Inspiration

How do you inspire a student to reach for more? Make the school itself an inspiring place to be. At PSRS/PEERS participating school districts, typical classrooms are enhanced by the addition of large, open areas and small, intimate "think tanks" for teamwork and collaboration.

Financial Section

Independent Auditors' Report

WILLIAMS KEEPERS LLC
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The Board of Trustees of the
Public School and Public Education Employee
Retirement Systems of Missouri

We have audited the accompanying financial statements of the Public School and Public Education Employee Retirement Systems of Missouri (the Systems), which comprise the statements of fiduciary net position as of June 30, 2019, the related statements of changes in fiduciary net position for the year then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We conducted our audit in accordance with U.S. generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Public School and Public Education Employee Retirement Systems of Missouri as of June 30, 2019, and the respective changes in fiduciary net position for the year then ended, in conformity with U.S. generally accepted accounting principles.

Independent Auditors' Report, continued

Other Matters

Prior Year Information

The prior year combined total information has been derived from the Systems' 2018 financial statements and, in our report dated November 30, 2018, we expressed unmodified opinions on the respective financial statements of the Systems' fiduciary net position.

Required Supplementary Information

U.S. generally accepted accounting principles require that the management's discussion and analysis on pages 17-22, schedules related to the defined benefit plans (schedules of changes in the employers' net pension liability, employers' net pension liability, employer contributions, investment returns, and notes to schedules) on pages 48-53, and schedules related to the defined benefit OPEB plan (schedule of changes in the net OPEB liability and related ratios) on page 54 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context.

We have applied certain limited procedures to the required supplementary information in accordance with U.S. generally accepted auditing standards, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audits of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the Public School and Public Education Employee Retirement Systems of Missouri basic financial statements. The introductory, investment, actuarial and statistical sections and the additional information presented on pages 55 and 56 are presented for purposes of additional analysis and are not a required part of the financial statements.

The additional information presented on pages 55 and 56 is the responsibility of management and was derived from and relate directly to the underlying accounting and other records used to prepare the financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with U.S. generally accepted auditing standards. In our opinion, the additional information presented on pages 55 and 56 is fairly stated in all material respects in relation to the basic financial statements as a whole.

The introductory, investment, actuarial and statistical sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

Williams-Keepers LLC

November 26, 2019

Management's Discussion and Analysis

Introduction

This discussion and analysis of the financial position of the Public School Retirement System of Missouri (PSRS) and the Public Education Employee Retirement System of Missouri (PEERS), collectively referred to as the Systems, provides an overview of the Systems' financial activities for the fiscal year ended June 30, 2019. We encourage you to consider the information presented here in conjunction with the *Transmittal Letter* included in the *Introductory Section* and the financial statements and other information presented in the *Financial Section* of this *Comprehensive Annual Financial Report* (CAFR).

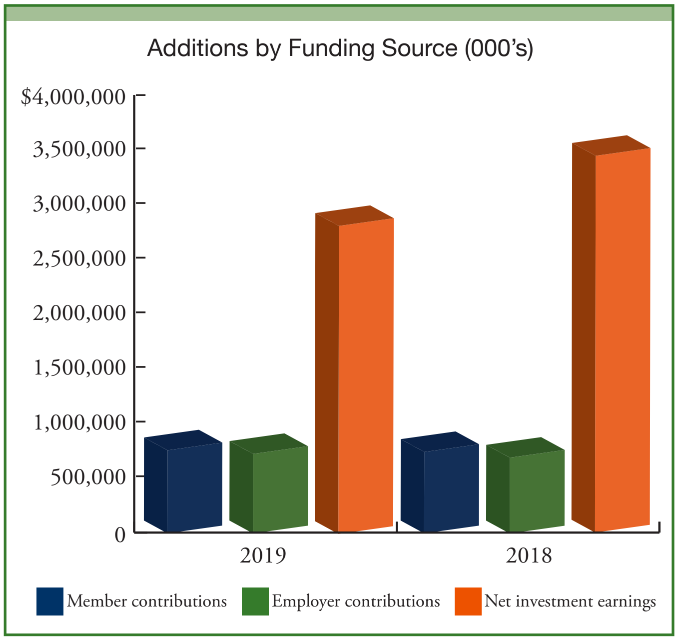
Financial Highlights

The following highlights are explained in more detail for each System later in this discussion.

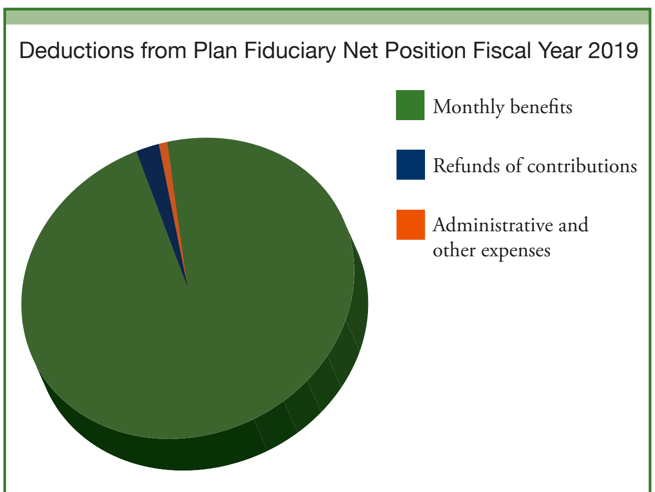
- The Board of Trustees adopts actuarial assumptions, each of which individually represents a reasonable long-term estimate of anticipated experience for the Systems, derived from experience studies conducted every fifth year. The most recent comprehensive experience study was completed in June 2016. All economic and demographic assumptions were reviewed and updated, where appropriate, based on the results of the study and effective with the June 30, 2016 valuations. For the June 30, 2017 valuations, the investment rate of return was reduced from 7.75% to 7.6% and the assumption for annual cost-of-living adjustments was updated in accordance with the funding policies amended by the Board of Trustees at their November 3, 2017 meeting. The Board of Trustees further reduced the investment rate of return to 7.5% at their October 29, 2018 meeting. The actuarial assumed rate of return of 7.5% was effective with the June 30, 2018 valuations and fiscal year 2019 investment performance. No additional assumption changes have occurred. The significant actuarial assumptions are detailed in the notes to the financial statements and the notes to the schedules of required supplementary information.
- As of June 30, 2019, PSRS' fiduciary net position as a percentage of the total pension liability increased to 84.6% from 84.1% for the prior year. PSRS' net pension liability approximated $7.4 billion as of June 30, 2019. As of June 30, 2019, PEERS' fiduciary net position as a percentage of the total pension liability increased to 86.4% from 86.1% for the prior year. PEERS' net pension liability approximated $791.0 million as of June 30, 2019. The net pension liability is calculated utilizing the market value of assets in accordance with Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans,* for accounting presentation purposes.
- The pre-funded status of the Systems is measured as the ratio of assets available for benefits to a benefit liability measure for the Systems. While there are several such measures that could be appropriately used, the benefit liability measure that ties most closely to the Systems' funding policies is the actuarial accrued liability (AAL) computed in accordance with assumptions and methods approved by the Board of Trustees. The pre-funded ratio uses the actuarial value of assets (AVA), a smoothed asset value that recognizes 20% of the total investment gain or loss on the AVA for each of the preceding five years. This is the significant difference between accounting measurements in accordance with GASB Statement No. 67 and funding calculations. As of June 30, 2019, the pre-funded ratios for funding purposes were 84.4% for PSRS and 86.4% for PEERS.
- The Systems' assets increased through investment earnings by $2.9 billion from the previous year with a total fund performance of 7.0% (6.9% net of all investment expenses and fees). The total plan return, net of all investment expenses and fees, was slightly under both the policy benchmark return of 7.3% and the long-term investment goal (actuarially assumed return) of 7.5%. Over long periods of time, the Systems continue to produce investment returns that meet or exceed the Systems' objective. The annualized investment return for PSRS and PEERS is 8.3% (8.1% net of all investment expenses and fees) over the last 30 years.
- The Systems' investment returns for the last five years have exceeded 70% of the peer group as defined by the Wilshire TUCS universe of public pension plans with assets in excess of $1 billion. Additionally, the Systems generated the returns (and longer-term investment returns) while taking less risk than approximately three-fourths of comparable public funds in the United States.
- Cost-sharing, defined-benefit, retirement systems such as the Systems have a long-term perspective on financial activities. The Systems' primary responsibility is to assure that sufficient funds will be available to provide retirement, disability and survivor benefits to current and future members.

Condensed Statements of Fiduciary Net Position and Statements of Changes in Fiduciary Net Position are provided for each System on the following pages.

- Pension benefits are funded through a combination of member and employer contributions and investment income. The following chart depicts the combined amount of funding received by the Systems from each source for the years ended June 30, 2019 and 2018.



- Expenses are incurred for the sole purpose for which the Systems were created: the payment of benefits to the Systems' membership and their beneficiaries. Included in the deductions from fiduciary net position were monthly benefit payments, refunds of contributions due to member terminations or deaths and administrative and other expenses. The pie chart below depicts the combined Systems deductions from Plan Fiduciary Net Position for the year ended June 30, 2019.



- The net position of the combined Systems increased by $1.6 billion. The net position of PSRS increased by $1.3 billion while the net position of PEERS increased by $248.8 million.
- Total revenues for fiscal year 2019 were comprised of contribution revenue of $1.71 billion and investment gains of $2.9 billion, compared to contribution revenue of $1.66 billion and investment gains of $3.6 billion for fiscal year 2018.
- Expenses increased 4.3% over the prior year from $2.9 billion to $3.0 billion. Retirement benefits and member refunds increased by $125.9 million from the prior year, while administrative expenses increased by $0.6 million during the same time period. The increase in administrative expenditures is directly related to the implementation of a new financial and human resource system, which is partially offset by a reduction in annual OPEB expenses. The Systems implemented GASB Statement No. 75, *Financial Reporting for Post-Employment Benefit Plans other than Pension Plans,* during fiscal year 2018.

Overview of the Financial Statements

The CAFR reflects the activities of the Systems as reported in Statements of Fiduciary Net Position and the Statements of Changes in Fiduciary Net Position (the Systems' financial statements). The Systems' financial statements, notes to the financial statements, and required supplementary information were prepared in conformity with GASB Statement No. 67, *Financial Reporting for Pension Plans*, as amended. This discussion and analysis is intended to serve as an introduction to the financial section of the CAFR. The financial section of the CAFR consists of: the basic financial statements comprised of the Statements of Fiduciary Net Position and the Statements of Changes in Fiduciary Net Position, the notes to the basic financial statements, required supplementary information and other supplementary information.

The Statements of Fiduciary Net Position present information on the assets and liabilities of the Systems, with the difference between the two reported as net position. The net position of the Systems reflects the resources available to pay benefits to members when due. Over time, increases and decreases in net position measure whether the Systems' financial position is improving or deteriorating.

The Statements of Changes in Fiduciary Net Position present information detailing the changes in net position that occurred during the current fiscal year. All changes in net position are reported on an accrual basis. This means that the revenue or expense is recognized as soon as the underlying event giving rise to the change occurs, regardless of when the actual cash is received or paid. Thus, revenues and expenses are reported in this statement for some items that will not result in cash flows until future fiscal periods. For example, contributions due from an employer, even though not yet paid by year end, will be reflected as revenue. Earned vacation accruals will be reflected as an expense, even though they have not been paid to employees.

The notes to the financial statements provide additional information that is essential to a full understanding of the data provided in the financial statements. The notes can be found on pages 26 through 47.

The report also contains required supplementary information in addition to the basic financial statements themselves. The required supplementary information consists of the following schedules and related notes:

- The Schedules of Changes in the Employers' Net Pension Liability include historical trend information about the annual changes of the net pension liability, including assumption changes and variances of assumed experience.
- The Schedules of Employers' Net Pension Liability include historical trend information about whether each System's net position is increasing or decreasing over time relative to the total pension liability. The schedules provide a long-term, ongoing perspective of the accumulation of assets to pay benefits when due.
- The Schedules of Employer Contributions present historical trend information about the actuarially determined contributions of employers and the actual contributions made by employers.
- The Schedules of Investment Returns present historical annual money-weighted rate of returns.
- The Schedules of Changes in the Net OPEB Liability and Related Ratios include historical trend information about the defined benefit other post-employment benefit (OPEB) plan from a long-term, ongoing perspective.
- The Notes to the Schedules of Required Supplementary Information provide additional information that is essential to a full understanding of the data provided in the schedules.

Other supplementary schedules are also included. The Schedules of Administrative Expenses present the overall cost of administering the Systems. The Schedules of Professional Services further detail this category of administrative expense. The Schedules of Investment Expenses show the costs associated with investing the assets of the Systems. These expenses are shown as a reduction of revenue on the Statements of Changes in Fiduciary Net Position.

Financial Analysis of the Public School Retirement System of Missouri (PSRS)

PSRS is a mandatory cost-sharing multiple employer retirement system for full-time certificated employees and certain part-time employees of participating employers. PSRS members were required to contribute 14.5% of their annual covered salary during fiscal year 2019. The employer was required to match that amount. Most PSRS members do not contribute to Social Security, except for employees hired after 1986 who contribute to Medicare only. In some instances, positions may be determined not to be exempt from Social Security contributions. PSRS members required to contribute to Social Security are required to contribute two-thirds of the approved PSRS contribution rate and their employer is required to match the contribution. The members' benefits are further calculated at two-thirds the normal benefit amount.

Public School Retirement System of Missouri
Fiduciary Net Position (000's)

	2019	2018	Change
Cash & investments	$ 41,057,494	$ 39,880,821	$ 1,176,673
Receivables	2,152,895	2,343,682	(190,787)
Other	24,867	23,175	1,692
Total assets	**43,235,256**	**42,247,678**	**987,578**
Deferred outflows of resources	**93**	**67**	**26**
Total liabilities	**2,641,400**	**2,988,142**	**(346,742)**
Deferred inflows of resources	**190**	**58**	**132**
Fiduciary net position	**$ 40,593,759**	**$ 39,259,545**	**$1,334,214**

Assets

Total assets of PSRS as of June 30, 2019 were $43.2 billion and were mostly comprised of cash, investments, investment sales receivables and contributions due from employers. Total assets increased by $1 billion or 2.3% from the prior year due to investment earnings.

