State of Wisconsin
Department of Employee Trust Funds
Robert J. Conlin
SECRETARY

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Correspondence Memorandum

Date: February 15, 2017

To: Audit Committee, Employee Trust Funds Board

From: Cindy Klimke-Armatoski
Chief Trust Financial Officer

Subject: 2015 WRS Financial Report

This memo is for informational purposes only. No Committee action is required.

2015 financial statements and related notes for the Wisconsin Retirement System (WRS) have been prepared and audited by the Legislative Audit Bureau (LAB).

The report confirms the WRS continues to be well funded, with a funding value-based ratio near 100% as of December 31, 2015. The fair value-based ratio, calculated in accordance with standards issued by the Governmental Accounting Standards Board, is 98.2%. This is a decrease from 102.7%, primarily the result of lower market returns in 2015 compared to 2014.

In the course of the audit the LAB identified errors in the work papers, notes and statements reviewed. While none of these errors materially affected the financial statements, the LAB reported a significant deficiency in internal controls and recommended the Department of Employee Trust Funds (ETF) continue to improve our financial reporting process. In addition, LAB identified a significant deficiency with controls over the reconciliation of cash at the Department of Administration (DOA), which affected ETF's reporting of the WRS.

ETF recognizes the importance of strong internal controls and accurate financial reporting. We will continue our efforts to make improvements, including:

- Working with DOA and the State of Wisconsin Investment Board to document, assess and enhance controls to mitigate the risk of errors in recording cash;
- Continuing to cross-train staff on the tasks related to financial reporting;
- Enhancing planning of financial reporting by incorporating a project management discipline;

Reviewed and approved by Robert J. Conlin, Secretary

Electronically Signed 3/3/17

Board	Mtg Date	Item #
AUD	3.23.17	4C

- Implementing effective reviews; and
- Enhancing documentation of high-complexity processes and calculations, including introducing a risk and control framework.

In addition to the above actions, having stability with a general ledger system will help. As noted in the audit report, there were challenges relating to the State's transition to STAR. This is not uncommon, given the complexity of transitions between financial systems and our volume of activity. We have already seen issues subside and expect that trend to continue as STAR matures and we gain better proficiency in its operations.

While it is never possible to fully eliminate human error, it is important that controls exist to mitigate the risk of errors. We believe the actions outlined above will enhance our control environment and minimize the risk of future errors or allow us to detect and correct misstatements on a timely basis.

Staff will be at the committee meeting to answer any questions.

Attachment: WRS Financial Report Calendar Year 2015

Wisconsin Retirement System Financial Report

Calendar Year 2015

ET-8600 (12/1/2016)

Wisconsin Retirement System Financial Report

Calendar Year 2015

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ETF Executive Team

Robert J. Conlin, Secretary
John Voelker, Deputy Secretary
Pamela Henning, Assistant Deputy Secretary

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STATE OF WISCONSIN
Legislative Audit Bureau
Celebrating 50 Years of Service 1966-2016
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Joe Chrisman
State Auditor

Independent Auditor's Report on the Financial Statements and Other Reporting Required by *Government Auditing Standards*

Senator Robert Cowles and
Representative Samantha Kerkman, Co-Chairpersons
Joint Legislative Audit Committee

Members of the Employee Trust Funds Board and
Mr. Robert J. Conlin, Secretary
Department of Employee Trust Funds

Report on the Financial Statements

We have audited the accompanying Statement of Fiduciary Net Position, Statement of Changes in Fiduciary Net Position, and the related notes for the Wisconsin Retirement System as of and for the year ended December 31, 2015.

Management's Responsibility for the Financial Statements

Management of the Department of Employee Trust Funds (ETF) is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America. 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.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, which is issued by the Comptroller General of the United States. 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 auditor's 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 the 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 opinion on these financial statements.

Opinion

In our opinion, the financial statements referred to in the first paragraph present fairly, in all material respects, the financial position of the Wisconsin Retirement System as of December 31, 2015, and the respective changes in its financial position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Emphases of Matter

As discussed in Note 1 to the financial statements, the financial statements referred to in the first paragraph present only the Wisconsin Retirement System and do not purport to, and do not, present fairly the financial position of the State of Wisconsin as of December 31, 2015, or the changes in its financial position for the year then ended, in accordance with accounting principles generally accepted in the United States of America.

As discussed in Note 2 to the financial statements, ETF implemented Governmental Accounting Standards Board (GASB) Statement Number 82, *Pension Issues—an amendment of GASB Statements No. 27, No. 68, and No. 73*, which changed the presentation of certain payroll-related measures, the selection of assumptions used in determining the total pension liability and related measures, and the classification of employer-paid member contributions.

