard deviation, correlation, and co-variance. However, at its most basic level, diversification is insurance against bad future outcomes. The System diversifies simply because it doesn’t know how actual events in the future will transpire relative to what is priced into the market. Diversification is a very humble approach to investing. If an investor knew with certainty which asset class would perform best the next month, quarter, or year, the investor would simply invest in that one asset class. However, without such perfect foresight, the downside risk of such

a strategy could be devastating. As Peter Bernstein, the late American financial historian, economist, and educator once wrote, “Diversification is the only rational deployment of our ignorance.”

Investment Book of Record

The Investment Operations group began implementation of an Investment Book of Record (“IBOR”) this year, following a robust 18 month needs assessment, future state identification, and competitive selection process where Ernst & Young served as the Board’s consultant. The IBOR will become the Fund’s investment technology “engine”, designed to deliver the best available view of investment data suitable for investment decision-making, incorporating the current status and forward projections of portfolio investment holdings and cash positions, as well as reference data and derived analytics supporting the investment decision-making process. Implementation of the IBOR will modernize PSERS’ Investment Operations, facilitating more complete straight through processing, stronger data quality control, and enhanced analytics tools supporting the allocation, performance, risk, compliance, and deep reporting needs of PSERS’ stakeholders.

Accomplishments

The Investment Office successfully transitioned to working remotely during the first quarter of 2020 as the COVID-19 pandemic forced PSERS to close its offices. The investment team was prepared as all of the professionals had the necessary equipment to make this transition seamless. The team has access to all service providers and tools necessary to manage the portfolio as well as communicate with our external service providers and each other through tools such as Skype and Microsoft Teams.

The Investment Professionals and the Board completed a very large project to re-write the entire Investment Policy Statement during the fiscal year. The objective of this process was to improve the clarity of the investment policies. The results were the adoption of a modernized Investment Policy Statement and 23 stand-alone policies in March 2020 after hundreds of hours of Board and Investment Professionals’ time.

PSERS, in conjunction with the Commonwealth of Pennsylvania Office of the State Treasury, was able to successfully negotiate a Service Level Agreement with PSERS’ custodial bank, BNY Mellon. The agreement documents PSERS’ operational and service expectations for the quality, responsibilities, and service levels provided by BNY Mellon, including various performance metrics.

Summary

This past fiscal year was volatile and challenging with a net of fee return of 1.11%. However, pension plans like PSERS are built to generate long-term returns, so one good or bad year is not going to make or break the Fund. The System focuses on long-term returns. For the past 10 years, the Fund’s annualized net of fee return has been 7.70%, comfortably above the actuarial assumed rate of return of 7.25%. Looking forward, with cash rates of around 0.00%, the System still needs to take prudent risks to achieve its long-term goal of 7.25%. The System has built a diversified allocation to allow it to collect risk premiums over the long-term. In the short-term, no one knows what will happen and the System should expect to go through years where returns are below 7.25%, perhaps significantly below. The System continues to believe the best way to achieve its long-term objectives is to maintain a very diversified portfolio which includes all asset classes available to the Fund, such as public and private equities, fixed income, real assets, and absolute return and all portfolio tools available, such as derivatives and leverage. In any given year, the System expects some assets to perform well, such as U.S. long Treasuries and gold did this past fiscal year, and some to not do as well, such as MLPs and public real estate this past fiscal year. However, over the long run, the System expects each of its asset classes to generate a positive return commensurate with the risks taken. The future is uncertain, but we believe the Fund is well positioned to accomplish its objectives.