Liabilities

Total liabilities as of June 30, 2019, were $2.6 billion and were mostly comprised of payables from the purchase of investments and obligations under security lending arrangements. Total liabilities decreased by $346.7

million from the prior year. This was due to a decrease in investment purchase liabilities, accounts payable and obligations under security lending arrangements.

Net Position

PSRS assets exceeded liabilities at June 30, 2019, by $40.6 billion. This was an increase of $1.3 billion from the 2018 net position. This increase was a result of investment earnings that totaled $2.6 billion for the year offset by benefit payments and other expenses which exceeded contribution revenue by $1.3 billion.

Deferred inflows and outflows are presented in accordance with GASB Statement No. 75.

Public School Retirement System of Missouri
Changes in Fiduciary Net Position (000's)

	2019	2018	Change
Additions			
Member contributions	$ 747,403	$ 726,996	$ 20,407
Employer contributions	712,545	696,970	15,575
Investment income	2,595,859	3,173,732	(577,873)
Other	6	4	2
Total additions	**4,055,813**	**4,597,702**	**(541,889)**
Deductions			
Monthly benefits	2,660,977	2,555,656	105,321
Refunds of contributions	49,296	51,329	(2,033)
Administrative expenses	11,282	11,019	263
Other	44	399	(355)
Total deductions	**2,721,599**	**2,618,403**	**103,196**
Change in fiduciary net position	**$1,334,214**	**$1,979,299**	**$ (645,085)**

Revenues – Additions to Fiduciary Net Position

The reserves needed to finance retirement benefits are accumulated through the collection of employer and employee contributions and through investment earnings. Total contribution revenue for the year increased by $36.0 million to $1.5 billion. This was a 2.5% increase over the prior year. Retirement contributions were calculated at 14.5% of retirement salary for each member during fiscal year 2019. The employer matched this amount. Contribution rates were unchanged from the prior year. In addition to contributions on salary, members may also pay contributions to reinstate previously refunded service or to purchase various types of elective service. Such contributions were approximately $5.7 million more than the prior year. This along with an increased retirement salary base and the addition of new members resulted in the overall increase in contributions.

The net investment gain was $2.6 billion as compared to a net investment gain of $3.2 billion in 2018. The current year gains are reflective of a 6.9% net return on the Systems' diversified investment portfolio, compared to 8.7% in the prior year. All investment related expenses, such as fees paid to investment managers, are reflected as a reduction in revenue and are accounted for in this net figure. The *Investment Section* of this report contains additional information regarding investments and securities lending activity.

Expenses – Deductions from Fiduciary Net Position

The primary expenses of PSRS include the payment of pension benefits to members and beneficiaries, refunds of contributions to former members, and the cost of administering the System. Total expenses for fiscal year 2019 were $2.7 billion, an increase of 3.9% over fiscal year 2018.

Benefit expenses increased by $105.3 million to $2.66 billion. This was a result of an overall increase of 1,777 monthly benefit recipients from the prior year end. There were no changes to the benefit formula during 2019. Refunds of contributions decreased by $2.0 million during the current year to a total of $49.3 million.

Administrative expenses increased by $0.3 million to $11.3 million. The increase in administrative expenditures is directly related to the implementation of a new financial and human resource system, which is partially offset by a reduction in annual OPEB expenses. The cost of administrative items was charged 61% to PSRS and 39% to PEERS, unless the expense was determined to be of direct benefit to only one System. In such instance, the allocation of expense was 100% to the benefited System. As always, we will continue to look for ways to streamline costs when prudent.

Financial Analysis of the Public Education Employee Retirement System of Missouri (PEERS)

PEERS is a mandatory cost-sharing multiple employer retirement system for non-certificated employees and certain part-time certificated employees of participating employers. PEERS members were required to contribute 6.86% of their annual covered salary during 2019. The employer was required to match that amount. PEERS members also contribute to Social Security.

Public Education Employee Retirement System of Missouri
Fiduciary Net Position (000's)

	2019	2018	Change
Cash & investments	$ 5,080,876	$ 4,848,898	$ 231,978
Receivables	266,717	285,811	(19,094)
Other	335	-	335
Total assets	**5,347,928**	**5,134,709**	**213,219**
Deferred outflows of resources	**59**	**32**	**27**
Total liabilities	**329,342**	**364,939**	**(35,597)**
Deferred inflows of resources	**121**	**36**	**85**
Fiduciary net position	**$ 5,018,524**	**$ 4,769,766**	**$ 248,758**

Assets

Total assets of PEERS as of June 30, 2019 were $5.3 billion and were mostly comprised of cash, investments, investment sales receivables and contributions due from employers. Total assets increased by $213.2 million or 4.2% from the prior year due to investment earnings.

Liabilities

Total liabilities as of June 30, 2019 were $329.3 million and were mostly comprised of payables from the purchase of investments and obligations under security lending arrangements. Total liabilities decreased by $35.6 million. This was due to a decrease in investment purchase liabilities, accounts payable and obligations under security lending arrangements.

Net Position

PEERS assets exceeded liabilities at June 30, 2019 by $5.0 billion. This was up from the 2018 net position of $4.8 billion by $248.8 million. This increase was a result of investment earnings that totaled $319.8 million for the year offset by benefit payments and other expenses which exceeded contribution revenue by $71.0 million.

Deferred inflows and outflows are presented in accordance with GASB Statement No. 75.

Public Education Employee Retirement System of Missouri
Changes in Fiduciary Net Position (000's)

	2019	2018	Change
Additions			
Member contributions	$ 126,609	$ 121,468	$ 5,141
Employer contributions	120,042	115,103	4,939
Investment income	319,773	381,524	(61,751)
Total additions	**566,424**	**618,095**	**(51,671)**
Deductions			
Monthly benefits	291,568	269,364	22,204
Refunds of contributions	18,674	18,270	404
Administrative expenses	7,415	7,106	309
Other	9	7	2
Total deductions	**317,666**	**294,747**	**22,919**
Change in fiduciary net position	**$ 248,758**	**$ 323,348**	**$ (74,590)**

Revenues – Additions to Fiduciary Net Position

The reserves needed to finance retirement benefits are accumulated through the collection of employer and employee contributions and through investment earnings. Total contribution revenue for the year increased by $10.1 million to $246.7 million. Retirement contributions were calculated at 6.86% of retirement salary for each member during fiscal year 2019. The employer matched this amount. Contribution rates were unchanged from the prior year. Overall contribution revenue increased by 4.3%. In addition to contributions on salary, members may also pay contributions to reinstate previously refunded service or to purchase various types of elective service. Such contributions were $1.0 million more than the prior year. The increase in total contributions is attributable to purchases of service, a higher retirement salary base, the addition of new members and an increase in contributions for members working after retirement.

The net investment gain was $319.8 million as compared to a net investment gain of $381.5 million in 2018. The current year gains are reflective of a 6.9% net return on the Systems' diversified investment portfolio, as compared to 8.7% in the prior year. All investment related expenses, such as fees paid to investment managers, are reflected as a reduction in revenue and are accounted for in this net figure. The *Investment Section* of this report contains additional information regarding investments and securities lending activity.

Expenses – Deductions from Fiduciary Net Position

The primary expenses of PEERS include the payment of pension benefits to members and beneficiaries, refunds of contributions to former members, and the cost of administering the System. Total expenses for fiscal year 2019 were $317.7 million, an increase of 7.8% over fiscal year 2018.

Benefit expenses increased by $22.2 million to $291.6 million. This was a result of an overall increase of 1,490 monthly benefit recipients from the prior year end. There were no changes to the benefit formula during 2019. Refunds of contributions increased by $0.4 million from the prior year.

Administrative expenses increased by $0.3 million. The increase in administrative expenditures is directly related to the implementation of a new financial and human resource system, which is partially offset by a reduction in annual OPEB expenses. The cost of administrative items was charged 61% to PSRS and 39% to PEERS, unless the expense was determined to be of direct benefit to only one System. In such instance, the allocation of expense was 100% to the benefited System. As always, we will continue to look for ways to streamline costs when prudent.

Summary

The total net returns of 6.9% for PSRS and PEERS was slightly under both the long-term investment goal of earning 7.5% and the total plan policy benchmark return of 7.3%. Due to the long-term nature of defined benefit pension plans, it is important to look at the financial performance of the Systems over a period of years and not just at this single point in time. Over long periods of time, the Systems continue to produce investment returns that meet or exceed the Systems' objectives. The annualized investment return for the Systems over the last 30 years is 8.1%, net of all fees and expenses.

The actuarial assumed rate of return was 8.0% from 1980 through fiscal year 2016. The Board of Trustees set the actuarial assumed rate of return at 7.75%, effective with the June 30, 2016 actuarial valuations and fiscal year 2017 investment performance measurement. The Board of Trustees considered the current funded status of the Systems, expectations of capital markets and other factors during fiscal year 2017 and 2018. Based on these considerations the Board of Trustees approved reducing the risk profile of the plans by approving a further reduction of the actuarial assumed rate of return to 7.6% as of June 30, 2017 and 7.5% as of June 30, 2018. The actuarial assumed rate of return of 7.5% was effective with the June 30, 2018 valuations and fiscal year 2019 investment performance. Detailed information regarding the Systems' investment portfolio is included in the *Investment Section* of this report.

The Systems' funding objective is to achieve a funded ratio of 100% over a closed 30-year period. For this purpose, funded ratio is defined as the actuarial value of assets divided by the actuarial accrued liability determined under the entry age normal cost method and the actuarial assumptions adopted by the Board. Detailed information regarding the Systems' actuarial assumptions is included in the *Actuarial Section* of this report.

The economic factor that is of primary significance to the Systems is the investment rate of return earned in global capital markets. Legislative, demographic, and actuarial assumption changes can also have a significant impact on the funded status of the Systems. All of these factors are incorporated into the annual actuarial valuations, which determine the contribution rates at which participating employers must contribute in order to appropriately fund benefits.

The fiscal year 2021 contribution rates remain unchanged from the fiscal year 2020 rates and were approved by the Board of Trustees at their October 28, 2019 meeting. The fiscal year 2021 contribution rate for PSRS remains 29.0%. The fiscal year 2021 contribution rate for PEERS remains 13.72%. The fiscal year 2021 contribution rates are in compliance with the PSRS/PEERS Board of Trustees' Funding Policies and represent the continued stability of contribution rates for employers and members.

The Board of Trustees, management and staff continually strive to improve the financial position of the Systems through a prudent investment program and long-term strategic planning.

Requests for Information

This financial report is designed to provide the Board of Trustees, our members, and other users of our financial report with a general overview of the Systems' finances and to demonstrate the Systems' accountability for the money it receives. If you have any questions about this report or need additional financial information, contact the Public School and Education Employee Retirement Systems of Missouri (PSRS/PEERS), P.O. Box 268, Jefferson City, MO 65102.

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Public School Retirement System of Missouri
Public Education Employee Retirement System of Missouri
Statements of Fiduciary Net Position

as of June 30, 2019
with comparative totals for June 30, 2018

			Combined Totals	
	PSRS	**PEERS**	**June 30, 2019**	**June 30, 2018**
ASSETS				
Cash	$ 63,231,559	$ 13,436,039	$ 76,667,598	$ 621,911,512
Receivables				
Contributions	229,551,832	29,111,461	258,663,293	210,730,424
Accrued interest and dividends	88,968,017	10,995,247	99,963,264	86,376,816
Investment sales	1,833,591,124	226,610,598	2,060,201,722	2,332,007,193
Receivable from PEERS for allocated expenses	754,122	-	754,122	346,094
Other	30,033	-	30,033	32,498
Total receivables	2,152,895,128	266,717,306	2,419,612,434	2,629,493,025
Investments, at fair value				
U.S. Treasuries and TIPS	7,313,333,716	903,851,045	8,217,184,761	7,510,796,187
U.S. public equities	11,740,001,875	1,450,501,853	13,190,503,728	13,339,505,250
Non-U.S. public equities	6,470,676,306	799,420,260	7,270,096,566	6,754,684,280
Short term investments	612,354,717	77,522,354	689,877,071	830,383,770
Public debt	1,721,791,342	212,659,520	1,934,450,862	2,305,567,703
Private equity	4,592,087,051	567,533,610	5,159,620,661	4,230,218,000
Private credit	414,135,585	51,182,798	465,318,383	364,051,618
Private real estate	3,203,567,732	395,927,241	3,599,494,973	3,274,940,816
Hedged assets	4,696,614,435	580,452,093	5,277,066,528	5,122,748,516
Total investments	40,764,562,759	5,039,050,774	45,803,613,533	43,732,896,140
Invested securities lending collateral	229,699,265	28,388,411	258,087,676	374,910,695
Prepaid expenses	2,737,979	334,569	3,072,548	44,150
Capital assets, net of accumulated depreciation	22,128,631	-	22,128,631	23,131,284
Total assets	43,235,255,321	5,347,927,099	48,583,182,420	47,382,386,806
DEFERRED OUTFLOW OF RESOURCES				
Outflows related to other post employment benefit obligations	93,020	59,472	152,492	98,798
LIABILITIES				
Accounts payable	14,615,330	1,947,978	16,563,308	22,341,657
Interest payable	1,834,568	226,733	2,061,301	1,189,322
Securities lending collateral	229,687,701	28,386,982	258,074,683	374,895,161
Investment purchases	2,391,164,165	295,521,116	2,686,685,281	2,948,021,102
Payable to PSRS for allocated expenses	-	754,122	754,122	346,094
Accrued medical claims	58,560	37,440	96,000	80,000
Net other post employment benefit obligation	2,370,450	1,515,534	3,885,984	3,788,863
Compensated absences	1,668,882	951,691	2,620,573	2,419,115
Total liabilities	2,641,399,656	329,341,596	2,970,741,252	3,353,081,314
DEFERRED INFLOW OF RESOURCES				
Inflows related to other post employment benefit obligations	189,820	121,360	311,180	93,590
NET POSITION - RESTRICTED FOR PENSIONS	$ 40,593,758,865	$ 5,018,523,615	$ 45,612,282,480	$ 44,029,310,700

See accompanying Notes to the Financial Statements.