As discussed in Note 3 to the financial statements, the financial statements include investments that do not have readily ascertainable market prices and are valued based on a variety of third-party pricing methods. However, because of the inherent uncertainty of valuation, those estimated values may differ from the values that would have been used had a ready market for the investments existed.

Our opinion was not modified with respect to these matters.

Other Matters

Accounting principles generally accepted in the United States of America require that the Wisconsin Retirement System's Schedules of Changes in Net Pension Liability (Asset) and Related Ratios, Schedule of Employer Contributions, and Schedule of Investment Returns, which include the related notes, on pages 49 through 51 be presented to supplement the financial statements. Such information, although not a part of the financial statements, is required by GASB, which considers it to be essential for placing the financial statements in an appropriate operational, economic, or historical context. In accordance with auditing standards generally accepted in the United States of America, we have applied certain limited procedures to the required supplementary information that included inquiries of management about the methods of preparing the information. We further compared the information for consistency with management's responses to our inquiries, the financial statements, and other knowledge we obtained during our audit of the 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 do so.

Management has omitted management's discussion and analysis, which accounting principles generally accepted in the United States of America require to be presented to supplement the financial statements. Although not a part of the financial statements, GASB considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context. Our opinion on the financial statements is not affected by this missing information.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued a report dated December 1, 2016, on our consideration of ETF's internal control over financial reporting; our tests of its compliance with certain provisions of laws, regulations, and contracts; and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* and should be used when considering ETF's internal control over financial reporting and compliance.

LEGISLATIVE AUDIT BUREAU

Joe Chrisman
State Auditor

December 1, 2016

Wisconsin Retirement System
Statement of Fiduciary Net Position
December 31, 2015

		Year Ended December 31, 2015
ASSETS		
Equity in Pooled Cash and Cash Equivalents	$	3,956,982,157
Securities Lending Collateral		1,177,768,950
Prepaid Expenses		29,172,616
Receivables:		
Contributions Receivable		179,588,088
Prior Service Contributions Receivables		25,977,566
Benefit Overpayment Receivable		2,254,151
Due From Other Benefit Programs		6,533,092
Miscellaneous Receivables		3,050,182
Interest and Dividends Receivable		226,908,981
Investment Sales Receivable		1,041,413,822
Total Receivables		1,485,725,882
Investments at Fair Value:		
Fixed Income Investments		24,955,170,031
Financial Futures Contracts		(246,955)
Preferred Securities		178,665,891
Stocks		47,185,253,775
Options Contracts		(1,179,154)
Limited Partnerships		10,679,849,080
Real Estate		1,119,024,432
Foreign Currency Contracts		3,273,951
Multi Asset Investments		4,102,891,996
Swaps		9,754,348
Total Investments		88,232,457,395
Capital Assets		13,896,533
TOTAL ASSETS		94,896,003,532
LIABILITIES		
Core Investment Due Other Benefit Programs		3,327,057,124
Variable Investment Due Other Benefit Programs		19,759,023
Obligation Under Reverse Repurchase Agreements		809,677,776
Short Sell Obligations		166,160,817
Securities Lending Collateral Liability		1,177,768,950
Collateral Due to Counterparty		21,870,000
Benefits Payable		337,103,748
Unearned Revenue		74,880
Due To Other Benefit Programs		75,619,698
Interfund Payables		20
Miscellaneous Payables		122,591,858
Investment Payables		333,649,330
TOTAL LIABILITIES		6,391,333,223
NET POSITION RESTRICTED FOR PENSIONS	$	88,504,670,309

The accompanying notes are an integral part of this statement.

Wisconsin Retirement System
Statement of Changes in Fiduciary Net Position
For the Year Ended December 31, 2015

		Year Ended December 31, 2015
ADDITIONS		
Contributions:		
Employer Contributions	$	977,733,921
Employee Contributions		937,225,184
Total Contributions		1,914,959,105
Investment Income:		
Net Appreciation (Depreciation) in Fair Value of Investments		(2,328,202,194)
Interest		550,054,145
Dividends		1,206,311,252
Securities Lending Income		35,068,097
Other		188,536,643
Less:		
Investment Income Distributed to Other Benefit Programs		26,147,298
Investment Expense		(350,036,426)
Securities Lending Rebates and Fees		(2,866,698)
Net Investment Income		(674,987,883)
Interest on Prior Service Receivable		1,616,837
Miscellaneous Income		248,234
TOTAL ADDITIONS		1,241,836,294
DEDUCTIONS		
Retirement, Disability & Beneficiary Benefits		4,780,290,040
Separation Benefits		37,642,404
Other Benefit Expenses		43,296,474
Administrative Expenses		22,708,614
TOTAL DEDUCTIONS		4,883,937,531
Net Increase (Decrease)		(3,642,101,238)
Net Position - Beginning of Year		92,146,771,547
Net Position - End of Year	$	88,504,670,309

The accompanying notes are an integral part of this statement.