James H. Grossman Jr., CPA, CFA
Chief Investment Officer

Annualized Time-Weighted Returns (%) Net of Fees

Periods Ended June 30, 2020

	1 Year	3 Years	5 Years	10 Years
PSERS Total Portfolio	1.11	5.62	5.64	7.70
Total Fund Policy Index	2.74	6.26	6.08	7.50
Median Public Defined Benefit Plan (DBP) Fund Universe (Aon Hewitt Database)	1.91	5.40	5.78	8.10
PSERS U.S. Equity Portfolios	3.23	8.27	9.47	13.37
U.S. Equity Policy Index (1)	3.25	8.94	9.38	13.35
PSERS Non-U.S. Equity Portfolios	1.77	4.94	5.45	8.92
Non-U.S. Equity Policy Index (2)	-2.53	2.60	3.67	6.89
PSERS Fixed Income Portfolios (10)	7.10	7.16	6.65	6.93
Fixed Income Policy Index (3)	8.70	6.38	5.70	5.15
PSERS Commodity Portfolios (10)	2.13	6.17	2.65	0.76
Commodity Policy Index (4)	-2.68	0.67	-1.84	-2.37
PSERS Absolute Return Portfolios	-0.49	2.23	2.38	3.92
Absolute Return Policy Index (5)	1.74	4.39	4.34	5.59
PSERS Risk Parity Portfolios (11)	0.14	4.96	4.39	N/A
Risk Parity Policy Index (6)	10.51	8.66	7.37	8.78
PSERS Master Limited Partnership (MLP) Portfolios	-35.43	-13.04	-11.06	3.54
Standard & Poor's MLP Index	-30.96	-11.20	-10.14	0.91
PSERS Real Estate (7) (10)	2.43	7.78	8.12	10.68
Blended Real Estate Index (8)	-0.73	6.17	7.10	9.93
PSERS Alternative Investments (7)	-4.18	7.40	7.97	9.44
Burgiss Median, Vintage Year Weighted Index (9)	1.79	9.79	9.76	11.46

- Returns presented are a blend of the S&P 500 Total Return Index (75%), S&P 400 Total Return Index (12.5%), and the S&P Small Cap 600 Total Return Index (12.5%) effective October 1, 2019.
- Returns presented are a blend of the MSCI ACWI ex. USA IMI with DM 75% Hedged to USD Total Return Index (85%) and the MSCI Emerging Markets IMI Net Total Return Index (15%) effective October 1, 2019 with the weights to these indexes varying since April 1, 2016.
- Returns presented are a blend of the Bloomberg Barclays U.S. Aggregate Bond Total Return Index (11.1%), the Bloomberg Barclays U.S. Long Treasury Total Return Index (16.7%), the J.P. Morgan GBI-EM Broad Diversified Index (0.9%), the J.P. Morgan EMBI Global Diversified Index (0.9%), the ICE BofAML EM Corporate Plus Index (Hedged to USD) (0.9%), the S&P LSTA Leveraged Loan Total Return Index + 200 bps (27.8%), the Bloomberg Barclays U.S. Government Inflation-Linked Bond All Maturities Total Return Index (20.9%), and the Bloomberg Barclays World Government ex. U.S. Inflation-Linked Bond All Maturities Total Return Index (Hedged to USD) (20.8%) effective October 1, 2019.
- Returns presented are a blend of the Bloomberg Commodity Gold Index (37.5%) and the Bloomberg Commodity Index (62.5%). On July 1, 2014, the indices names were changed from DJ/UBS to Bloomberg. The returns have been adjusted for leverage.
- HFRI Fund of Funds Conservative Index + 100 bps effective October 1, 2019.
- Effective July 1, 2014 returns presented are a blend of MSCI ACW Index (\$Net) (50%); Barclays Capital U.S. Treasury Index (75%); Barclays Capital World Inflation Linked Bond Index Hedged (55%); Bloomberg Commodity Index (Total Return) (15%); Bloomberg Gold Subindex (5%); and 3-Month LIBOR (-100%). The weights to these indices have varied in previous quarters. The returns have been adjusted for volatility.
- Returns reported on a one-quarter lag, except for publicly traded real estate security investments.
- Effective April 1, 2015, comprised of a blended benchmark consisting of the National Council of Real Estate Investment Fiduciaries (NCREIF) – Open End Diversified Core Equity (ODCE) Index and Burgiss Private iQ (for Value-Added Real Estate and Opportunistic Real Estate) reported on a one-quarter lag. For periods between April 1, 2010 and March 31, 2015, the benchmark was comprised of a blended benchmark of NCREIF-ODCE (core) and various private real estate benchmarks for Value-Added and Opportunistic (including NCREIF-Closed-End Value-Added (CEVA), NCREIF/Townsend and NCREIF-NPI) reported on a one-quarter lag. For all prior periods, the benchmark was comprised of a blended benchmark strategically split between public/private using various public REIT indices (FTSE EPRA/NAREIT Global Real Estate, Wilshire Real Estate Securities and Wilshire REIT) and NCREIF-NPI (for all non-core) reported on a one-quarter lag.
- Burgiss Median, Vintage Year Weighted Index effective January 1, 2011. Previously, the Thompson ONE, Vintage Year Weighted Index was used. Returns reported on a one-quarter lag.
- Returns are presented on an unleveraged basis for comparability purposes to the Policy Index.
- Returns are presented on a volatility-adjusted basis for comparability purposes to the Policy Index.