Public School Retirement System of Missouri
Public Education Employee Retirement System of Missouri
Statements of Changes in Fiduciary Net Position

for the year ended June 30, 2019
with comparative totals for the year ended June 30, 2018

			Combined Totals Year Ended	
	PSRS	**PEERS**	**June 30, 2019**	**June 30, 2018**
ADDITIONS				
Contributions				
Employer	$ 712,545,096	$ 120,042,046	$ 832,587,142	$ 812,073,541
Member	747,402,726	126,609,105	874,011,831	848,464,011
Total contributions	1,459,947,822	246,651,151	1,706,598,973	1,660,537,552
Investment income				
From investing activities:				
Net appreciation in fair value of investments	2,590,083,214	319,477,591	2,909,560,805	3,589,899,525
Interest from investments	225,627,348	27,695,624	253,322,972	230,363,712
Interest from bank deposits	329,394	40,648	370,042	251,071
Dividends	229,988,612	28,208,144	258,196,756	239,268,109
Total investment income	3,046,028,568	375,422,007	3,421,450,575	4,059,782,417
Less investment expenses	454,644,412	56,197,193	510,841,605	507,705,244
Net income from investing activities	2,591,384,156	319,224,814	2,910,608,970	3,552,077,173
From security lending activities:				
Security lending gross income	5,163,251	633,325	5,796,576	5,370,319
Net (depreciation) appreciation in fair value of security lending collateral	(2,276)	(265)	(2,541)	(4,223)
Less security lending activity expenses:				
Agent fees	856,434	105,846	962,280	700,008
Broker rebates paid (received)	(170,472)	(21,069)	(191,541)	1,487,897
Total security lending expenses	685,962	84,777	770,739	2,187,905
Net income from security lending activities	4,475,013	548,283	5,023,296	3,178,191
Total net investment income	2,595,859,169	319,773,097	2,915,632,266	3,555,255,364
Other income				
Miscellaneous income	6,366	163	6,529	4,519
Total other income	6,366	163	6,529	4,519
Total additions	4,055,813,357	566,424,411	4,622,237,768	5,215,797,435
DEDUCTIONS				
Monthly benefits	2,660,977,570	291,568,479	2,952,546,049	2,825,019,884
Refunds of contributions	49,295,932	18,673,920	67,969,852	69,599,237
Administrative expenses	11,282,371	7,414,688	18,697,059	18,125,409
Other expenses	44,027	9,001	53,028	406,276
Total deductions	2,721,599,900	317,666,088	3,039,265,988	2,913,150,806
Net increase in net position	1,334,213,457	248,758,323	1,582,971,780	2,302,646,629
NET POSITION - RESTRICTED FOR PENSIONS				
Beginning of year	39,259,545,408	4,769,765,292	44,029,310,700	41,726,664,071
End of year	$ 40,593,758,865	$ 5,018,523,615	$ 45,612,282,480	$ 44,029,310,700

See accompanying Notes to the Financial Statements.

Notes to the Financial Statements

Note 1 - Plan Descriptions

The Board of Trustees of the Public School Retirement System of Missouri administers two separate retirement systems, the Public School Retirement System of Missouri (PSRS) and the Public Education Employee Retirement System of Missouri (PEERS). The Board of Trustees consists of seven members, three of whom are elected PSRS active members, one an elected active member of PEERS and three persons appointed by the governor, one of whom must be a retired member of either PSRS or PEERS.

The funds of the two Systems are managed simultaneously. Investments of the Systems are combined in a commingled investment pool as allowed by state statute. Each System owns an equity position in the pool and receives proportionate investment income from the pool in accordance with their respective ownership percentage. Each System's allocated share of each type of investment in the pool is shown on the Statements of Fiduciary Net Position. Investment gains and losses are reported in the Statements of Changes in Fiduciary Net Position. Each System's assets may be used only for the payment of benefits to the members of the separate System in accordance with the statutes governing that System as well as expenses required to administer the System.

The Public School Retirement System of Missouri (PSRS)

PSRS is a mandatory cost-sharing multiple employer retirement system for all full-time certificated employees and certain part-time certificated employees of all public school districts in Missouri (except the school districts of St. Louis and Kansas City) and all public community colleges. The System also includes certificated employees of PSRS, Missouri State Teachers' Association, Missouri State High School Activities Association, and certain employees of the state of Missouri who elected to remain covered by PSRS under legislation enacted in 1986, 1987 and 1989. The majority of PSRS members are exempt from Social Security contributions. In some instances, positions may be determined not to be exempt from Social Security contributions. Any PSRS member who is required to contribute to Social Security comes under the requirements of Section 169.070 (9) RSMo, known as the "2/3's statute." PSRS members required to contribute to Social Security are required to contribute two-thirds of the approved PSRS contribution rate and their employer is required to match the contribution. The members' benefits are further calculated at two-thirds the normal benefit amount.

PSRS was established as an independent trust fund by the Missouri General Assembly effective August 1, 1945. Statutes governing the System are found in Sections 169.010-169.141 and Sections 169.560-169.595 RSMo. It is a defined benefit plan providing service retirement, death and disability benefits to its members. Members are vested for service retirement benefits after accruing five years of service. Individuals who (a) are at least age 60 and have a minimum of five years of service, (b) have 30 years of service, or (c) qualify for benefits under the "Rule of 80" (service and age total at least 80) are entitled to a monthly benefit for life, which is calculated using a 2.5% benefit factor. Actuarially age-reduced benefits are available for members with five to 24.9 years of service at age 55 or with 25 years of service (if not yet age 55). Members who are younger than age 55 and who do not qualify under the "Rule of 80" but have between 25 and 29.9 years of service may retire with a lesser benefit factor. Members that are three years beyond normal retirement can elect to have their lifetime monthly benefits actuarially reduced in exchange for the right to also receive a one-time partial lump sum (PLSO) payment at retirement equal to 12, 24, or 36 times the Single Life benefit amount. Annual cost-of-living adjustments (COLAs) are provided for eligible service and disability retirees and for surviving beneficiaries receiving payments under optional benefit plans, up to a lifetime maximum of 80% of the original benefit amount.

For a more detailed summary of benefits for the members of PSRS, refer to the *Summary Plan Description* in the *Actuarial Section* of this report.

Contributions – PSRS members were required to contribute 14.5% of their annual covered salary during fiscal year 2019. Employers were required to match the contributions made by employees. The contribution rate is set each year by the PSRS/PEERS Board of Trustees upon the recommendation of the independent actuary within the contribution restrictions set in Section 169.030 RSMo. The annual statutory increase in the total contribution rate may not exceed 1% of pay. Administrative costs are financed through investment earnings. Contributions for employees of the State of Missouri were made by the state in accordance with the actuarially determined contribution rate needed to fund current costs and prior service costs of state employees as authorized in Section 104.342.8 RSMo.

Members – The number of PSRS members and benefit recipients served by the System at June 30, 2019:

Retirees and beneficiaries receiving benefits			63,072
Inactive members entitled to, but not yet receiving benefits			9,076
Active members:	Vested	60,375	
	Non-vested	18,488	
Total active members			78,863
Other inactive members and terminated accounts			8,999
Total			160,010

Employers – PSRS had 533 contributing employers during fiscal year 2019.

The Public Education Employee Retirement System of Missouri (PEERS)

PEERS is a mandatory cost-sharing multiple employer retirement system for all public school district employees (except the school districts of St. Louis and Kansas City), employees of the Missouri Association of School Administrators, and public community college employees (except the Community College of St. Louis). Employees of covered districts who work 20 or more hours per week on a regular basis and who are not contributing members of the Public School Retirement System of Missouri (PSRS) must contribute to PEERS. Employees of PSRS who do not hold Missouri educator certificates also contribute to PEERS.

PEERS was established as a trust fund by the Missouri General Assembly effective October 13, 1965. Statutes governing the System are found in Sections 169.600 - 169.715 and Sections 169.560-169.595 RSMo. The statutes place responsibility for the operation of PEERS on the Board of Trustees of the Public School Retirement System of Missouri.

PEERS is a defined benefit plan providing service retirement and disability benefits to its members. Members are vested for service retirement benefits after accruing five years of service. Individuals who (a) are at least age 60 and have a minimum of five years of service, (b) have 30 years of service, or (c) qualify for benefits under the "Rule of 80" (service and age total at least 80) are entitled to a monthly benefit for life, which is calculated using a 1.61% benefit factor. Members qualifying for "Rule of 80" or "30-and-out" are entitled to an additional temporary .8% benefit multiplier until reaching minimum Social Security age (currently age 62). Actuarially age-reduced retirement benefits are available with five years of service at age 55. Members who are younger than age 55 and who do not qualify under the "Rule of 80" but have between 25 and 29.9 years of service may retire with a lesser benefit factor. Members that are three years beyond normal retirement can elect to have their lifetime monthly benefits actuarially reduced in exchange for the right to also receive a one-time partial lump sum (PLSO) payment at retirement equal to 12, 24, or 36 times the Single Life benefit amount. Annual cost-of-living adjustments (COLAs) up to a lifetime maximum of 80% of the original benefit amount are provided for eligible service and disability retirees and for surviving beneficiaries receiving payments under optional benefit plans.

For a more detailed summary of benefits for the members of PEERS, refer to the *Summary Plan Description* in the *Actuarial Section* of this report.

Contributions – PEERS members were required to contribute 6.86% of their annual covered salary during fiscal year 2019. Employers were required to match the contributions made by their employees. The contribution rate is set each year by the PSRS/PEERS Board of Trustees upon the recommendation of the independent actuary within the contribution restrictions in Section 169.620 RSMo. The annual statutory increase in the total contribution rate may not exceed 0.5% of pay. Administrative costs proportional to its membership size are reimbursed by PEERS to the Public School Retirement System of Missouri (PSRS) and are financed through investment earnings.

Members - The number of PEERS members and benefit recipients served by the System at June 30, 2019:

Retirees and beneficiaries receiving benefits			31,850
Inactive members entitled to, but not yet receiving benefits			6,744
Active members:	Vested	26,913	
	Non-vested	22,432	
Total active members			49,345
Other inactive members and terminated accounts			30,374
Total			118,313

Employers – PEERS had 530 contributing employers during fiscal year 2019.

Note 2 – Summary of Significant Accounting Policies

Basis of Accounting

For financial reporting purposes, the Systems adhere to accounting principles generally accepted in the United States of America. The Systems apply all applicable pronouncements of the Governmental Accounting Standards Board (GASB).

The Systems' financial statements, notes to the financial statements, and required supplementary information were prepared in conformity with GASB Statement No. 67, *Financial Reporting for Pension Plans*, as amended. GASB Statement No. 67 addresses accounting and financial reporting requirements for pension plans. Significant requirements include an actuarial calculation of total and net pension liability. It also includes comprehensive footnote disclosures regarding the pension liability, the sensitivity of the net pension liability to the discount rate and extensive investment activity disclosures. The total pension liability, determined in accordance with GASB Statement No. 67 is presented in Note 5 - *Net Pension Liability of Employers.*

The financial statements of both Systems were prepared using the accrual basis of accounting. For both Systems, member and employer contributions are recognized when due, pursuant to formal commitments and statutory requirements. Benefits and refunds are recognized when due and payable in accordance with the statutes governing the Systems. Expenses are recognized when the liability is incurred, regardless of when payment is made. Administrative expenses are funded through investment earnings.

Cash

Cash includes cash on hand, demand deposits, and short-term investments with original maturities of three months or less from the date of acquisition.

Receivables

Receivables consist primarily of contributions owed and yet to be remitted by employers, pending investment trades and interest and dividends payable to the Systems as of the end of each fiscal year.

Method Used to Value Investments

Investments are reported at fair value. The fair value of investments is based on published market prices and quotations from major investment brokers at current exchange rates, as available. Many factors are considered in arriving at fair value. Fixed income securities not traded on a national or international exchange are based on equivalent values of comparable securities with similar yield and risk. The value of private equity, private credit and real estate investments that do not have an established market is determined based upon the most current net asset values and activities through year end. When values are not readily available, alternative investments are valued based on a good faith determination by the General Partner.

GASB Statement No. 72 addresses accounting and reporting issues related to fair value measurements. The Statement requires disclosures to be made about fair value measurements, the level of fair value hierarchy, and valuation techniques. Comprehensive footnote disclosure regarding this Statement is presented in Note 4 - *Deposits, Investments and Securities Lending Program.*

Capital Assets

The building and other capital assets are owned by PSRS and are stated at cost less depreciation accumulated since acquisition. The stated value does not purport to represent replacement or realized value. Costs of major additions and improvements are capitalized. Expenditures for maintenance and repairs are charged to operations as incurred. Depreciation is calculated using the straight-line method, with estimated lives ranging from three to 40 years in the following major classes: computers and software, three years; vehicles, five years; equipment, five years; building and land improvements, 15 years; pension administration system, 20 years; building, 40 years.

PSRS allocates depreciation expense to PEERS for the use of capital assets.

Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of net position restricted for pension benefits at June 30, 2019. Actual results could differ from those estimates.

Total Columns

The financial statements include total column information for the prior year. Such information does not include sufficient detail to constitute a presentation in conformity with U.S. generally accepted accounting principles. Accordingly, such information should be read in conjunction with both Systems' financial statements for the year ended June 30, 2018, from which the information was derived. Certain reclassifications have been made to the 2018 totals to conform with the classifications for 2019.