Notes to the Financial Statements

1. Summary of Significant Accounting Policies

The Wisconsin Retirement System (WRS) is a cost-sharing, multiple-employer public employee retirement system established and administered by the State of Wisconsin to provide pension benefits for state and local government employees. The system is administered in accordance with Chapter 40 of the Wisconsin Statutes. The Department of Employee Trust Funds (ETF) is responsible for administration of the WRS, including collecting contributions from employers and paying retirement benefits to WRS participants, and the State of Wisconsin Investment Board (SWIB) is responsible for managing WRS investments.

Presentation Basis

The financial statements of the WRS have been prepared by ETF in conformity with generally accepted accounting principles (GAAP) for government units as prescribed by the Governmental Accounting Standards Boards (GASB). The WRS is not a general-purpose government and does not present government-wide statements. The WRS is included in the State of Wisconsin financial reporting entity and is presented in the State's Comprehensive Annual Financial Report in a "Pension and Other Employee Benefit Trust Fund" and is reported as a separate fund in ETF's separately issued Comprehensive Annual Financial Report.

Department-wide administrative expenses, capital assets, and general fund activities are most closely associated with the WRS fund and have been blended with the WRS for presentation. All material intrafund transactions have been eliminated from fund financial statements.

Measurement Focus and Basis of Accounting

The financial statements of the WRS have been prepared in accordance with GAAP. The WRS fund is accounted for using the flow of economic resources measurement focus and the accrual basis of accounting. Under the accrual basis of accounting, contributions are recognized in the accounting period in which the underlying earnings on which the contributions are based are paid and the employer has made a formal commitment to provide the contributions. Benefits and refunds are recognized when due and payable in accordance with the terms of the WRS. Security transactions and the related gains and losses are recorded on a trade date basis. Dividend income is recorded on the ex-dividend date, and interest income is accrued as earned.

Investments

The assets of the WRS are valued at fair value and are invested in the Core Retirement Investment Trust (Core Fund) and the Variable Retirement Investment

Trust (Variable Fund), which are collectively the Retirement Funds. The assets of other benefit programs are invested in the Core Fund. Earnings are allocated between the WRS and other benefit programs based on the average balance invested for each program. Earnings allocated to other benefit programs are classified as "Investment Income Distributed to Other Benefit Programs" on the Statement of Changes in Fiduciary Net Position. The total amount invested by the other benefit programs included in the Retirement Funds is presented as "Core Investment Due Other Benefit Programs" and "Variable Investment Due Other Benefit Programs" on the Statement of Fiduciary Net Position.

The State of Wisconsin Investment Board (SWIB) manages the Retirement Funds with oversight by the Board of Trustees, as authorized in Wis. Stat. § 25.17. SWIB is not registered with the Securities and Exchange Commission as an investment company.

Administrative Expenses

The administrative costs of all Department programs are financed by a separate appropriation and are allocated to each benefit plan administered by ETF in accordance with Wis. Stat. § 40.04. The sources of funds for this appropriation are investment earnings and third-party reimbursements received from the various programs administered by ETF. Total administrative expenses for the year were $32.8 million, of which $22.7 million was allocated to the WRS.

SWIB incurs expenses related to investing the trust funds. As authorized by Wis. Stat. § 25.187 (2), these costs are charged directly to the investment income of each trust fund.

Capital Assets

Capital assets consist of office furniture and equipment and computer software (purchased or externally acquired and internally generated software). ETF capitalizes all furniture and equipment, and purchased computer software with a purchase price in excess of $5,000, and internally-generated software and other intangible assets in excess of $1 million. Assets are depreciated on a composite basis over an estimated life, ranging from 5 to 20 years, using the straight-line method of depreciation.

As of December 31, 2015, the total value of capital assets was $16,785,437, less accumulated depreciation of $2,888,904, for a net capital asset value of $13,896,533. The net capital asset value includes $13,740,802 in internally-generated software, and $75,794 in purchased software.