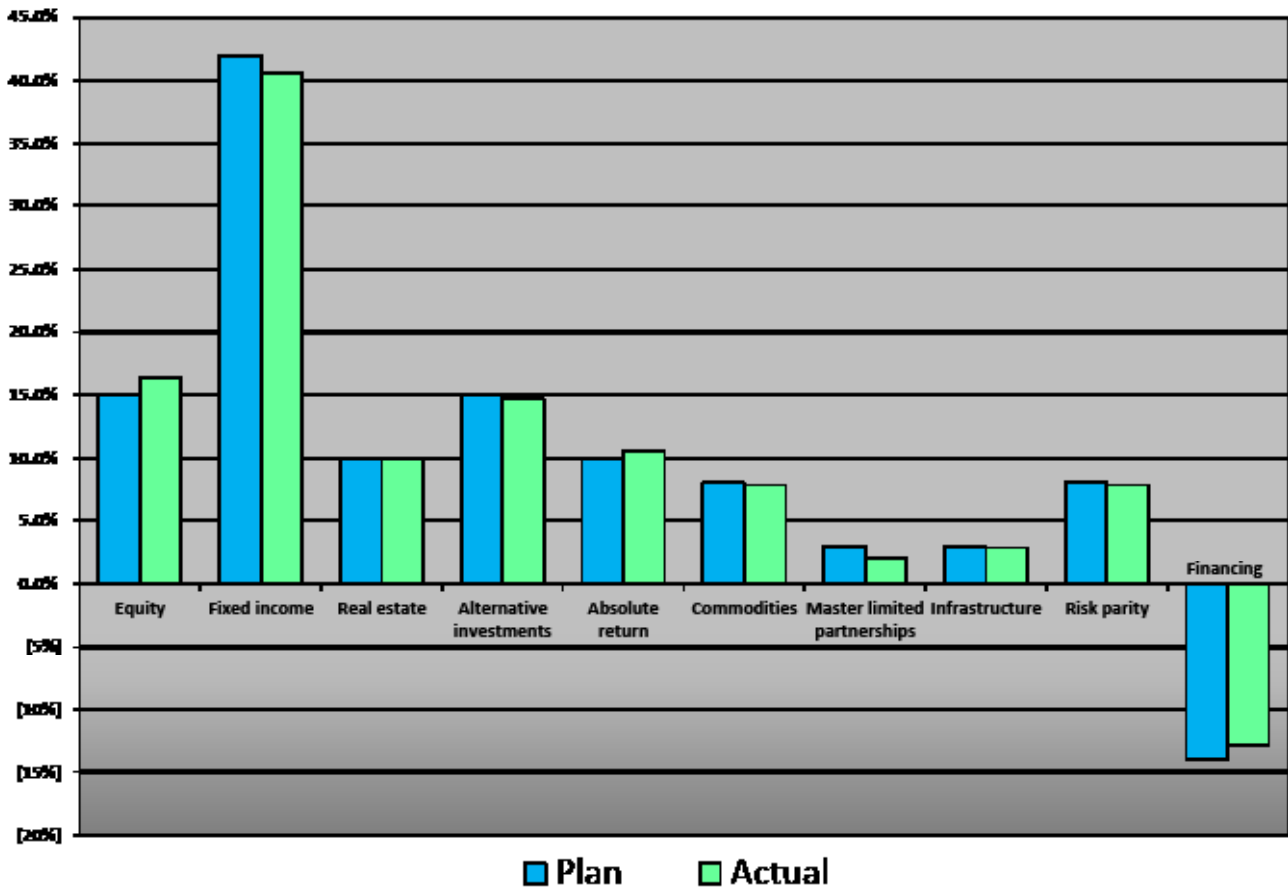
Portfolio Summary Statistics
Asset Allocation
As of June 30, 2020
(Dollar Amounts in Thousands)