Note 3 – Designations of Net Position – Restricted for Pensions

The Systems designate the net position – restricted for pensions for the following specific purposes:

Public School Retirement System of Missouri

	2019
Designated for Members' Contributions (Member Reserves) – Accumulation of active and terminated member contributions plus interest.	$ 8,355,003,509
Designated for the Payment of Benefits to Present Retirees – Transfers from Member Reserves at retirement and an actuarially determined transfer from Operating Reserves to fund the System's obligation for benefit payments and cost-of-living adjustments to current retirees and beneficiary recipients.	29,429,992,827
Designated for Operating Expenses/Benefits to Future Retirees (Operating Reserves) – Accumulation of employer contributions and investment income used to fund future benefit payments, interest on member accounts and, administration and maintenance expenses of the System.	2,808,762,529
Net Position – Restricted For Pensions	$ 40,593,758,865

Public Education Employee Retirement System of Missouri

	2019
Designated for Members' Contributions (Member Reserves) – Accumulation of active and terminated member contributions plus interest.	$ 1,092,643,691
Designated for the Payment of Benefits to Present Retirees – Transfers from Member Reserves at retirement and an actuarially determined transfer from Operating Reserves to fund the System's obligation for benefit payments and cost-of-living adjustments to current retirees and beneficiary recipients.	2,861,160,127
Designated for Operating Expenses/Benefits to Future Retirees (Operating Reserves) – Accumulation of employer contributions and investment income used to fund future benefit payments, interest on member accounts and, administration and maintenance expenses of the System.	1,064,719,797
Net Position – Restricted For Pensions	$ 5,018,523,615

Note 4 – Deposits, Investments and Securities Lending Program

Custodial Credit Risk

Custodial credit risk for deposits is the risk that, in the event of the failure of a depository financial institution, the Systems will not be able to recover deposits or will not be able to recover collateral securities that are in the possession of an outside party. The custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, the Systems would not be able to recover the value of investment or collateral securities that are in the possession of an outside party. To mitigate custodial credit risk, the Systems require that all deposits be 100% collateralized with securities held in the Systems' name and held by a third party agent.

Deposits

Cash balances include short-term securities held by the custodial bank in a pooled short-term investment fund and operating balances held by the depository banks.

At June 30, 2019, the PSRS carrying amount of deposits at the depository bank was $4,647,411 and the bank balance was $2,781,533. Of the bank balance, $250,000 was covered by federal depository insurance. In addition, the deposits were collateralized with U.S. agency securities held by a third-party institution in the System's name, totaling $2,962,083. An additional $8,206,122 was held in overnight repurchase agreements with a book value of $8,206,122. The overnight repurchase agreements were collateralized with U.S. agency securities held by a third-party institution in the System's name totaling $8,206,122.

At June 30, 2019, the PEERS carrying amount of deposits at the depository bank was $784,796 and the bank balance was $204,758. Of the bank balance, $204,758 was covered by federal depository insurance. In addition, the deposits were collateralized with U.S. agency securities held by a third-party institution in the System's name, totaling $3,864,653. An additional $633,960 was held in overnight repurchase agreements with a book value of $633,960. The overnight repurchase agreements were collateralized with U.S. agency securities held by a third-party institution in the System's name totaling $633,960.

Investment Policy and Asset Allocation

Funds for both Systems that are in excess of a safe operating balance are invested under policies and procedures established by the Board of Trustees. Chapter 169.040 RSMo as amended effective August 13, 1984, authorizes any investment which a prudent person acting in a like capacity and familiar with similar matters would use in the conduct of an enterprise of a like character and with like aims. Any person with fiduciary responsibility with respect to the Systems is covered by this "prudent person" rule.

The Board of Trustees of PSRS and PEERS approved the commingling of assets for purposes of investment as allowed by state statute. In order to implement this change, PSRS and PEERS adopted the Missouri Education Pension Trust Agreement. The Missouri Education Pension Trust (MEPT) 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. For financial statement presentation, MEPT assets, liabilities, revenues, and expenses have been allocated to and presented in each respective system in the basic financial statements as required by investment pools. Due to the fact all invested assets are invested in MEPT, the rate of return for each of the Systems is approximately the same.

The Systems' policy in regard to the allocation of invested assets is established and may be amended by the Board of Trustees. System assets are managed on a total return basis with a long-term objective of achieving and maintaining a fully funded status for the benefits provided by the Systems. The Board of Trustees amended the long term asset allocation at their June 2016 Trustees' meeting. The long-term target for Public Credit was decreased from 12.0% to 7.0%, which resulted in Public Risk Assets decreasing from 60.0% to 55.0%. Private Equity increased from 10.5% to 12.0%, Private Real Estate increased from 7.5% to 9.0% and Private Credit increased from 2.0% to 4.0%, resulting in Private Risk Assets increasing from 20.0% to 25.0%. Implementation of the amended long-term targets will be achieved over a number of years through a disciplined investment approach. The policy benchmarks will change over time as the Systems make meaningful progress towards the new long-term targets. The following table illustrates the Systems' Board of Trustees approved asset allocation as of June 30, 2019.

Investment Type	Long-term Target	Policy Ranges
Public Risk Asset Programs		
U.S. Public Equity	27.0%	16% - 48%
Public Credit	7.0%	0% - 20%
Hedged Assets	6.0%	0% - 25%
Non-U.S. Public Equity	15.0%	8% - 28%
Total Public Risk Assets	**55.0%**	**35% - 75%**
Safe Assets		
U.S. Treasuries	16.0%	0% - 40%
U.S. TIPS	4.0%	0% - 40%
Cash Equivalents	0.0%	0% - 10%
Total Safe Assets	**20.0%**	**10% - 40%**
Private Risk Asset Programs		
Private Equity	12.00%	4% - 15%
Private Real Estate	9.00%	4% - 12%
Private Credit	4.00%	0% - 8%
Total Private Risk Assets	**25.00%**	**10% - 30%**
Total Fund	**100.0%**	

The Systems categorize their fair value measurements within the fair value hierarchy established by U.S. generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset and gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (level 1 measurements) and the lowest priority to unobservable inputs (level 3 measurements). The Systems have classified the fair value measurements on the following page in accordance with the Board approved asset allocation discussed above. The classifications will not directly reconcile to total investments per the Statements of Fiduciary Net Position due to the considerations of cash holdings, other liabilities and accruals.

Level 1 - Unadjusted quoted prices for identical instruments in active markets.

Level 2 - Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which all significant inputs are observable.

Level 3 - Valuations derived from valuation techniques in which significant inputs are unobservable.

Investments that are measured at fair value using the net asset value (NAV) per share (or its equivalent) as a practical expedient are not classified in the fair value hierarchy.

In instances where inputs used to measure fair value fall into different levels in the fair value hierarchy, fair value measurements in their entirety are categorized based on the lowest level input that is significant to the valuation. The Systems' assessment of the significance of particular inputs to these fair value measurements requires judgment and considers factors specific to each asset or liability. The tables on the following page show the fair value leveling of the investments for the Systems.

Short-term securities generally include investments in money market-type securities reported at cost which approximates market or fair value.

Equities within all assets classes that are classified in Level 1 are valued using prices quoted in active markets for those securities. Equity and equity derivative securities classified in Level 2 are securities whose values are derived daily from associated traded securities. Equity securities classified in Level 3 are valued with last trade data having limited trading volume.

Fixed income securities and derivatives within all assets classes that are classified in Level 2 are valued using either a bid evaluation or a matrix pricing technique. Bid evaluations may include market quotations, yields, maturities, call features and ratings. Matrix pricing is used to value securities based on the securities relationship to benchmark quoted prices. Such securities include U.S. Treasuries, corporate and agency bonds, bank loans, and mortgage backed securities. Level 2 fixed income securities have non-proprietary information that was readily available to market participants, from multiple independent sources, which are known to be actively involved in the market.

Investments and Derivatives Measured at Fair Value

Investments by fair value level	Total at 6/30/2019	Fair Value Measurements Level 1	Level 2	Level 3
U.S. Treasuries and TIPS				
U.S. Treasuries	$ 8,217,184,761	$ -	$ 8,217,184,761	$ -
Total U.S. Treasuries and TIPS	8,217,184,761	-	8,217,184,761	-
U.S. public equities				
Equities	6,766,072,558	6,766,072,558	-	-
U.S. Treasuries	532,566,898	-	532,566,898	-
Sovereign Debt	15,098,448	-	15,098,448	-
Total U.S. public equities	7,313,737,904	6,766,072,558	547,665,346	-
Non-U.S. public equities				
Equities	5,017,733,833	5,015,491,463	-	2,242,370
Total Non-U.S. public equities	5,017,733,833	5,015,491,463	-	2,242,370
Short term investments				
Short term investment fund	711,073,832	-	711,073,832	-
Total Short term investments	711,073,832	-	711,073,832	-
Public debt				
Corporate Bonds	1,853,371,001	-	1,853,371,001	-
Bank Loans	4,310,006	-	4,310,006	-
U.S. Treasuries	69,313,147	-	69,313,147	-
Equities	246,795	246,789	-	6
Municipal Bonds	11,322,358	-	11,322,358	-
Total Public Debt	1,938,563,307	246,789	1,938,316,512	6
Hedged assets				
U.S. Treasuries	525,541,575	-	525,541,575	-
Equities	219,016,839	219,016,839	-	-
Corporate Bonds	69,493,854	-	69,493,854	-
Agency Bonds	2,759,160	-	2,759,160	-
Total Hedged assets	816,811,428	219,016,839	597,794,589	-
Private equity				
Equities	377,589	377,589	-	-
Total Private equity	377,589	377,589	-	-
Total investments by fair value level	**$24,015,482,654**	**$12,001,205,238**	**$12,012,035,040**	**$2,242,376**
Total investments measured at the NAV ***(See detailed schedule on the following page)***	**21,163,096,281**			
Total Investments measured at fair value	**$ 45,178,578,935**			

Investment derivative instruments:	6/30/2019	Level 1	Level 2	Level 3
Equity total return swaps	$ 26,614,059	$ -	$ 26,614,059	$ -
Currency swaps	(792,560)	-	(792,560)	-
Interest rate swaps	(618,685)	-	(618,685)	-
Foreign currency forwards	(8,511,201)	-	(8,511,201)	-
Total investment derivative instruments	**$ 16,691,613**	**$ -**	**$ 16,691,613**	**$ -**

	6/30/2019	Level 1	Level 2	Level 3
Total invested securities lending collateral	**$ 258,087,676**	**$ -**	**$ 258,087,676**	**$ -**

Investments Measured at the NAV	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Public Equity Investments				
Passive U.S. Equity Funds	$ 3,098,185,106	$ -	Daily	1 day
Active U.S. Equity Funds	289,856,367	-	Quarterly	45 days
Passive Non-U.S. Equity Fund	444,401,194	-	Daily	2 days
Active Non-U.S. Equity Funds	1,786,636,776	-	Monthly	15 - 30 days
Total Public Equity Investments	5,619,079,443	-		
Hedge Fund Investments				
Asset Allocation/Global Macro	971,650,441	-	Monthly	5 days
Distressed Debt/Credit	784,052,201	-	Quarterly, semi-annual	65 - 90 days
Diversified Beta	388,989,884	-	Quarterly	30 days
Equity Focused	1,697,118,106	-	Monthly, quarterly	5 - 60 days
Multi-Strategy	2,478,149,797	-	Monthly, quarterly	15 - 120 days
Total Hedge Fund Investments	6,319,960,429	-		
Private Risk Investments				
Private Equity	5,159,243,053	4,670,030,713	Not eligible	N/A
Private Credit	465,318,383	708,795,282	Not eligible	N/A
Private Real Estate - closed end funds	1,032,921,733	1,450,465,918	Not eligible	N/A
Private Real Estate - open end funds	2,566,573,240	314,085,667	Quarterly	15 - 180 days
Total Private Risk Investments	9,224,056,409	7,143,377,580		
Total investments measured at the NAV	$ 21,163,096,281	$ 7,143,377,580		

The fair values of investments in certain public equity, hedged assets, and private risk assets are based on the investments' net asset value (NAV) per share (or its equivalent) and are presented in the above table. Investments that are measured at fair value using the net asset value (or its equivalent) as a practical expedient are not classified in the fair value hierarchy.

Public Equity Investments

The public equity investments include two passive U.S. equity funds, two active U.S. equity funds, two passive non-U.S. equity funds and three active non-U.S. equity funds. The passive equity funds provide for basic market exposure with daily liquidity. The active U.S. equity funds provide active industry specific strategies within U.S. markets while the active non-U.S. equity funds provide active investment strategies in the global equity and emerging markets.

Hedged Assets

The hedged assets investment strategy provides diversification and reduced volatility to the total portfolio. The purpose of this program is to enhance the overall risk/return profile 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).

Asset Allocation/Global Macro includes investments in two funds with the strategy of taking long and short positions based on top-down macroeconomic analysis (i.e., interest rates, foreign exchange rates, and commodity prices). Global strategies involve long and short positions in securities of diverse geographical regions such as developed and emerging markets.

Distressed Debt/Credit includes investments in two funds which seek returns by capitalizing on opportunities in financially distressed companies' debt and credit securities.

Diversified Beta includes investments in three funds with a risk parity approach which focuses on the allocation of risk across the portfolio.

Equity Focused includes investments in seven funds with the strategy of taking long positions in attractive equity securities and potentially short positions in unattractive equity securities.

Multi-Strategy includes investments in ten funds which represent a broad style of investing that seeks diverse sources of alpha generation and positive absolute returns by employing a variety of investment strategies. Strategies utilized may include, but are not limited to, convertible bond arbitrage, equity long/short, statistical arbitrage, and merger arbitrage.

Private Risk Assets

Private risk investments are typically very long term in nature, not publicly traded and relatively illiquid. Investments are made in limited partnerships where redemptions are restricted over the life of the partnership. During the life of the partnerships, distributions are received as underlying portfolio investments are realized.

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.

Private Credit investments are comprised primarily of debt-related investments that provide a current yield along with equity participation (usually warrants). Primary strategies are distressed debt, bankruptcy restructurings, mezzanine debt, bank loans, and other credit-drive or debt-related strategies.

Real Estate investments are 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 a diversifier to the overall investment portfolio. The real estate portfolio includes closed-end funds where distributions from each investment will be received as the underlying investments are liquidated and open-end funds which offer redemption options.

Rate of Return

For the year ended June 30, 2019, the money-weighted rate of return, net of all investment expenses and fees, was 6.9%. The money weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested. Time weighted returns (geometric return) for the year ended June 30, 2019 net of all investment expenses and fees, was 6.9%.

Concentration of Credit Risk

Concentration of credit risk is the risk of loss attributed to the magnitude of the Systems' investment in a single issue. To mitigate this risk, the Systems' investment policy prohibits investing more than 5% of the total investment portfolio into any single financial institution or issuer, excluding U.S. government securities. At June 30, 2019, the Systems did not have more than 5% of total investments in a single issue except for U.S. government securities.