Amounts Due from/to Other Benefit Programs

In addition to the WRS, ETF administers other employee benefit programs for public employees. Amounts due to or from the WRS to other benefit programs adminstered by ETF, as of December 31, 2015, consist of the following:

Due from/to Other Benefit Programs As of December 31, 2015 (In Thousands)		
Wisconsin Retirement System	**Due From Other Benefit Programs**	**Due to Other Benefit Programs**
Employee Reimbursement Accounts & Commuter Benefits		$ 2
Long-Term Disability Insurance	$ 6,530	43,296
Health Insurance		7,352
State Retiree Health Insurance		
Local Retiree Health Insurance		
Life Insurance		3
State Retiree Life Insurance		
Local Retiree Life Insurance		
Duty Disability		1,486
Income Continuation Insurance		1
Sick Leave	3	23,479
Total	$ 6,533	$75,619

The amounts due from Long-Term Disability Insurance to WRS are for additional contributions to WRS, but not allocated to WRS prior to year-end. The amounts due to other benefits programs consist of contributions received but not allocated out of WRS until after the calendar year ended, with exception of the due to Long-Term Disability which represents insurance premiums owed by WRS to Long-Term Disability. All liabilities are expected to be paid within one year of the balance sheet date.

Use of Estimates

The preparation of financial statements in accordance with GAAP requires management to make estimates that affect amounts reported herein. Due to the inherent uncertainty involved, actual results could differ from those estimates.

2. Accounting Changes

The WRS adopted GASB Statement No. 82, Pension Issues, an amendment of GASB No.67, No. 68, and No. 73 during the year ended December 31, 2015. Statement No. 82 addresses the presentation of payroll-related measures in the Required Supplementary Information, the selection of assumptions used in determining the total pension liability and related measures, and the classification of employer-paid member contributions.

3. Deposits, Investments and Securities Lending Transactions

Valuation of Securities

The investments of the Retirement Funds are reported in the Statement of Fiduciary Net Position at fair value as prescribed by GASB and per section 25.17(14) of the Wisconsin Statutes. Unrealized gains and losses are reflected in the Statement of Changes in Fiduciary Net Position as "Net Appreciation (Depreciation) in Fair Value of Investments."

The fair value of the Retirement Funds' assets are obtained or estimated in accordance with a pricing hierarchy established with SWIB's custodian, Bank of New York Mellon (BNY Mellon). As prescribed by the hierarchy, a variety of independent pricing sources are used to price assets based on type, class or issue.

When a portfolio includes securities or instruments for which the custodial bank does not receive fair value information from its vendor pricing sources, a variety of third party pricing methods are used, including appraisals, pricing models and other methods deemed acceptable by industry standards.

The "Equity in Pooled Cash and Cash Equivalents" account reported on the Statement of Fiduciary Net Position consists of short-term investments which are used to meet the liquidity requirements of the Retirement Funds. Cash and Cash Equivalents held by the Retirement Funds can include cash on deposit, foreign currencies, cash posted as collateral to counterparties, repurchase agreements, certificates of deposit, U.S. Treasury Bills, short-term investment funds, and other liquid financial instruments with maturities that are generally less than three months. Cash and Cash Equivalents are reported at fair value or cost, which approximates fair value.

Privately held debt, which is included in "Fixed Income Investments" on the Statement of Fiduciary Net Position, is priced using a multi-tiered approach that values each holding based on the best available information using the following hierarchy of pricing sources:

1. Custodian supplied prices for assets that are in the Barclays Capital U.S. Aggregate Bond Index
2. Prices provided by a third party with expertise in the bond market
3. Modeled prices where interest rate spreads are supplied by a third party

In a few instances, privately held debt cannot be priced by one of the above three sources. In these circumstances the investment is priced using an alternative bond index price or, if no independent quotation exists, the investment may be valued at cost.

For alternative investments where no readily ascertainable market value exists, including limited partnerships and real estate pooled funds, fair value is estimated based on the net asset value as reported by the general partner. The capital account balance as stated in the most recent available quarterly reporting period is adjusted for subsequent cash flows to derive fair value. The financial statements of the limited partnerships and real estate pooled funds are audited by independent auditors annually.

Real estate properties wholly owned by SWIB are valued by independent appraisers every three years. In years when appraisals are not performed, properties are informally appraised by the asset advisor. Each year, audited financial statements are prepared for each property.

SWIB values hedge funds based on monthly statements or estimated returns received from each of the hedge fund's administrators. A third-party administrator's responsibility is to independently account for the hedge fund's activity and calculate the net asset value of the fund. Generally, hedge fund administrators price financial instruments traded in active markets based on quoted market prices or binding dealer quotations. For certain over-the-counter instruments, fair value is determined based on valuation models used by the administrator. Annually, the financial statements prepared by the administrator are audited by independent auditors.

Derivative financial instruments are marked to fair value daily, with valuation changes recognized in income during the period the instruments are held and when the instrument is sold or expires. The nature and use of derivative instruments is discussed later in these notes.