Pension investments	Fair Value	% Fair Value
Common and preferred stock (Equity):		
Large and mid cap stocks	\$ 4,106,592	7.2
Small cap stocks	646,920	1.1
Emerging markets stocks	1,541,506	2.7
Total Non-U.S. equity	6,295,018	11.0
Large cap stocks	2,352,682	4.1
Mid and small stocks	749,848	1.3
Total U.S. equity	3,102,530	5.4
Total Common and preferred stock - Asset Allocation Basis	9,397,548	16.4
Fixed income:		
Investment grade fixed income	9,773,387	17.0
Private Credit	5,250,947	9.2
Total U.S. Fixed income	15,024,334	26.2
Non-U.S. developed markets fixed income	4,437,200	7.8
Emerging markets fixed income	344,171	0.6
Total Non-U.S. Fixed income	4,781,371	8.4
Cash and cash equivalents	3,425,643	6.0
Total Fixed income - Asset Allocation Basis	23,231,348	40.6
Real estate	5,689,428	9.9
Alternative investments:		
Private equity	6,157,753	10.7
Special situations	1,168,041	2.0
Venture capital	1,138,718	2.0
Total Alternative investments - Asset Allocation Basis	8,464,512	14.7
Absolute return	6,058,517	10.6
Commodities	4,471,408	7.8
Master limited partnerships	1,221,994	2.1
Infrastructure	1,663,789	2.9
Risk parity	4,482,602	7.8
Financing	(7,318,129)	(12.8)
Total Pension investments - Asset Allocation Basis	57,363,017	100.0
Net Asset Allocation Adjustment*	(22,323)	
Pension investments per Statement of Fiduciary Net Position	57,340,694	
Postemployment Healthcare investments	\$ 411,442	100.0
Defined Contribution plan investments	\$ 21,565	100.0

* Includes reclassifications of certain investments between asset classes and investment receivables/payables to adjust the Statement of Fiduciary Net Position classification to the basis used to measure Asset Allocation. See the table and graph which follow.

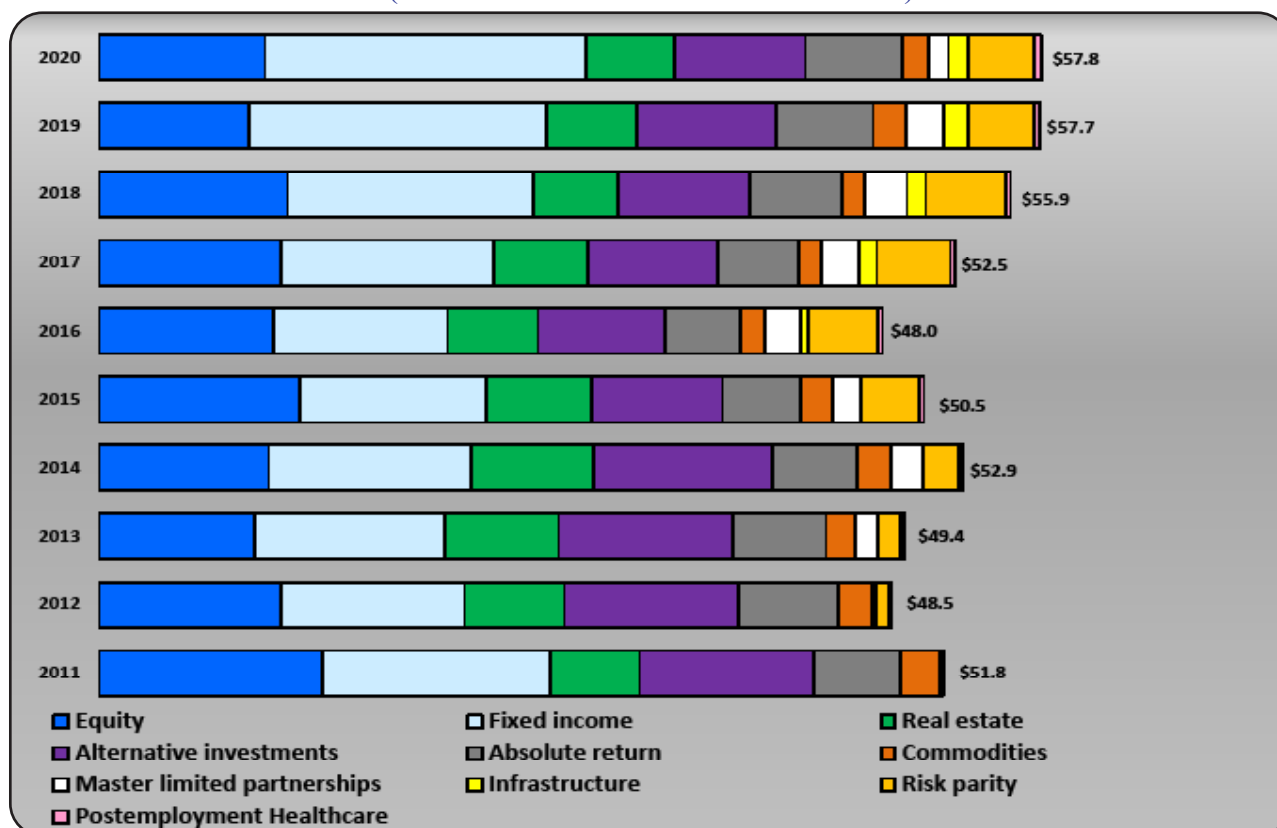
Comparison of Actual Portfolio Distribution to Asset Allocation Plan As of June 30, 2020