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. The Systems' investment policy restricts duration as a means of managing its exposure to fair value losses arising from increased interest rates. In addition, each manager must follow guidelines established relative to the duration of its benchmark. The portfolios are continually monitored to ensure compliance with these guidelines. The following table includes collateral pledged for securities lending collateral. The maturities of all debt securities are presented below:

Security Type	Fair Value at June 30, 2019	< 1 year to maturity	1 to 5 years to maturity	6 to 10 years to maturity	Over 10 years to maturity
U.S. treasuries	$ 9,341,906,527	$ 1,860,529,720	$ 3,905,949,049	$ 2,586,159,712	$ 989,268,046
Agencies	3,359,013	599,853	2,759,160	-	-
Corporate bonds	1,927,174,858	523,499,832	782,490,524	583,368,038	37,816,464
Sovereign debt	20,085,968	4,987,520	15,098,448	-	-
Repurchase agreements	149,531,447	149,531,447	-	-	-
Commercial paper	27,930,794	27,930,794	-	-	-
Certificate of deposit	73,809,202	73,809,202	-	-	-
Derivatives	(340,898)	277,787	-	-	(618,685)
Municipals	11,322,357	-	11,322,357	-	-
Bank deposits	711,073,832	711,073,832	-	-	-
Commingled Funds (see note)					
Bridgewater STIF II	25,952,543	25,952,543	-	-	-
Bridgewater US IL Bond Fund	12,816,200	-	-	12,816,200	-
Bridgewater International Bond Fund	10,618,122	-	-	-	10,618,122
Currency	14,466,571	14,466,571	-	-	-
Total	$12,329,706,536	$ 3,392,659,101	$ 4,717,619,538	$ 3,182,343,950	$ 1,037,083,947
Percentage of Total Fixed Income	**100%**	**27%**	**38%**	**27%**	**8%**

Note: Commingled Funds are presented at the weighted average maturity. These funds do not have a single maturity date; however, the underlying securities have maturity dates. To more accurately reflect the interest rate risk of the Systems, these weighted averages are displayed.

The following table includes the debt maturities for the Systems' deposits and repurchase agreements collateral.

Security Type	Fair Value at June 30, 2019	< 1 year to maturity	1 to 5 years to maturity	6 to 10 years to maturity	Over 10 years to maturity
PSRS - Agencies	$ 11,168,205	$ -	$ 1,096,430	$ 3,186,463	$ 6,885,312
PEERS - Agencies	4,498,613	-	-	232,785	4,265,828

Credit Risk

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The Systems do not have a single investment policy designating the minimum allowable credit rating; however, each manager must follow guidelines established specifically for its managed portfolio. The portfolios are continually monitored to ensure compliance with these guidelines. The following table includes collateral pledged for securities lending collateral. The Systems' debt investments by credit rating category as of June 30, 2019 are presented in the following table.

Security Type	Fair Value at June 30, 2019	%	FDIC Insured	AAA	AA	A	BBB	BB	B	CCC	Not Rated
U.S. treasuries	$ 9,341,906,527	76%	$ -	$ 9,341,906,527	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Agencies	3,359,013	0%	-	3,359,013	-	-	-	-	-	-	-
Corporate bonds	1,927,174,858	16%	-	16,019,442	106,946,067	830,363,056	860,353,077	65,419,999	42,905,698	3,270,625	1,896,894
Sovereign debt	20,085,968	0%	-	4,987,520	-	15,098,448	-	-	-	-	-
Repurchase agreements	149,531,447	1%	-	21,531,447	-	128,000,000	-	-	-	-	-
Commercial paper	27,930,794	0%	-	14,957,350	-	12,973,444	-	-	-	-	-
Certificates of deposit	73,809,202	1%	-	23,334,550	-	50,474,652	-	-	-	-	-
Derivatives	(340,898)	0%	-	-	-	-	-	-	-	-	(340,898)
Municipals	11,322,357	0%	-	10,754,407	567,950	-	-	-	-	-	-
Bank Deposits	711,073,832	6%	711,073,832	-	-	-	-	-	-	-	-
Commingled Funds (see note)											
Bridgewater STIF II	25,952,543	0%	-	25,952,543	-	-	-	-	-	-	-
Bridgewater US IL Bond Fund	12,816,200	0%	-	12,816,200	-	-	-	-	-	-	-
Bridgewater International Bond Fund	10,618,122	0%	-	10,618,122	-	-	-	-	-	-	-
Currency	14,466,571	0%	-	-	-	-	-	-	-	-	14,466,571
Total	$ 12,329,706,536	100%	$ 711,073,832	$ 9,486,237,121	$107,514,017	$1,036,909,600	$ 860,353,077	$ 65,419,999	$ 42,905,698	$ 3,270,625	$16,022,567
Percentage of Total Fixed Income	**100%**		**6%**	**77%**	**1%**	**8%**	**7%**	**1%**	**0%**	**0%**	**0%**

Note: Commingled Funds are presented at the weighted average credit quality. These funds do not carry a rating in and of themselves; however, the underlying securities are all rated. To more accurately reflect the credit risk of the Systems, these weighted averages are displayed. Obligations of the U.S. government or obligations explicitly guaranteed by the U.S. government are not required to be disclosed; however, we feel it shows a more true picture of our fixed income holdings.

All collateral pledged in support of the Systems' deposits and repurchase agreements was held in agency securities with a quality rating of AAA.

Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or a deposit. The Systems do not have a single investment policy designating the allowable exposure to foreign currency; however, each manager must follow guidelines established specifically for its managed portfolio. The portfolios are continually monitored to ensure compliance with these guidelines. The Systems' exposure to foreign currency risk as of June 30, 2019 is presented in the following table.

Currency	Debt	Equity	Currency/Short Term	Total
Argentine Peso	$ -	$ -	$ 431,487	$ 431,487
Australian Dollar	-	139,884,196	1,015,881	140,900,077
Brazilian Real	-	63,520,513	251,885	63,772,398
Canadian Dollar	-	181,621,009	1,708,000	183,329,009
Chilean Peso	-	7,836,920	(145,121)	7,691,799
Colombian Peso	-	3,408,707	(7,432)	3,401,275
Czech Koruna	-	12,623,874	(7,342)	12,616,532
Danish Krone	-	63,821,707	39,209	63,860,916
Egyptian Pound	-	14,104,204	(32,549)	14,071,655
Euro Currency	658,699	1,415,677,278	11,757,507	1,428,093,484
Hong Kong Dollar	-	419,500,683	2,242,384	421,743,067
Hungarian Forint	-	13,182,839	372,555	13,555,394
Indian Rupee	-	137,511,219	237,061	137,748,280
Indonesian Rupiah	-	14,635,613	422,473	15,058,086
Israeli Shekel	-	5,290,295	188,358	5,478,653
Japanese Yen	15,098,448	532,571,862	1,626,244	549,296,554
Malaysian Ringgit	-	27,092,941	88,144	27,181,085
Mexican Peso	-	10,645,685	11,548	10,657,233
New Taiwan Dollar	-	85,143,121	91,796	85,234,917
New Turkish Lira	-	11,314,464	183,182	11,497,646
New Zealand Dollar	-	20,849,672	854,883	21,704,555
Norwegian Krone	-	20,253,840	201,045	20,454,885
Peruvian Nuevo Sol	-	18,277	-	18,277
Philippine Peso	-	15,867,184	16,156	15,883,340
Polish Zloty	-	12,278,513	(42,444)	12,236,069
Pound Sterling	-	389,704,492	700,087	390,404,579
Qatari Rial	-	17,108,455	-	17,108,455
Russian Ruble	-	32,126,323	677,608	32,803,931
Saudi Riyal	-	-	(612)	(612)
Singapore Dollar	-	66,338,621	444,786	66,783,407
South African Rand	-	53,193,326	363,107	53,556,433
South Korean Won	-	119,052,882	(117,873)	118,935,009
Swedish Krona	-	55,560,539	(590,765)	54,969,774
Swiss Franc	-	354,437,786	(1,275,811)	353,161,975
Thailand Baht	-	40,702,187	1	40,702,188
UAE Dirham	-	6,686,748	(5,691)	6,681,057
Yuan Renminbi	-	38,721,266	476,775	39,198,041
Total	**$ 15,757,147**	**$ 4,402,287,241**	**$ 22,176,522**	**$ 4,440,220,910**

Derivatives

Derivatives are generally defined as investment instruments whose cash flows or fair values are derived from the value of some other asset or index. The Systems are parties to derivatives which have off-balance sheet risk. These derivative instruments are used in the normal course of business to generate earnings and reduce exposure to fluctuations in market conditions. The Systems are exposed to various types of credit, market, and legal risk related to these investments. Investment staff monitors these types of investments with extreme care and is not aware of any undue risks at this time. All derivatives are considered investments. Derivatives are reported at fair value on the Statements of Fiduciary Net Position based on quoted market prices when available. In the instances that quoted market prices are unavailable, pricing is obtained via independent pricing sources.

The fair value balances and notional amounts of derivative instruments outstanding as of June 30, 2019, classified by type are as follows:

	Fair Value at June 30, 2019		
Investment Derivatives	**Classification**	**Amount**	**Notional**
Swaps			
Currency swaps	Investments, at fair value	$ (792,560)	$ 15,036,198
Pay-fixed interest rate swaps	Investments, at fair value	(618,685)	10,000,000
Total return swaps - equity	Investments, at fair value	26,614,059	1,827,063,541
Total swaps		**25,202,814**	**1,852,099,739**
Futures			
Equity futures long	Investments, at fair value	-	131,897,175
Equity futures short	Investments, at fair value	-	99,929,091
Treasury futures long	Investments, at fair value	-	124,025,907
Treasury futures short	Investments, at fair value	-	37,414,062
Commodity futures long	Investments, at fair value	-	19,552,460
Total futures		**-**	**412,818,695**
Foreign currency forwards net receivable/payable	Investment Sales and Purchases	(8,511,201)	-
Total Investment Derivatives		**$ 16,691,613**	**$ 2,264,918,434**

Swaps - The Systems' investment managers may enter into various swaps including interest rate swaps, credit default swaps, currency swaps and equity and total return swaps. Swaps represent an agreement between two parties to exchange sequences of cash flows over a period in the future. In the most common type of interest rate swap arrangement, one party agrees to pay fixed interest payments on designated dates to a counterparty who, in turn, agrees to make return interest payments that float with some reference rate. A credit default swap is a contract whereby the credit risk associated with an investment is transferred by entering into an agreement with another party, who in exchange for periodic fees, agrees to make payments in the event of a default or other predetermined credit event. A currency swap is a foreign exchange transaction that trades principal and interest in one currency for the same in another currency. A total return swap is a contract in which one party makes payments based on a set rate, either fixed or variable, while the other party makes payments based on the return of the underlying asset. The underlying asset is typically an index, bond, etc. Gains and losses on swaps are determined based on market values and are recorded in net appreciation (depreciation) in fair value of investments on the Systems' Statements of Changes in Fiduciary Net Position. Net gains on swaps of $152.3 million were recognized for the fiscal year ended June 30, 2019.

Futures - Futures represent commitments to purchase (asset) or sell (liability) securities at a future date and at a specified price. Futures contracts are traded on organized exchanges (exchange traded) thereby minimizing the Systems' credit risk. The net change in the value of futures contracts is settled daily in cash with the exchanges. Net gains or losses resulting from the daily settlements are included in net appreciation (depreciation) in fair value of investments on the Systems' Statements of Changes in Fiduciary Net Position. The Systems recognized net losses on futures contracts of $5.3 million during the fiscal year ended June 30, 2019.

Options - Options represent or give buyers the right, but not the obligation, to buy (call) or sell (put) an asset at a preset price over a specified period. The option's price is usually a small percentage of the underlying asset's value. As a writer of financial options, the Systems' investment managers receive a premium at the outset of the agreement and bear the risk of an unfavorable change in the price of the financial instrument underlying the option. As a purchaser of financial options, the Systems' investment managers pay a premium at the outset of the agreement and the counterparty bears the risk of an unfavorable change in the price of the financial instrument underlying the option. Net gains or losses resulting from such obligations are included in net appreciation (depreciation) in fair value of investments on the Systems' Statements of Changes in Fiduciary Net Position. The Systems had no option activity during the fiscal year ended June 30, 2019.

Currency forwards - Currency forwards represent forward foreign exchange contracts that are entered into in order to hedge the exposure to changes in foreign currency rate on the foreign currency dominated portfolio holdings. A forward foreign exchange contract is a commitment to purchase or sell a foreign currency at a future date at a negotiated forward rate. The gain or loss arising from the difference between the original contracts and the closing of such contracts is included in net appreciation (depreciation) in fair value of investments on the Systems' Statements of Changes in Fiduciary Net Position. The Systems recognized net gains on such contracts of $45.3 million during the fiscal year ended June 30, 2019.

Derivative Risk - Derivatives that are exchange traded are not subject to credit risk. No derivatives held are subject to custodial credit risk.

At June 30, 2019 the counterparties' credit ratings for currency forwards, options and swaps are subject to credit risk as shown below:

The Systems are exposed to interest rate risk on their interest rate swaps. As the variable portion of the swaps move in the market, the Systems' exposure increases and decreases. The Systems are exposed to termination risk. The Systems' investment managers or their counterparties may terminate a derivative if either party fails to perform under the terms of the contract.

The Systems' derivatives are governed by ISDA Master Agreements between the Systems and the Counterparties. These agreements set forth collateral requirements and applicable netting arrangements. Foreign currency risks are reflected on page 37.

The Systems could be exposed to risk if the counterparties to the contracts are unable to meet the terms of the contracts. The Systems' investment managers seek to control this risk through counterparty credit evaluations and approvals, counterparty credit limits, and exposure monitoring procedures. The Systems anticipate that the counterparties will be able to satisfy their obligations under the contracts.

The derivative financial instruments discussed involve, to varying degrees, elements of market risk to the extent of future market movements in excess of the amounts recognized in the Statements of Fiduciary Net Position. Market risk arises from the potential unfavorable change in the value of the underlying instruments. The contract or notional amounts of these instruments reflect the extent of the Systems' involvement in each class of financial instrument; however, these amounts do not represent the exposure to market loss. Additional derivatives may be held in limited partnerships and commingled funds that are not reflected below.