A limited number of securities are carried at cost. Certain non-public or closely held stocks are not reported at fair value, but are carried at cost since no independent quotation is available to estimate fair value for these securities.

Credit Risk

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations to SWIB. Fixed income credit risk investment guidelines outline the minimum ratings required at the time of purchase by individual portfolios, or groups of portfolios, based on the portfolios' investment objectives. In addition, some fixed income portfolios are required to carry a minimum weighted average rating at all times. Information regarding SWIB's credit risk related to derivatives is discussed later in these notes.

The table, **Credit Quality Distribution**, displays the lowest credit rating assigned by nationally-recognized statistical rating organizations on debt securities held by the Retirement Funds as of December 31, 2015. Included in this table are fixed income securities, including certain short term securities, classified as Equity in Pooled Cash and Cash Equivalents on the Statement of Fiduciary Net Position. Also included are interest rate sensitive investments held in the Retirement Funds' securities lending collateral reinvestment pools, which are managed by SWIB's custodian. Additional information regarding the securities lending program is discussed later in these notes.

The table also includes SWIB's investment in commingled fixed income funds which are not rated. Although the funds themselves are not assigned ratings, external management investment guidelines govern minimum credit quality standards for the investments within each portfolio. These standards are determined based on the investment objectives and risk parameters of each fund. The table, **Credit Quality Breakdown of Commingled Fixed Income Funds**, presents the aggregated credit ratings for the underlying investments held by these funds.

Retirement Funds
Credit Quality Distribution
As of December 31, 2015
(In Thousands)

Rating	Fair Value	% of Total
AAA/Aaa	$ 493,057	2
AA/Aa	12,112,153	41
A	2,430,390	8
P-2 or A-2	303,392	1
BBB/Baa	2,529,722	9
BB/Ba	690,431	2
B	562,239	2
CCC/Caa or below	179,955	1
Commingled Fixed Income Funds	8,489,061	29
Not Rated	1,447,716	5
Total	$ 29,238,116	100 %

Retirement Funds
Credit Quality Breakdown of Commingled Fixed Income Funds
As of December 31, 2015
(In Thousands)

Rating*	Fair Value	% of Total
P-1 or A-1	$ 2,361,534	28
AAA/Aaa	1,049,069	12
AA/Aa	703,399	8
A	1,528,266	18
BBB/Baa	2,296,809	28
BB/Ba	208,358	2
B	163,866	2
CCC/Caa or below	92,359	1
Not Rated	85,401	1
Total	$ 8,489,061	100 %

* Reflects aggregated ratings of underlying investments as reported by fixed income fund managers.

Reverse Repurchase Agreements

SWIB held $809.7 million in reverse repurchase agreements at December 31, 2015. Investment guidelines permit certain portfolios to enter into reverse repurchase agreements, which are a sale of securities with a simultaneous agreement to repurchase the securities in the future at the same price plus a stated rate of interest. The market value of the securities underlying reverse repurchase agreements exceeds the cash received, providing the counterparty a margin against a decline in market value of the securities. If the counterparty defaults on their obligation to sell these securities back to SWIB or provide cash of equal value, SWIB could suffer an economic loss equal to the difference between the market value of the underlying securities plus accrued interest and the agreement obligation, including accrued interest.

SWIB enters into reverse repurchase agreements with various counterparties and such transactions are governed by Master Repurchase Agreements (MRA). MRAs are negotiated contracts and contain terms in which SWIB seeks to minimize counterparty credit risk. SWIB also controls credit exposures by limiting trades with any one counterparty to stipulated amounts. In addition, in the case of one MRA, SWIB's agent retains full control of the underlying securities, effectively eliminating the possibility of rehypothecation of the securities. The counterparty credit exposure is monitored daily and managed through the transfer of margin, in the form of cash or securities, between SWIB and the counterparty. The Retirement Funds' counterparty credit exposure for reverse repurchase agreements at December 31, 2015 is summarized in the table, **Reverse Repurchase Agreements, Counterparty Credit Exposure.**

Retirement Funds **Reverse Repurchase Agreements** **Counterparty Credit Exposure** **As of December 31, 2015** (In Thousands)		
Fair Value of Collateral and Margin Held by Counterparty/Agent		$ 822,244
Less:		
Cash due to Counterparty	$ 809,678	
Collateral and Interest due to Counterparty	524	
Total due to Counterparty		810,202
Net Counterparty Credit Exposure		$ 12,042

The cash proceeds from reverse repurchase agreements are reinvested by the Retirement Funds. The maturities of the purchases made with the proceeds of reverse repurchase agreements are not necessarily matched to the maturities of the agreements. The agreed-upon yields earned by the counterparty for the reverse repurchase agreements held were between 0.41% and 0.75% at December 31, 2015. The reverse repurchase agreements had open maturities, whereby a maturity date is not established upon entering into the agreement; however, interest rates on the agreements are negotiated daily. The agreements can be terminated at the will of either SWIB or the counterparty.