Asset Category	Plan	Actual
Common and preferred stock (Equity)	15.0%	16.4%
Fixed income	42.0	40.6
Real estate	10.0	9.9
Alternative investments	15.0	14.7
Absolute return	10.0	10.6
Commodities	8.0	7.8
Master limited partnerships	3.0	2.1
Infrastructure	3.0	2.9
Risk parity	8.0	7.8
Financing	(14.0)	(12.8)
Total	100.0%	100.0%



Portfolio Capital Distribution 10 Year Trend*

(Fair Value - Dollar Amounts in Billions)



*Defined Contribution Plan is not included in the above chart.

The following lists of portfolio detail statistics present the ten largest holdings by descending order of fair value for the largest public market asset classes. Information on the complete holdings of the System can be downloaded from the PSERS website at www.psers.pa.gov.

Common and Preferred Stock 10 Largest Holdings in Descending Order by Fair Value As of June 30, 2020 (Dollar Amounts and Shares in Thousands)

Description	No. of Shares	Fair Value
SPDR Trust Unit Series 1	2,855	\$ 880,333
The Children's Investment Fund LP	498,905	504,845
Cederberg Greater China Equity Fund	1,973	269,648
Steadview Capital Partners LP	178,330	178,591
iShares MSCI ETF	3,539	168,435
Effissimo Capital Management Feeder Fund 2	729	166,115
BlackRock Emerging Markets Alpha Advantage Fund Ltd.- Class P	105	148,165
Enterprise Products Partners, LP	8,004	145,427
Williams Partners, LP	6,181	117,561
Enbridge Inc.	3,797	115,276
Total of 10 Largest Holdings		\$ 2,694,396

Fixed Income
10 Largest Holdings in Descending Order by Fair Value
As of June 30, 2020
(Dollar Amounts and Shares in Thousands)

Description	No. of Shares	Fair Value
Bridgewater International Inflation-Linked Bond Fund	276	\$ 1,339,425
BlackRock US Extended Core Global Alpha Bond Fund Ltd.	365	918,482
Bridgewater Pure Alpha Fund II, Ltd.	138	534,463
TAO Partners Parallel Fund, LP	N/A	427,716
Bain Capital Credit Managed Account, LP	N/A	369,977
Bridgewater Short Term Investment Fund	29,135	369,899
Cerberus PSERS Levered Loan Opportunities Fund, LP	N/A	362,705
LBC-PSERS Credit Fund, LP	N/A	275,098
PIMCO BRAVO Fund III Onshore Feeder, LP	N/A	264,991
Bain Capital Distressed and Special Situations 2016, LP	N/A	261,471
Total of 10 Largest Holdings		\$ 5,124,227

Absolute Return
10 Largest Holdings in Descending Order by Fair Value
As of June 30, 2020
(Dollar Amounts and Shares in Thousands)

Description	No. of Shares	Fair Value
Bridgewater Pure Alpha Fund II, Ltd.	240	\$ 839,808
Garda Fixed Income Relative Value Opportunity Fund Ltd.	291	533,728
Capula Global Relative Value Fund, Ltd.	4,786	519,875
Aeolus Property Catastrophe Keystone PF Fund, LP	363	359,869
OWS Credit Opportunity Offshore Fund III, Ltd.	275	348,382
PIMCO Commodity Alpha Fund, Ltd.	256	343,625
PIMCO Global Credit Opportunity Offshore Fund Ltd.	280	294,280
Brigade Leveraged Capital Structures Offshore Ltd.	170	278,897
AKAZ Offshore Fund Ltd.	200	269,836
Capula Tail Risk Fund Ltd.	2,983	257,608
Total of 10 Largest Holdings		\$ 4,045,908