Derivative Counterparty Credit Ratings

Quality Rating	Swaps	Forwards	Total
AA	$ -	$ (361,936)	$ (361,936)
A	23,079,598	(8,129,033)	14,950,565
BBB	-	(20,232)	(20,232)
Total subject to credit risk	**$ 23,079,598**	**$(8,511,201)**	**$ 14,568,397**

Security Lending Activity

Under the "prudent person" authority of the governing statutes and in accordance with the policies set by the Board of Trustees, the Systems lend securities to broker-dealers and banks pursuant to a form of loan agreement. The Systems' custodial bank is authorized to act as the Systems' agent to lend available securities to approved broker-dealers and banks subject to the receipt of acceptable collateral.

During the fiscal year, the Systems' custodial bank lent, on behalf of the Systems, securities to participating broker-dealers. The broker-dealers must provide collateral in the form of cash. The Systems did not impose restrictions during the fiscal year on the amount of loans that the custodial bank made on their behalf. Borrowers were required to deliver collateral for each loan equal to: (1) in the case of loaned securities denominated in U.S. dollars or whose primary trading market was located in the United States, or sovereign debt issued by foreign governments, 102% of the fair value of the loaned securities and (2) in the case of loaned securities not denominated in U.S. dollars or whose primary trading market was not located in the United States, 105% of the fair value of the loaned securities.

Pursuant to the lending agreement, the custodial bank has an obligation to provide a form of indemnification to the Systems in the event of default by a borrower. There were no violations of the contractual provisions nor were there any borrower or lending agent default losses during the fiscal year.

The fair value of securities on loan as of June 30, 2019 was $251,598,362. On June 30, 2019 the Systems had no credit risk exposure to borrowers as the cash and securities collateral amounts received exceeded amounts on loan. Loans are generally terminable on demand. However, with the prior approval of the Systems, loans may be made on the basis of a specified termination date, with or without providing for the right of the Systems to terminate or substitute equivalent securities. As of June 30, 2019, there were no term loans.

Cash collateral is invested in separately managed accounts in accordance with the investment guidelines approved by the Systems. The primary investment objective is the preservation of principal. As of June 30, 2019, the cost basis of the invested cash collateral totaled $258,074,683 and the estimated fair value totaled $258,087,676.

The Systems' recognized net depreciation of $2,541 for the year ended June 30, 2019 on the invested collateral account. Such is reported as net (depreciation) appreciation in fair value of security lending collateral on the Statements of Changes in Fiduciary Net Position.

The weighted average duration of invested collateral as of June 30, 2019 was 13 days and an average final maturity of approximately 34 days. Because the loans were terminable at will, their duration did not match the duration of the investments made with cash collateral.

Note 5 – Net Pension Liability of Employers

The components of the net pension liability of the Systems' employers at June 30, 2019 are as follows:

	Total Pension Liability (TPL) (a)	Plan Fiduciary Net Position-Restricted for Pensions (b)	Net Pension Liability (NPL) (a - b)	Plan Fiduciary Net Position as a % of TPL (b/a)	Covered Payroll (c)	Employers' NPL as a % of Covered Payroll ((b-a)/c)
PSRS	$ 47,973,829,236	$ 40,593,758,865	$ 7,380,070,371	84.6%	$ 4,844,248,703	152.3%
PEERS	$ 5,809,484,699	$ 5,018,523,615	$ 790,961,084	86.4%	$ 1,665,654,047	47.5%

Actuarial Assumptions - Actuarial valuations of the Systems involve estimates of the reported amount and assumptions about probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality and future salary increases. Amounts determined regarding the net pension liability are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. The Board of Trustees adopts actuarial assumptions, each of which individually represents a reasonable long-term estimate of anticipated experience for the Systems, derived from experience studies conducted every fifth year. The most recent comprehensive experience studies were completed in June 2016. All economic and demographic assumptions were reviewed and updated, where appropriate, based on the results of the study and effective with the June 30, 2016 valuation. The next experience studies are scheduled for 2021. For the June 30, 2018 valuations, the investment rate of return was reduced from 7.6% to 7.5% and was updated in accordance with the funding policies amended by the Board of Trustees at their October 2018 meeting. No additional assumption changes have occurred.

The Schedules of Employer's Net Pension Liability presents multi-year trend information about whether the plan net positions are increasing or decreasing over time relative to the total pension liability. These schedules are presented in the required supplementary information following the notes to the financial statements. The total pension liability was determined by an actuarial valuation as of June 30, 2019. A summary of the significant actuarial assumptions as of June 30, 2019 are shown on the following page.

Measurement Date	**June 30, 2019**
Valuation Date	**June 30, 2019**
Actuarial Cost Method	Entry Age Normal
Investment Rate of Return	7.50%
Inflation	2.25%
Total Payroll Growth	
PSRS	2.75% per annum, consisting of 2.25% inflation, 0.25% additional inflation due to the inclusion of health care costs in pension earnings, and 0.25% of real wage growth.
PEERS	3.25% per annum, consisting of 2.25% inflation, 0.50% additional inflation due to the inclusion of health care costs in pension earnings, and 0.50% of real wage growth.
Individual Salary Growth	
PSRS	3.00% - 9.50%, depending on service and including 2.25% inflation, 0.25% additional inflation due to the inclusion of health care costs in pension earnings, 0.25% of real wage growth for productivity, and real wage growth for merit, promotion and seniority of 0.25% to 6.75%.
PEERS	4.00% - 11.00%, depending on service and including 2.25% inflation, 0.50% additional inflation due to the inclusion of health care costs in pension earnings, 0.50% of real wage growth for productivity, and real wage growth for merit, promotion and seniority of 0.75% to 7.75%.
Cost-of-Living Increases	
PSRS	1.65% compounded annually, beginning on the second January after retirement and capped at 80% lifetime increase. The assumption increases from 1.30% to 1.65% over seven years.
PEERS	1.65% compounded annually, beginning on the fourth January after retirement and capped at 80% lifetime increase. The assumption increases from 1.30% to 1.65% over seven years.
Mortality Assumption	
Actives PSRS	RP 2006 White Collar Employee Mortality Table, multiplied by an adjustment factor of 0.75 at all ages for both males and females, with static projection using the 2014 SSA Improvement Scale to 2028.
PEERS	RP 2006 Total Dataset Employee Mortality Table, multiplied by an adjustment factor of 0.75 at all ages for both males and females, with static projection using the 2014 SSA Improvement Scale to 2028.
Non-Disabled Retirees, Beneficiaries and Survivors: PSRS	RP 2006 White Collar Mortality Table multiplied by the adjustment factors shown in the table below, with static projections using the 2014 SSA Improvement Scale to 2028.

Age	Males	Females
<60	1.00	1.00
60-74	0.89	0.67
75-89	1.05	0.91
>=90	1.05	1.16

PEERS: RP 2006 Total Dataset Mortality Table multiplied by the adjustment factors shown in the table below, with static projections using the 2014 SSA Improvement Scale to 2028.

Age	Males	Females
<60	1.00	1.00
60-74	1.49	0.77
75-89	1.27	1.03
>=90	1.16	1.04

Disabled Retirees RP 2006 Disabled Retiree Mortality Table, with static projections using the 2014 SSA Improvement Scale to 2028.

Sensitivity of Net Pension Liability

The sensitivity of the net pension liability of employers to changes in the discount rate is presented below. The net pension liability of employers calculated using the discount rate of 7.5% is presented as well as what the employers' net pension liability would be using a discount rate that is 1.0% lower (6.5%) or 1.0% higher (8.5%) than the current rate.

		1% Decrease (6.5%)	Current Rate (7.5%)	1% Increase (8.5%)
PSRS	Net Pension Liability (Asset)	$ 13,425,639,223	$ 7,380,070,371	$ 2,354,968,836
PEERS	Net Pension Liability (Asset)	$ 1,502,009,544	$ 790,961,084	$ 194,568,000

Long-Term Expected Rate of Return

The long-term expected rate of return on investments was determined in accordance with Actuarial Standard of Practice (ASOP) No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations.* ASOP No. 27 provides guidance on the selection of an appropriate assumed rate of return. The long-term expected rate of return on the Systems' investments was determined using a building-block method in which best-estimate ranges of expected future real rates of returns (expected returns, net of investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the Systems' target allocation as of June 30, 2019 are summarized below along with the long term geometric return. Geometric return (also referred to as the time weighted return) is considered standard practice within the investment management industry. Geometric returns represent the compounded rate of growth of a portfolio. The method eliminates the effects created by cashflows.

Asset Class	Target Asset Allocation	Long-Term Expected Real Return Arithmetic Basis	Weighted Long-Term Expected Real Return Arithmetic Basis
U.S. Public Equity	27.0 %	5.16 %	1.39 %
Public Credit	7.0 %	2.17 %	0.15 %
Hedged Assets	6.0 %	4.42 %	0.27 %
Non-U.S. Public Equity	15.0 %	6.01 %	0.90 %
U.S. Treasuries	16.0 %	0.96 %	0.15 %
U.S. TIPS	4.0 %	0.80 %	0.03 %
Private Credit	4.0 %	5.60 %	0.22 %
Private Equity	12.0 %	9.86 %	1.18 %
Private Real Estate	9.0 %	3.56 %	0.32 %
Total	100.0 %		4.61 %
		Inflation	2.25 %
		Long-term arithmetical nominal return	6.86 %
		Effect of covariance matrix	0.64 %
		Long-term expected geometric return	7.50 %

The long-term expected rate of return used to measure the total pension liability was 7.5% as of June 30, 2019 and is consistent with the long-term expected geometric return on plan investments. The actuarial assumed rate of return was 8.0% from 1980 through fiscal year 2016. The Board of Trustees adopted a new actuarial assumed rate of return of 7.75% effective with the June 30, 2016 valuation based on the actuarial experience studies and asset-liability study conducted during the 2016 fiscal year. The Board of Trustees further reduced the assumed rate of return to 7.6% effective with the June 30, 2017 valuation and then again with the June 30, 2018 valuation to 7.5%. The projection of cash flows used to determine the discount rate assumed that employer contributions would be made at the actuarially calculated rate computed in accordance with assumptions and methods stated in the funding policy adopted by the Board of Trustees, which requires payment of the normal cost and amortization of the unfunded actuarially accrued liability in level percent of employee payroll installments over 30 years utilizing a closed period, layered approach. Based on this assumption, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members.

Note 6 – Retirement Plans

Section 401(a) Defined Benefit Plan

All full-time System employees holding valid Missouri educator certificates are covered by PSRS. All other eligible employees are members of PEERS. Both Systems provide retirement and disability benefits, annual cost-of-living adjustments and death benefits to plan members and beneficiaries. Chapter 169 RSMo contains the statutory provisions of both Systems.

PSRS members were required to contribute 14.5% of their annual covered salary during fiscal years 2019, 2018 and 2017. PSRS, as the employer, was required to match that amount. The contribution rate is set each year by the Board of Trustees upon the recommendation of the independent actuary within the contribution restrictions set in Section 169.030 RSMo. Employer contributions to PSRS totaled $84,515 for the 2019 fiscal year, $67,424 for the 2018 fiscal year and $47,196 for the 2017 fiscal year. The amounts for these years are equal to the required contributions. PEERS members were required to contribute 6.86% of their annual covered salary during fiscal years 2019, 2018 and 2017. PSRS, as the employer, was required to match that amount. The contribution rate is set each year by the Board of Trustees upon the recommendation of the independent actuary within the contribution restrictions in Section 169.620 RSMo. Employer contributions to PEERS totaled $794,871 for the 2019 fiscal year, $756,101 for the 2018 fiscal year and $734,395 for the 2017 fiscal year. The amounts for these years are equal to the required contributions.

PSRS and PEERS, as the administrators for the defined pension plans, are also participating employers of the Systems. The administrative expenses of the Systems are included in the deductions to the Systems' fiduciary net position. While the employer contributions of the other participating employers are funded from outside revenue sources, the employer contributions of PSRS and PEERS are funded from sources already recognized as revenues – earnings on plan investments. Attempting to allocate a portion of the net pension liability to PSRS and PEERS would result in an allocation of the net pension liability to the other participating employers.

Accordingly, PSRS and PEERS will exclude its contributions from the employer proportionate share calculation for the reporting of a net pension liability, by assigning itself a proportionate share of 0%.

Section 457 Deferred Compensation Plan

A voluntary Section 457 deferred compensation plan is administered to provide additional retirement benefits for employees. The plan provides for employer-matching contributions up to a set maximum. The total contributions are subject to the limitations established in IRC Section 457. The Board of Trustees has authority to establish the employer contribution levels. For most employees, the System will match $50 plus 0.52% of salary per month. For certain employees, the System will make employer-paid contributions of $18,500 per year plus $6,000 in catch up contributions, if eligible. This is governed by individual employment contracts as approved by the Board of Trustees.

All employees immediately vest in the employer-matching and employer-paid contributions. Employer-matching contributions totaled $118,410 and employer-paid contributions totaled $68,250 for the 2019 fiscal year. Employee contributions totaled $462,727 for the 2019 fiscal year.

Maintenance of individual member accounts and custody of assets have been contracted to a third-party administrator and investment custodian. Total contributions are sent directly to the third-party administrator by the employer. Employees can self-direct investments of their contributions and their respective share of matching contributions in a number of investment options. Because the System does not hold the plan's assets and does not have significant administrative responsibilities, the plan's assets and changes in net assets are not reported in the Systems' financial statements.

The Systems established an unfunded Section 457(f) non-qualified deferred compensation plan for certain employees. The plan is subject to Internal Revenue Code section 457(f), and to the extent applicable, Internal Revenue Code section 409A. Employees approved for participation in the plan by the Systems' Board of Trustees may acquire a vested interest in a deferred compensation award which is credited to the account of the member under terms approved by the Board of Trustees. The value of the member's account shall be subject to a risk of forfeiture based on the applicable vesting schedule determined for the member. As of June 30, 2019, employees had a vested interest under the plan of $71,223 and disbursements of $27,981 were made from the plan for the year then ended.