The cash due to counterparties resulting from reverse repurchase agreements is reported as "Obligation Under Reverse Repurchase Agreements" and the interest due to counterparties is included in "Investment Payables" on the Statement of Fiduciary Net Position. The underlying assets, as well as the reinvested proceeds, are reported in the "Investments at Fair Value" section on the Statement of Fiduciary Net Position.

Custodial Credit Risk

Deposits—Custodial credit risk related to deposits is the risk that, in the event of the failure of a depository financial institution, SWIB will not be able to recover deposits that are in possession of an outside party. Cash deposits totaled $834.8 million as of December 31, 2015. Of the total cash deposits, $358.9 million was collateralized by securities borrowed. Additionally, a portion of the total deposits were uninsured and uncollateralized. These represented balances held in foreign currencies in SWIB's custodian's nominee name and cash posted as collateral for derivatives transactions as well as cash collateral posted exceeding the fair value of securities held by SWIB related to SWIB's shorting program. The sum of uninsured and uncollateralized deposits amounted to $431.3 million as of December 31, 2015. The remaining deposits were covered by depository insurance at year end. The Retirement Funds also held certificates of deposit that were covered by depository insurance with a fair value of $39.2 million as of December 31, 2015.

Investments—Custodial credit risk for investments is the risk that, in the event of failure of the counterparty to a transaction, SWIB will not be able to recover the value of investments that are in the possession of an outside party. The Retirement Funds held nine repurchase agreements totaling $804.9 million as of December 31, 2015. All of these repurchase agreements were tri-party agreements held in short-term cash management portfolios managed by SWIB's custodian. The underlying securities for these repurchase agreements were held by the tri-party's agent, not in SWIB's name.

SWIB's custodial credit risk policy addresses the primary risks associated with safekeeping and custody. It requires that SWIB's custodial institution be selected through a competitive bid process and that the institution be designated a "Systemically Important Financial Institution" by the U.S. Federal Reserve. The policy also requires that SWIB be reflected as beneficial owner on all securities entrusted to the custodian and that SWIB have access to safekeeping and custody accounts. The custodian is also required to be insured for errors and omissions and must provide SWIB with an annual report on internal controls, prepared in accordance with the *Statement on Standards for Attestation Engagements* (SSAE) No. 16. Furthermore, SWIB management has established a system of controls for the oversight of services and related processes of the custodian. SWIB's current custodial bank was selected in accordance with these guidelines and meets all requirements stipulated in the custodial credit risk policy.

Concentration of Credit Risk

Concentration of credit risk is the risk of loss attributed to the magnitude of an organization's investment in a single issuer. SWIB limits concentrations of credit risk by establishing investment guidelines for individual portfolios or groups of portfolios that generally restrict issuer concentrations in any one company or Rule 144A securities to less than 5% of the portfolio's market value. The Retirement Funds did not hold any investments with a single issuer, exclusive of investments issued or explicitly guaranteed by the U.S. government, representing 5% or more of the Retirement Funds' value at December 31, 2015.

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. SWIB uses a number of different methods to manage interest rate risk. Fixed income investments held by the Retirement Funds include investments with variable rate securities, stepped rate securities, securities with no coupon, such as discount notes, and coupons that range between 0.001% and 13.625% at December 31, 2015.

Generally, SWIB analyzes long or intermediate term portfolios' interest rate risk using various duration calculations. Modified duration, which is stated in years, is the measure of price sensitivity of a fixed income security to an interest rate change of 100 basis points. The calculation is based on the weighted average of the present values for all cash flows. Some investments are analyzed using an option adjusted duration calculation which is similar to the modified duration method. Option adjusted duration incorporates the duration shortening effect of any embedded call provisions in the securities. Duration statistics are weighted by the dollar value of the position to compute an average duration for each investment type.

Short-term portfolios' interest rate risk is analyzed using the weighted average maturity (to next reset). Weighted average maturity is the maturity of each position in a portfolio weighted by the dollar value of the position to compute an average maturity for the portfolio as a whole. This measure indicates a portfolio's sensitivity to interest rate changes: a longer weighted average maturity implies greater volatility in response to interest rate changes.

SWIB's investment guidelines related to interest rate risk vary by portfolio. Some fixed income portfolios are required to be managed within a range of a targeted duration, while others are required to maintain a weighted average maturity at or below a specified number of days or years.