Postemployment Healthcare Investments
10 Largest Holdings in Descending Order by Fair Value
As of June 30, 2020
(Dollar Amounts in Thousands)

Description	Maturity Date	Interest Rate (%)	Par Value	Fair Value
Wilmington US Government MM	N/A	Various	\$ 174,343	\$ 174,343
PSERS Short-Term Investment Fund	Various	Various	141,199	141,199
World Financial Network	06/17/24	2.55%	6,517	6,514
Toyota Motor Credit Corp.	10/23/20	0.48%	6,000	6,000
Cabela's Credit Card Master Note Trust	07/17/23	0.85%	5,310	5,326
Master Credit Card	01/21/22	0.53%	2,972	2,977
World Omni Auto	Various	Various	2,858	2,861
Santander Drive Auto Receivables Trust	Various	Various	2,855	2,852
CarMax Auto Owner Trust	Various	Various	2,681	2,683
Hyundai Auto Lease	Various	Various	2,408	2,410
Total of 10 Largest Holdings				\$ 347,165

Defined Contribution Plan Investments
10 Largest Holdings in Descending Order by Fair Value
As of June 30, 2020
(Dollar Amounts and Shares in Thousands)

Description	No. of Shares	Fair Value
PSERS Short-Term Investment Fund	N/A	\$ 6,716
T Rowe Price Target Date 2060	568	6,383
T Rowe Price Target Date 2055	207	2,212
T Rowe Price Target Date 2050	143	1,522
T Rowe Price Target Date 2045	118	1,262
T Rowe Price Target Date 2040	93	997
T Rowe Price Target Date 2035	80	855
T Rowe Price Target Date 2030	64	696
T Rowe Price Target Date 2025	33	358
T Rowe Price Target Date 2020	16	180
Total of 10 Largest Holdings		\$ 21,181

Comparison of Investment Activity Income
Fiscal Years Ended June 30, 2020 and 2019
(Dollar Amounts in Thousands)

Investment Activity	2020	2019
Net appreciation in fair value of investments	\$ 261,864	\$ 2,830,333
Short-term	102,344	130,046
Fixed income	268,787	256,597
Common and preferred stock	277,635	322,865
Collective trust funds	4,633	6,373
Real estate	219,762	226,303
Alternative investments	371,652	298,004
Total investment activity income	\$ 1,506,677	\$ 4,070,521

Brokers' fees on equity investment transactions for the fiscal year ended June 30, 2020 were \$5.1 million. The System has commission recapture contracts with several brokers. These contracts generally stipulate that the brokers rebate a percentage of commissions earned on investment transactions directly to the System. During the fiscal year ended June 30, 2020, the System earned \$51,000 from a commissions recapture program. A list of the brokers receiving fees in excess of \$100,000 during the fiscal year follows:

Summary Schedule of Brokers' Fees
(Cumulative Fiscal Year Amounts Exceeding \$100,000)
Fiscal Year Ended June 30, 2020
(Shares in Thousands)

Broker Name	Fees Paid	Shares	Broker Name	Fees Paid	Shares
Instinet LLC	\$ 550,766	163,028	Bank Of America Merrill Lynch	\$ 187,667	36,787
B. Riley & Company	337,840	12,011	Knight Securities	173,722	13,587
Fimat USA	270,415	110	Canaccord Genuity Inc.	170,874	34,533
Citigroup Inc.	267,939	38,422	UBS	164,603	26,394
Goldman Sachs & Company	241,070	35,702	J P Morgan Chase & Co.	134,131	31,383
Morgan Stanley & Company	200,414	44,626	Jefferies & Company Inc.	125,115	20,570
Liquidnet Inc.	198,897	21,122	Barclays Capital	116,955	10,188
Credit Suisse First Boston	191,985	36,781	Macquarie Bank Ltd	113,138	23,826

Professional Consultants
External Investment Advisors
As of June 30, 2020

Absolute Return Managers

- ◆ Aeolus Capital Management, Ltd.
- ◆ Apollo Aviation Group
- ◆ AKAZ Investment Partners, LP
- ◆ Bridgewater Associates, LP
- ◆ Brigade Capital Management
- ◆ Capula Investment Management, LLP
- ◆ Carlyle Aviation Management Limited
- ◆ Caspian Capital, LP
- ◆ Falko Regional Aircraft Limited
- ◆ Garda Capital Partners, LP
- ◆ HS Group Ltd.
- ◆ Independence Reinsurance Partners GP, LLC
- ◆ Nephila Capital, Ltd.
- ◆ Oceanwood Capital Management, Ltd.
- ◆ One William Street Capital Management, LP
- ◆ Pacific Investment Management Company, LLC
- ◆ Two Sigma Advisors, LP
- ◆ Venor Capital Management, LP

Publicly-Traded Real Estate Securities Advisor

- ◆ Security Capital Research & Management, Inc.