Section 401(a) Defined Contribution Plan

The Systems established a 401(a) defined contribution plan for certain employees. The employees are approved for participation in the plan by the Systems' Board of Trustees. The plan is a tax qualified plan under Section 401(a) of the Internal Revenue Code and all contributions by or on behalf of employees are tax deferred until time of withdrawal. All employees immediately vest in employer-paid contributions. Employer-paid contributions totaled $55,000 for the 2019 fiscal year.

Maintenance of individual member accounts and custody of assets have been contracted to a third-party administrator and investment custodian. Total contributions are sent directly to the third-party administrator by the employer. Employees can self-direct investments of their contributions in a number of investment options. Because the System does not hold the plan's assets and does not have significant administrative responsibilities, the plan's assets and changes in net assets are not reported in the Systems' financial statements.

Note 7 – Other Post-Employment Benefit Plans

Post-Employment Staff Retiree Healthcare Plan

Plan Description, Funding Policy and Benefits Provided – The Public School Retirement System of Missouri Staff Retiree Healthcare Program (SRHP) is a single-employer defined benefit other post-employment benefit (OPEB) plan administered by PSRS. SRHP is administered as required by RSMo 169.590. SRHP provides a healthcare premium implicit rate subsidy to eligible staff retirees and their dependents provided they pay 100% of the blended healthcare premium. The blended healthcare premium is based on all active and retired employees. Retiree healthcare benefits are funded on a pay-as-you-go basis, with premiums determined annually. Therefore, no formal trust has been established for the SRHP. The PSRS/PEERS Board of Trustees determines the funding of benefits and any benefit amendments. There is no continuing obligation to provide benefits beyond each calendar year. SRHP does not issue a stand-alone public financial report.

Employees covered by benefit terms:

Retirees and spouses of retirees receiving benefits	16
Active employees	134
Total	150

OPEB Liability – The components of the net OPEB Liability of the SRHP as of June 30, 2019 are as follows:

Total OPEB Liability - Beginning of the year	$ 3,788,863
Service cost	151,794
Interest Costs	132,375
Experience (gains) losses	74,147
Assumption changes	(259,345)
Plan amendments	-
Benefit payments	(1,850)
Total OPEB Liability - End of year	$ 3,885,984
OPEB Plan Fiduciary Net Position	$ -
Net OPEB Liability	$ 3,885,984

OPEB Expense – The components of the OPEB expense for the year ended June 30, 2019 are as follows:

Service Cost	$ 151,794
Plan Amendments	-
Interest Costs	132,375
Recognition of deferred (inflows) outflows of resources related to:	
Liability experiences (gains) losses	20,453
Assumption changes (gains) losses	(41,755)
Total Recognition of deferred (inflows) outflows of resources	(21,302)
Total collective OPEB expense recognized	$ 262,867

Actuarial Method and Assumptions - The total OPEB liability was determined by an actuarial valuation as of June 30, 2019. Projections of benefits for financial reporting purposes are based on the substantive plan (the plan as understood by the employer and the plan members) and include the types of benefits provided at the time of each valuation and the historical pattern of sharing of benefit costs between the employer and plan members to that point. The actuarial assumptions and methods used in the valuation are based on prior plan experience and industry trends. The nature of the plan design and overall plan size does not allow for full scale periodic experience studies; therefore such a study has not been conducted. Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality and healthcare cost trends. Amounts determined regarding the total OPEB liability and expense are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future.

In the June 30, 2019 actuarial valuation, the following actuarial assumptions and methods were used:

Measurement date	June 30, 2019
Valuation date	June 30, 2019
Actuarial cost method	Entry Age Normal
Actuarial value of assets	No Assets (pay-as-you-go)
Amortization method	Level Percent Open
Discount rate	3.36% per year for June 30, 2018 2.46% per year effective June 30, 2019
Wage inflation	3.5% per year for June 30, 2015 and prior years 3.25% per year effective June 30, 2016
Healthcare trend rate	7.0% in fiscal year 2019, decreasing by one-half percentage point per year to an ultimate of 4.5% in fiscal year 2024 and after
Mortality	
Active members	Based on 75% of the RP-2006 Mortality Tables with static projecting to 2028 using the 2014 Improvement Scale.
Non-disabled retirees and beneficiaries	Based on the RP-2006 Mortality Tables with plan-specific experience adjustments and static projection to 2028 using the 2014 SSA Improvement Scale
Disabled retirees	Based on the RP-2014 Disabled Retiree Mortality Table, adjusted to 2006, with static projection to 2018 using the 2014 SSA Improvement Scale

Discount Rate - GASB Statement No. 75 requires plans not administered through a trust to utilize the yield or index rate for 20-year, tax-exempt general obligation municipal bonds with and average rating of AA/Aa or higher. The Systems utilized the US. General Obligation AA Municipal Bond Yield Curve for 20 years for the June 30, 2019 and 2018 valuations. The June 30, 2019 rate was 2.46% and the June 30, 2018 rate utilized for remeasurement was 3.36%. The movement in the yield on the 20 Year US. General Obligation AA Municipal Bond is considered an assumption change for reporting purposes.

Deferred Inflows and Outflows of Resources - As of June 30, 2019, the Systems reported deferred outflows of resources and deferred inflows of resources from the following sources related to the SRHP:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Balance of Deferred Outflows and Inflows Due to:		
Differences between expected and actual experience	$ 152,492	$ -
Changes of assumptions	-	311,180
Total	$ 152,492	$ 311,180

Amounts reported as collective deferred (inflows) / outflows of resources are to be recognized in pension expense as follows:

Year Ending June 30:	
2020	$ (21,302)
2021	(21,302)
2022	(21,302)
2023	(21,302)
2024	(21,302)
Thereafter	(52,178)
	$ (158,688)

Sensitivity of the net OPEB liability to changes in the discount rate and health care cost trend rate. – The following table presents the sensitivity of the net OPEB liability to changes in the discount rate. The net OPEB liability calculated using the discount rate of 2.46% is presented as well as what the net OPEB liability would be using a discount rate that is 1.0% lower (1.46%) or 1.0% higher (3.46%) than the current rate.

Discount Rate Sensitivity			
	1% Decrease (1.46%)	Current Rate (2.46%)	1% Increase (3.46%)
Net OPEB Liability	$ 4,328,949	$ 3,885,983	$ 3,484,975

The following table presents the sensitivity of the net OPEB liability to changes in the healthcare trend rate. The net OPEB liability calculated using the healthcare trend rate of 7.0% is presented as well as what the net OPEB liability would be using a healthcare trend rate that is 1.0% lower (6.0%) or 1.0% higher (8.0%) than the current rate.

Trend Rate Sensitivity			
	1% Decrease (6.0%)	Current Rate (7.0%)	1% Increase (8.0%)
Net OPEB Liability	$ 3,369,938	$ 3,885,983	$ 4,502,505

Post-Employment Health Plan

PSRS maintains a Post-Employment Health Plan ("PEHP") for employees. Upon termination, an employee will receive payment at the rate of one day of pay for each two days of accrued sick leave up to 100 days of accrued sick leave (50 days paid). Any days above 100 will be forfeited. All payments under the PEHP in excess of $1,000 will be transferred into a PEHP account which can be used to pay health insurance premiums for the employee or dependent at any time in the future. If an employee is retiring, the payments can be transferred back to PSRS on a monthly basis to cover the cost of health insurance for the retiree. The amount paid into the PEHP was $50,132 for four employees during 2019.

Note 8 – Risk Management

The Systems are exposed to various risks of loss related to natural disasters, errors and omissions, loss of assets, torts, etc. The Systems have chosen to cover such losses through the purchase of commercial insurance. There have been no material insurance claims filed or paid during the past three years.

The Systems have a disaster recovery plan that provides for continued computer operations at a remote location should the retirement office be unavailable for normal operations.

Note 9 – Commitments and Contingencies

Commitments to the future purchase of investments at June 30, 2019 totaled $2,686,685,281.

Total unfunded capital commitments to private real estate, private equity and other alternative investments totaled approximately $7.1 billion as of June 30, 2019. The unfunded commitments are not recorded in the Statements of Fiduciary Net Position.

Certain legal proceedings are pending with PSRS and PEERS arising from normal activities. Although unable to predict the outcome of these matters, the Systems believe the final outcome of these actions will not have a material adverse effect on the Systems' financial statements.

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Required Supplementary Information

Schedules of Changes in the Employers' Net Pension Liability

Public School Retirement System of Missouri

Year Ended:	June 30, 2019	June 30, 2018	June 30, 2017	June 30, 2016
Total pension liability				
Service cost	$ 830,084,321	$ 792,276,388	$ 740,176,751	$ 842,548,463
Interest cost	3,466,455,926	3,346,220,624	3,198,060,384	3,263,288,365
Difference between actual and expected experience	(314,439,382)	137,516,335	60,942,067	(641,098,601)
Assumption changes	-	531,202,248	1,279,805,826	100,247,551
Plan amendments	-	-	-	-
Benefit payments	(2,710,273,502)	(2,606,985,013)	(2,521,832,399)	(2,430,906,732)
Net change in total pension liability	1,271,827,363	2,200,230,582	2,757,152,629	1,134,079,046
Total pension liability - beginning of year	$ 46,702,001,873	$ 44,501,771,291	$ 41,744,618,662	$ 40,610,539,616
Total pension liability - end of year (a)	$ 47,973,829,236	$ 46,702,001,873	$ 44,501,771,291	$ 41,744,618,662
Plan Fiduciary Net Position				
Employer contributions	$ 712,545,096	$ 696,970,398	$ 684,857,718	$ 670,794,045
Member contributions	747,402,726	726,996,161	719,625,373	704,785,734
Net investment return	2,595,865,535	3,173,735,918	4,104,123,251	533,180,245
Benefit payments, including refunds of member contributions	(2,710,273,502)	(2,606,985,013)	(2,521,832,399)	(2,430,906,732)
Administrative and other expenses	(11,326,398)	(11,418,119)	(10,497,712)	(11,562,965)
Net change in plan fiduciary net position	1,334,213,457	1,979,299,345	2,976,276,231	(533,709,673)
Plan fiduciary net position - beginning of year	$ 39,259,545,408	$ 37,280,246,063	$ 34,303,969,832	$ 34,837,679,505
Plan fiduciary net position - end of year (b)	$ 40,593,758,865	$ 39,259,545,408	$ 37,280,246,063	$ 34,303,969,832
Net pension liability - end of year (a-b)	$ 7,380,070,371	$ 7,442,456,465	$ 7,221,525,228	$ 7,440,648,830

Public Education Employee Retirement System of Missouri

Year Ended:	June 30, 2019	June 30, 2018	June 30, 2017	June 30, 2016
Total pension liability				
Service cost	$ 170,543,513	$ 161,028,014	$ 150,975,958	$ 161,391,660
Interest cost	417,341,777	397,675,858	374,497,203	372,184,628
Difference between actual and expected experience	(10,635,802)	117,686	3,076,923	(51,257,557)
Assumption changes	-	61,921,295	140,420,925	65,420,724
Plan amendments	-	-	-	-
Benefit payments	(310,242,399)	(287,634,108)	(269,268,101)	(250,390,477)
Net change in total pension liability	267,007,089	333,108,745	399,702,908	297,348,978
Total pension liability - beginning of year	$ 5,542,477,610	$ 5,209,368,865	$ 4,809,665,957	$ 4,512,316,979
Total pension liability - end of year (a)	$ 5,809,484,699	$ 5,542,477,610	$ 5,209,368,865	$ 4,809,665,957
Plan Fiduciary Net Position				
Employer contributions	$ 120,042,046	$ 115,103,143	$ 111,239,585	$ 106,717,021
Member contributions	126,609,105	121,467,850	118,446,790	114,257,497
Net investment return	319,773,260	381,523,965	485,046,867	60,317,387
Benefit payments, including refunds of member contributions	(310,242,399)	(287,634,108)	(269,268,101)	(250,390,478)
Administrative and other expenses	(7,423,689)	(7,113,566)	(6,377,808)	(6,981,573)
Net change in plan fiduciary net position	248,758,323	323,347,284	439,087,333	23,919,854
Plan fiduciary net position - beginning of year	$ 4,769,765,292	$ 4,446,418,008	$ 4,007,330,675	$ 3,983,410,821
Plan fiduciary net position - end of year (b)	$ 5,018,523,615	$ 4,769,765,292	$ 4,446,418,008	$ 4,007,330,675
Net pension liability - end of year (a-b)	$ 790,961,084	$ 772,712,318	$ 762,950,857	$ 802,335,282

Note: This schedule is intended to show information for ten years. Additional years will be displayed as they become available.