The table, **Interest Rate Sensitivity by Investment Type**, presents the aggregated interest rate exposure for the Retirement Funds' assets at December 31, 2015. Weighted average maturity, where reset dates are assumed to be the effective maturity date for the security, is presented for repurchase agreements and short term pooled investments. Longer term investments held by the Retirement Funds are presented using modified duration, as this measure more accurately states the interest rate sensitivity of these investments. The duration statistic is calculated utilizing reset dates for some floating rate instruments, such as term loans. Information about the interest rate sensitivity of derivatives contracts is discussed later in these notes.

Retirement Funds
Interest Rate Sensitivity by Investment Type*
As of December 31, 2015
(In Thousands)

Investment Type	Fair Value	Weighted Average Duration (years)	Weighted Average Maturity (days)
Asset Backed Securities	$ 47,953	1.8	
Commercial Paper	322,524	<1	
Corporate Bonds & Private Placements	4,787,821	5.7	
Foreign Government/Agency Bonds	3,524,207	8.1	
Municipal Bonds	118,633	9.7	
Repurchase Agreements	804,872		1
U.S. Government Agencies	284,393	3.8	
U.S. Treasury Inflation Protected Securities	6,704,433	7.7	
U.S. Treasury Securities	4,154,219	5.0	
Commingled Funds			
Domestic Fixed Income	4,726,939	6.3	
Emerging Market Fixed Income	527,538	5.9	
Exchange Traded Funds	1,006	4.0	
Exchange Traded Funds - Short Positions	(1,017)	4.4	
Global Fixed Income	470,329	4.5	
Short-Term Cash Management	2,764,266		57
Total	$ 29,238,116		

* Excludes derivatives.

Foreign Currency Risk
Foreign currency risk is the risk that changes in exchange rates will adversely impact the fair value of an investment. It includes the risk that currencies in which a portfolio's investments are denominated, or currencies in which a portfolio has taken on an active position, will decline in value relative to the U.S. dollar.

Foreign currency exchange rates may fluctuate significantly for a number of reasons, including the forces of supply and demand in the foreign exchange markets, actual or perceived changes in interest rates, intervention by U.S. or foreign governments or central banks, currency controls, or political developments in the U.S. or abroad.

SWIB's policies include foreign currency risk management objectives relating to each individual portfolio. These guidelines address the foreign currency management activities permitted for each portfolio based on the portfolios mandates, risk tolerances and objectives. SWIB also employs discretionary currency overlay strategies at the total fund level when currency market conditions suggest such strategies are warranted. Additional information related to the management of foreign currencies through the use of derivatives is discussed later in these notes.

The table, **Currency Exposures by Investment Type,** presents the Retirement Fund investments that were exposed to foreign currency risk at December 31, 2015.

Retirement Funds
Currency Exposures by Investment Type
December 31, 2015
Stated in U.S. Dollars
(In Thousands)

Currency	Cash & Cash Equivalents	Stocks	Fixed Income	Limited Partnerships	Preferred Securities	Options	Futures Contracts	Short Sales	Total
Austrailian Dollar	$ 6,788	$ 1,026,915	$ 52,242	$-	$-	$-	$ 1,603	$-	$ 1,087,548
Brazilian Real	1,302	46,772	17,459	-	15,850	-	-	-	81,383
Brish Pound Sterling	28,178	3,313,835	335,706	71,370	-	-	2,179	(689)	3,750,579
Canadian Dollar	14,737	1,247,670	55,204	-	-	-	337	-	1,317,948
Chilean Peso	-	65	-	-	-	-	-	-	65
Colombian Peso	-	-	1,590	-	-	-	-	-	1,590
Czech Koruna	-	-	-	-	-	-	-	-	-
Danish Krone	2,870	300,674	24,806	-	-	-	-	-	328,350
Deutsche Mark	-	-	715	-	-	-	-	-	715
Euro Currency Unit	43,780	5,002,688	1,547,096	626,704	90,937	(47)	796	(27,052)	7,284,902
Hong Kong Dollar	6,336	676,932	-	-	-	-	-	-	683,268
Hungarian Forint	-	-	7,630	-	-	-	-	-	7,630
Indian Rupee	48	111,681	-	-	-	-	-	-	111,729
Indonesian Rupiah	260	14,274	15,147	-	-	-	-	-	29,681
Israeli New Shekel	908	80,017	-	-	-	-	-	-	80,925
Japanese Yen	171,034	3,798,346	920,008	-	-	-	(1,136)	(15,842)	4,872,410
Malaysian Ringgit	573	35,144	22,498	-	-	-	-	-	58,215
Mexican New Peso	1,723	18,300	79,742	-	-	-	-	-	99,765
Moroccan Dirham	12	-	-	-	-	-	-	-	12
New Zealand Dollar	312	37,845	11,237	-	-	-	-	-	49,394
Norwegian Krone	904	106,059	1,503	-	-	-	-	-	108,466
Peruvian Nuevo Sol	-	-	5,711	-	-	-	-	-	5,711
Philippine Peso	83	4,116	-	-	-	-	-	-	4,199
Polish Zloty	-	27,360	29,874	-	-	-	-	-	57,234
Russian Ruble	-	-	5,700	-	-	-	-	-	5,700
Singapore Dollar	2,047	187,021	12,979	-	-	-	-	(122)	201,925
South African Rand	558	38,633	20,921	-	-	-	-	-	60,112
South Korean Won	53	197,171	-	-	-	-	-	-	197,224
Swedish Krona	4,681	385,759	16,406	15,469	-	-	-	(104)	422,211
Swiss Franc	2,169	1,515,523	-	-	-	72	-	(4,454)	1,513,310
Taiwan New Dollar	3	110,921	-	-	-	-	-	-	110,924
Thailand Baht	10	58,877	-	-	-	-	-	-	58,887
Turkish Lira	2	35,189	-	-	-	-	-	-	35,191
U.S. Dollar	3,654,970	28,807,467	21,765,504	9,966,306	71,879	(1,204)	(4,026)	(117,898)	64,142,998
Uruguayan Peso	-	-	5,492	-	-	-	-	-	5,492
Total	$3,944,341	$47,185,254	$24,955,170	$10,679,849	$178,666	$(1,179)	$(247)	$(166,161)	$86,775,693