Non-U.S. Equity Managers

- ◆ Acadian Asset Management, LLC
- ◆ Baillie Gifford Overseas, Ltd.
- ◆ BlackRock Institutional Trust Company, N.A
- ◆ Cederberg Capital
- ◆ Effissimo Capital Management Pte. Ltd.
- ◆ Marathon Asset Management Limited
- ◆ Oberweis Asset Management, Inc.
- ◆ QS Batterymarch Financial Management, Inc.
- ◆ Steadview Capital Partners, LP
- ◆ The Children's Investment Fund, LP
- ◆ Wasatch Advisors, Inc.

Commodity Managers

- ◆ Denham Capital Management, LP
- ◆ Gresham Investment Management, LLC
- ◆ Wellington Management Company, LLP

U.S. Core Plus Fixed Income Managers

- ◆ BlackRock Financial Management
- ◆ SEI Investment Management Corporation

High Yield/Private Credit Managers

- ◆ Apollo Global Management, LLC
- ◆ Avenue Capital Group
- ◆ Bain Capital Credit, LP
- ◆ Brigade Capital Management
- ◆ The Carlyle Group
- ◆ Cerberus Business Finance, LLC
- ◆ Clearlake Capital Group, LP
- ◆ Galton Capital Group, LLC
- ◆ Hayfin Capital Management LLP
- ◆ Intermediate Capital Group PLC
- ◆ LBC Credit Management, LP
- ◆ Mariner Investment Group, LLC
- ◆ Oaktree Capital Management, LP
- ◆ Pacific Investment Management Company, LLC
- ◆ Park Square Capital, LLC
- ◆ SSG Capital Management Limited
- ◆ Summit Partners
- ◆ TCI Fund Management Limited
- ◆ TPG Sixth Street Partners
- ◆ Varde Partners, Inc.

Emerging Markets Debt Manager

- ◆ Franklin Templeton Investments

Multi-Sector Fixed Income Manager

- ◆ Pacific Investment Management Company, LLC

Non-U.S. Inflation-Linked Securities Manager

- ◆ Bridgewater Associates, LP

LIBOR-Plus Short-Term Investment Pool Managers

- ◆ Capula Investment Management, LLP
- ◆ Penn Mutual Asset Management, LLC
- ◆ Radcliffe Capital Management

Master Limited Partnership Managers

- ◆ Atlantic Trust Private Wealth Management
- ◆ Salient Capital Advisors, LLC

Currency Hedging Manager

- ◆ Insight Investment International Limited

Investment Section

Professional Consultants (Continued)

Infrastructure

- ◆ Blackstone Group, The
- ◆ GCM Grosvenor
- ◆ Mariner Investment Group, LLC
- ◆ Strategic Partners

Risk Parity Managers

- ◆ BlackRock Financial Management
- ◆ Bridgewater Associates, LP
- ◆ D.E. Shaw Investment Management, LLC

Real Estate Advisors

- ◆ Bell Partners, Inc.
- ◆ Charter Oak Advisors, Inc.
- ◆ GF Management, Inc.
- ◆ L&B Realty Advisors
- ◆ Property Management, Inc.

Real Estate Fund Managers

- ◆ Almanac Realty Investors, LLC
- ◆ Angelo, Gordon & Co., LP
- ◆ Ares Management, LLC
- ◆ Avenue Capital Group
- ◆ Bell Partners, Inc.
- ◆ BlackRock Real Estate
- ◆ Blackstone Group, The
- ◆ Brookfield Asset Management, Inc.
- ◆ Cabot Properties, Inc.
- ◆ Carlyle Group, The
- ◆ C-III Capital Partners, LLC
- ◆ DRA Advisors, LLC
- ◆ Equus Capital Partners, LTD
- ◆ Exeter Property Group
- ◆ Fortress Investment Group
- ◆ LAI Real Estate Investors, LLC
- ◆ LaSalle Mortgage Real Estate Investors
- ◆ LEM Capital Partners, LP
- ◆ O'Connor Capital Partners
- ◆ Paramount Group, Inc.
- ◆ PGIM Real Estate
- ◆ RCG Longview Management, LLC
- ◆ Silverpeak Real Estate Partners
- ◆ Stockbridge Capital Partners
- ◆ Strategic Partners
- ◆ UBS Realty Investors, LLC