June 30, 2015	June 30, 2014
$ 836,085,151	$ 849,712,130
3,019,050,250	2,885,182,982
598,417,056	226,591,816
-	-
-	-
(2,326,196,773)	(2,236,468,407)
2,127,355,684	1,725,018,521
$ 38,483,183,932	$ 36,758,165,411
$ 40,610,539,616	$38,483,183,932
$ 656,924,899	$ 643,989,869
689,187,215	679,390,918
1,447,169,205	4,927,198,588
(2,326,196,773)	(2,236,468,407)
(10,013,601)	(8,919,201)
457,070,945	4,005,191,767
$ 34,380,608,560	$ 30,375,416,793
$ 34,837,679,505	$ 34,380,608,560
$ 5,772,860,111	$ 4,102,575,372

June 30, 2015	June 30, 2014
$ 156,599,641	$ 159,672,364
333,780,285	315,131,402
45,518,402	(14,308,876)
-	-
-	-
(235,070,181)	(216,624,810)
300,828,147	243,870,080
$ 4,211,488,832	$ 3,967,618,752
$ 4,512,316,979	$ 4,211,488,832
$ 103,624,310	$ 100,699,735
110,443,660	106,420,656
163,719,526	544,154,941
(235,070,010)	(216,624,810)
(5,629,551)	(4,840,432)
137,087,935	529,810,090
$ 3,846,322,886	$ 3,316,512,796
$ 3,983,410,821	$ 3,846,322,886
$ 528,906,158	$ 365,165,946

Public School Retirement System of Missouri and
Public Education Employee Retirement System of Missouri

Required Supplementary Information

Schedules of Employers' Net Pension Liability

Public School Retirement System of Missouri

Year Ended	Total Pension Liability (TPL) (a)	Plan Fiduciary Net Position - Restricted for Pensions (b)	Net Pension Liability (NPL) (a - b)	Plan Fiduciary Net Position as a % of TPL (b/a)	Covered Payroll (c)	Employers' NPL as a % of Covered Payroll ((b-a)/c)
6/30/14	$ 38,483,183,932	$ 34,380,608,560	$ 4,102,575,372	89.3%	$ 4,425,567,630	92.7%
6/30/15	40,610,539,616	34,837,679,505	5,772,860,111	85.8%	4,508,241,581	128.1%
6/30/16	41,744,618,662	34,303,969,832	7,440,648,830	82.2%	4,556,137,282	163.3%
6/30/17	44,501,771,291	37,280,246,063	7,221,525,228	83.8%	4,655,169,121	155.1%
6/30/18	46,702,001,873	39,259,545,408	7,442,456,465	84.1%	4,759,665,456	156.4%
6/30/19	47,973,829,236	40,593,758,865	7,380,070,371	84.6%	4,844,248,703	152.3%

Public Education Employee Retirement System of Missouri

Year Ended	Total Pension Liability (TPL) (a)	Plan Fiduciary Net Position - Restricted for Pensions (b)	Net Pension Liability (NPL) (a - b)	Plan Fiduciary Net Position as a % of TPL (b/a)	Covered Payroll (c)	Employers' NPL as a % of Covered Payroll ((b-a)/c)
6/30/14	$ 4,211,488,832	$ 3,846,322,886	$ 365,165,946	91.3%	$ 1,442,700,979	25.3%
6/30/15	4,512,316,979	3,983,410,821	528,906,158	88.3%	1,469,771,528	36.0%
6/30/16	4,809,665,957	4,007,330,675	802,335,282	83.3%	1,519,081,146	52.8%
6/30/17	5,209,368,865	4,446,418,008	762,950,857	85.4%	1,558,183,433	49.0%
6/30/18	5,542,477,610	4,769,765,292	772,712,318	86.1%	1,636,007,948	47.2%
6/30/19	5,809,484,699	5,018,523,615	790,961,084	86.4%	1,665,654,047	47.5%

Note: This schedule is intended to show information for ten years. Additional years will be displayed as they become available.

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Required Supplementary Information

Schedules of Employer Contributions

Public School Retirement System of Missouri

Year Ended June 30	Actuarially Determined Contribution	Actual Employer Contributions	Contribution Excess/ (Deficiency) [1]	Covered Payroll	Contributions as a Percentage of Covered Payroll
2010	$ 658,161,150	$ 594,326,122	$ (63,835,028)	$ 4,402,415,719	13.50%
2011	684,366,766	594,732,137	(89,634,629)	4,248,086,693	14.00%
2012	720,303,976	620,214,231	(100,089,745)	4,277,339,524	14.50%
2013	507,232,268	634,040,335	126,808,067	4,372,691,966	14.50%
2014	608,459,393	643,989,869	35,530,476	4,441,309,441	14.50%
2015	666,438,984	656,924,899	(9,514,085)	4,530,516,545	14.50%
2016	643,155,536	669,953,683	26,798,147	4,620,370,228	14.50%
2017	642,821,624	684,857,718	42,036,094	4,723,156,676	14.50%
2018	533,062,186	696,970,397	163,908,211	4,806,692,393	14.50%
2019	628,513,916	712,545,096	84,031,180	4,914,104,110	14.50%

Public Education Employee Retirement System of Missouri

Year Ended June 30	Actuarially Determined Contribution	Actual Employer Contributions	Contribution Excess/ (Deficiency) [1]	Covered Payroll	Contributions as a Percentage of Covered Payroll
2010	$ 95,560,084	$ 91,478,725	$ (4,081,359)	$ 1,407,365,000	6.50%
2011	90,816,155	90,816,155	-	1,369,776,094	6.63%
2012	95,094,785	95,094,785	-	1,386,221,356	6.86%
2013	87,013,816	97,059,313	10,045,497	1,414,858,790	6.86%
2014	98,497,846	100,699,735	2,201,889	1,467,926,166	6.86%
2015	105,739,092	103,624,310	(2,114,782)	1,510,558,455	6.86%
2016	104,011,593	106,654,638	2,643,045	1,554,732,332	6.86%
2017	108,807,233	111,239,585	2,432,352	1,621,568,294	6.86%
2018	97,653,104	115,103,143	17,450,039	1,677,888,382	6.86%
2019	113,567,475	120,042,046	6,474,571	1,749,884,052	6.86%

[1] The annual statutory increase in the total contribution rate may not exceed 1% of pay for PSRS and 0.5% of pay for PEERS. The limitation on contribution increases resulted in a deficiency for some of the years presented. Contributions were funded to the maximum statutory limit each year.

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Required Supplementary Information

Schedules of Investment Returns

Year ended June 30:	2019	2018	2017	2016	2015	2014
Annual money-weighted rate of return, net of all investment expenses	6.9%	8.7%	12.3%	1.6%	4.3%	16.7%
Time-weighted rate of return, net of all investment expenses	6.9%	8.7%	12.3%	1.6%	4.3%	16.7%

Note: This schedule is intended to show information for ten years. Additional years will be displayed as they become available.

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Notes to the Schedules of Required Supplementary Information

The information presented in the required supplementary schedule was determined as part of the actuarial valuation at the date indicated. Additional information as of the latest actuarial valuation follows.

Changes in benefit terms:

PSRS:	The 25-and-Out and 2.55% provisions were extended in 2007 through 2013. In 2013 the state legislature provided a permanent extension of the 25-and Out provision and extended the 2.55% provision to 2014.
PEERS:	The 25-and-Out provision was extended in 2007 through 2013. In 2013 the State legislature provided a permanent extension of the 25-and Out provision.
Changes of assumptions:	In 2011 and 2016 payroll growth, salary increases, assumed life expectancies and mortality were adjusted to more closely reflect actual experience. In 2016, the inflation rate was adjusted to 2.25% from 2.5%, the investment rate of return from 8.00% to 7.75% and annual cost-of-loving adjustments were calculated in accordance with the funding policy as amended in June 2016. During 2016, minor revisions were made to other actuarially assumptions including but not limited to, retirement rates, withdraw rates, etc. The 2016 assumption changes were a result of an actuarial experience study conducted during the 2016 fiscal year. For fiscal year 2017, the investment rate of return was further reduced from 7.75% to 7.6% and the assumption for annual cost-of-living adjustments. For fiscal year 2018, the investment rate of return was further reduced to 7.5%. There were no assumption changes made during fiscal year 2019.
Actuarially Methods and Assumptions:	The actuarially determined contribution rates in the schedule of employers' contributions are calculated as of June 30, two years prior to the end of the fiscal year in which contributions are reported. The following actuarial methods and assumptions were used to determine contribution rates reported in the schedule.
Actuarial Cost Method	Entry Age Normal Level Percent of Payroll
Amortization Method	Closed, level percent for 30 years
Remaining amortization period	
PSRS	22.4 years
PEERS	22.7 years
Asset valuation method	5-year smoothing of actual returns above or below expected returns
Measurement Date	**June 30, 2019**
Valuation Date	**June 30, 2019**
Investment Rate of Return	7.50%
Inflation	2.25%
Total Payroll Growth	
PSRS	2.75% per annum, consisting of 2.25% inflation, 0.25% additional inflation due to the inclusion of health care costs in pension earnings, and 0.25% of real wage growth.
PEERS	3.25% per annum, consisting of 2.25% inflation, 0.50% additional inflation due to the inclusion of health care costs in pension earnings, and 0.50% of real wage growth.
Individual Salary Growth	
PSRS	3.00% - 9.50%, depending on service and including 2.25% inflation, 0.25% additional inflation due to the inclusion of health care costs in pension earnings, 0.25% of real wage growth for productivity, and real wage growth for merit, promotion and seniority of 0.25% to 6.75%.
PEERS	4.00% - 11.00%, depending on service and including 2.25% inflation, 0.50% additional inflation due to the inclusion of health care costs in pension earnings, 0.50% of real wage growth for productivity, and real wage growth for merit, promotion and seniority of 0.75% to 7.75%.
Cost-of-Living Increases	
PSRS	1.65% compounded annually, beginning on the second January after retirement and capped at 80% lifetime increase. The assumption increases from 1.30% to 1.65% over seven years.
PEERS	1.65% compounded annually, beginning on the fourth January after retirement and capped at 80% lifetime increase. The assumption increases from 1.30% to 1.65% over seven years.

Public School Retirement System of Missouri and
Public Education Employee Retirement System of Missouri

Notes to the Schedules of Required Supplementary Information - Continued

Measurement Date **June 30, 2019**

Valuation Date **June 30, 2019**

Mortality Assumption

Actives:

PSRS — RP 2006 White Collar Employee Mortality Table, multiplied by an adjustment factor of 0.75 at all ages for both males and females, with static projection using the 2014 SSA Improvement Scale to 2028.

PEERS — RP 2006 Total Dataset Employee Mortality Table, multiplied by an adjustment factor of 0.75 at all ages for both males and females, with static projection using the 2014 SSA Improvement Scale to 2028.

Non-Disabled Retirees, Beneficiaries and Survivors:

PSRS — RP 2006 White Collar Mortality Table multiplied by the adjustment factors shown in the table below, with static projections using the 2014 SSA Improvement Scale to 2028.

Age	Males	Females
<60	1.00	1.00
60-74	0.89	0.67
75-89	1.05	0.91
>=90	1.05	1.16

PEERS — RP 2006 Total Dataset Mortality Table multiplied by the adjustment factors shown in the table below, with static projections using the 2014 SSA Improvement Scale to 2028.

Age	Males	Females
<60	1.00	1.00
60-74	1.49	0.77
75-89	1.27	1.03
>=90	1.16	1.04

Disabled Retirees: RP 2006 Disabled Retiree Mortality Table, with static projections using the 2014 SSA Improvement Scale to 2028.

Public School Retirement System of Missouri and
Public Education Employee Retirement System of Missouri

Required Supplementary Information

Staff Retiree Health Plan – Defined Benefit OPEB Plan

Schedule of Changes in the Net OPEB Liability and Related Ratios

Year ended:	June 30, 2019	June 30, 2018
Total OPEB Liability - beginning of the year	$ 3,788,863	$ 2,050,100
Remeasurement of June 30, 2017 OPEB liability	-	1,479,740
Service cost	151,794	152,625
Interest cost	132,375	116,484
Experience (gains) losses	74,147	110,476
Assumption changes	(259,345)	(104,653)
Plan amendments	-	-
Benefit payments	(1,850)	(15,909)
Net change in total OPEB liability	$ 3,885,984	$ 3,788,863
OPEB Plan Fiduciary Net Position	$ -	$ -
Net OPEB Liability - end of the year	$ 3,885,984	$ 3,788,863
Covered Payroll	$ 12,025,626	$ 10,742,062
Employer's Net OPEB Liability as a Percentage of Coverage Payroll	32.3%	35.3%

Note: This schedule is intended to show information for ten years. Additional years will be displayed as they become available.

Public School Retirement System of Missouri and
Public Education Employee Retirement System of Missouri

Schedules of Administrative Expenses

for the year ended June 30, 2019

	PSRS	PEERS	Combined Totals
Personnel services	$ 6,549,878	$ 4,516,491	$ 11,066,369
Professional services			
Actuarial services	216,477	129,719	346,196
Legal services	341,932	125,607	467,539
Financial audit services	54,192	34,647	88,839
Other consultants	51,667	33,033	84,700
Technology consulting	1,058,508	673,465	1,731,973
Legislative consulting	27,450	17,550	45,000
Insurance consulting	3,660	2,340	6,000
Total professional services	1,753,886	1,016,361	2,770,247
Communications			
Information and publicity	252,242	178,920	431,162
Postage	309,922	191,189	501,111
Member education	17,254	10,512	27,766
Telephone	43,946	28,083	72,029
Total communications	623,364	408,704	1,032,068
Miscellaneous			
Building and utilities	123,269	78,811	202,080
Insurance	83,119	53,142	136,261
Office	779,794	497,533	1,277,327
Staff development	156,282	99,883	256,165
Miscellaneous	200,565	100,789	301,354
Total miscellaneous	1,343,029	830,158	2,173,187
Depreciation expense	1,012,214	642,974	1,655,188
Total administrative expenses	$ 11,282,371	$ 7,414,688	$ 18,697,059

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Schedules of Professional Services

for the year ended June 30, 2019

	PSRS	PEERS	Combined Totals
Actuarial services	$ 216,477	$ 129,719	$ 346,196
Legal expenses	341,932	125,607	467,539
Financial audit services	54,192	34,647	88,839
Other consulting	51,667	33,033	84,700
Technology consulting	1,058,508	673,465	1,731,973
Legislative consulting	27,450	17,550	45,000
Insurance consulting	3,660	2,340	6,000
Total professional services	$ 1,753,886	$ 1,016,361	$ 2,770,247

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Schedules of Investment Expenses

for the year ended June 30, 2019

	PSRS	PEERS	Combined Totals
Investment management expenses			
U.S. Treasuries and TIPS	$ 4,350,534	$ 537,707	$ 4,888,241
U.S. public equities	54,411,405	6,726,944	61,138,349
Non-U.S. public equities	24,920,969	3,080,120	28,001,089
Public debt	2,818,553	348,361	3,166,914
Private equity	220,072,127	27,199,929	247,272,056
Private credit	10,051,122	1,242,274	11,293,396
Private real estate	51,794,501	6,401,567	58,196,068
Hedged assets	75,500,003	9,331,463	84,831,465
Total investment management expenses	443,919,214	54,868,364	498,787,578
Investment consultant fees	4,415,906	545,786	4,961,692
Custodial bank fees	1,220,598	150,860	1,371,458
Investment staff expenses	5,262,054	653,417	5,915,471
Commission recapture income	(173,360)	(21,234)	(194,594)
Total investment expenses	$ 454,644,412	$ 56,197,193	$ 510,841,605
Security lending expenses			
Agent fees	$ 856,434	$ 105,846	$ 962,280
Broker rebates	(170,472)	(21,069)	(191,541)
Total security lending expenses	$ 685,962	$ 84,777	$ 770,739