Farmland Advisor

- ◆ Prudential Agricultural Group

Venture Capital Fund Managers

- ◆ Adams Capital Management, Inc.
- ◆ Aisling Capital, LLC
- ◆ Cross-Atlantic Capital Partners
- ◆ Insight Venture Management, LLC
- ◆ KBL Healthcare
- ◆ LLR Partners
- ◆ Mid-Atlantic Venture Funds
- ◆ Psilos Group Investors
- ◆ Quaker Bio-Ventures, Inc.
- ◆ Sante Ventures
- ◆ SCP Private Equity Partners
- ◆ StarVest Associates
- ◆ Sterling Partners
- ◆ Strategic Partners
- ◆ Summit Partners
- ◆ TDH, Inc.
- ◆ Tenaya Capital

Private Equity Fund Managers

- ◆ Actis LLP
- ◆ APAX Partners, LLP
- ◆ Bain Capital Partners, LLC
- ◆ Baring Private Equity Asia Limited
- ◆ Blue Point Capital Partners LLC
- ◆ Bridgepoint Capital Ltd
- ◆ Capital Group
- ◆ L Catterton Management Company LLC
- ◆ Cinven
- ◆ Collier Investment Management LTD
- ◆ Crestview Advisors LLC
- ◆ CVC Capital Partners Group
- ◆ Denham Capital
- ◆ EagleTree Capital
- ◆ The Energy & Minerals Group
- ◆ Equistone Partners Europe Limited
- ◆ Evergreen Pacific Partners GP LLC
- ◆ First Reserve Corporation
- ◆ GoldPoint Partners LLC
- ◆ Hahn & Company
- ◆ HgCapital
- ◆ Huntsman Gay Global Capital LLC
- ◆ Incline Management Corp.
- ◆ IPC Advisors
- ◆ K4 Capital Advisors
- ◆ Landmark Partners
- ◆ Milestone Partners
- ◆ Morgan Stanley
- ◆ New Mountain Investments
- ◆ NGP Energy Capital Management
- ◆ Odyssey Investment Partners LLC
- ◆ Orchid Asia
- ◆ PAI Europe

Professional Consultants (Continued)

- ◆ Palladium Equity Partners
- ◆ Partners Group Mgmt VI LTD
- ◆ Permira
- ◆ Platinum Equity Capital Partners
- ◆ Portfolio Advisors, LLC
- ◆ StepStone Group
- ◆ Sterling Partners
- ◆ Strategic Partners
- ◆ Trilantic Capital Management, LLC
- ◆ Webster Capital Management, LLC

Special Situations Fund Managers

- ◆ Apollo Global Management, LLC
- ◆ Arrowhead Mezzanine
- ◆ Avenue Capital Group
- ◆ Black Diamond Capital Management, LLC
- ◆ Cerberus Capital Management, LP
- ◆ Clearlake Capital Group, LP
- ◆ Gold Hill Venture Lending 03, LLC
- ◆ GoldPoint Partners, LLC
- ◆ Oaktree Capital Management LP
- ◆ Searchlight Capital Partners, LP
- ◆ Tulco Management, LLC
- ◆ Venor Capital Management, LP
- ◆ Versa Capital Management, LLC
- ◆ Windjammer Capital Investors

Custodian Bank

- ◆ The Bank of New York Mellon Corporation

Securities Lending Agent

- ◆ Deutsche Bank AG

Investment Accounting Application Service Provider

- ◆ STP Investment Services, LLC

Proxy Voting Agent

- ◆ Glass, Lewis & Co., LLC

Investment Evaluator and General Investment Consultant

- ◆ Aon Investment Consulting

Private Equity, Private Credit and Private Real Estate Investment Consultant

- ◆ Hamilton Lane Advisors, LLC

Absolute Return & Private Credit Consultant

- ◆ Aksia, LLC

Risk Management System Provider

- ◆ BlackRock Solutions

Defined Contribution Investment Consultant

- ◆ Cammack LaRhette Advisors, LLC



The Columbia-Wrightsville Bridge, officially the Veterans Memorial Bridge, spans the Susquehanna River between Columbia and Wrightsville, Pennsylvania