1) Commingled funds (including limited partnerships and other pooled vehicles) represent investments where the Retirement Funds own only a portion of the overall fund. While the overall fund may be denominated in U.S. dollars, the underlying investments may be exposed to foreign currency risk in various currencies. Commingled funds are shown in the denomination used by the fund for financial reporting.

2) Short Sell Obligations are reported as liabilities on the Statement of Fiduciary Net Position. They are included in the above table because they have exposure to foreign currency risk.

3) Investment types holding instruments denominated only in U. S. Dollars are not included in the above table. At calendar year-end, these include: Multi Asset, Real Estate, Swaps and Obligations Under Reverse Repurchase Agreements.

4) Values may not add due rounding.

Securities Lending Transactions

State statutes and Board of Trustee policies permit SWIB to use investments of the Retirement Funds to enter into securities lending transactions. These transactions involve the lending of securities to broker-dealers and other entities in exchange for collateral, in the form of cash or securities, with the simultaneous agreement to return the collateral for identical securities in the future. SWIB's custodian is an agent in lending the Retirement Funds' directly held domestic and international securities. When the Retirement Funds' securities are delivered to a borrower as part of a securities lending agreement, the borrower is required to place collateral equal to at least 102% of the loaned securities' fair value, including interest accrued, as of the delivery date with the lending agent, so long as the securities and the collateral are denominated in the same currency. In the event that securities are loaned against collateral denominated in a different currency, the borrower is required to place collateral totaling at least 105% of the loaned securities' fair value, including interest accrued, as of the delivery date with the lending agent. Collateral is marked to market daily and adjusted as needed to maintain the required minimum level. Pledging or selling non-cash collateral securities cannot be done without a borrower default. On December 31, 2015, the fair value of the securities on loan was approximately $13.4 billion.

Cash collateral is reinvested by the lending agent in two separate pools, a U.S. dollar cash collateral pool and a pool denominated in Euros. These pools are administered in accordance with contractual investment guidelines which are designed to minimize the risk of principal loss and provide a modest rate of return. Investment guidelines limit credit and liquidity risk by restricting new investments to overnight repurchase agreements collateralized with high quality U.S. government, U.S. government agencies, and sovereign debt securities. To further reduce credit risk, SWIB's custodian provides indemnification to SWIB against counterparty default. The earnings generated from the collateral investments, plus or minus the rebates received from or paid to the dealers and less fees paid to agents, results in the net earnings from lending activities, which are then split on a percentage basis with the lending agent. Cash from the U.S. dollar pool may be posted as collateral relating to short sale transactions and earns the U.S. Federal Funds rate plus 10 basis points. Additional information relating to short sales is discussed later in these notes.

At December 31, 2015, the Retirement Funds had minimal credit risk exposure to borrowers because the amounts owed to the borrowers exceeded the amounts the borrowers owed the Retirement Funds. In addition to the cash collateral reinvestment indemnification, the contract with the lending agent requires it to indemnify the Retirement Funds if the borrowers fail to return the loaned securities and the collateral is inadequate to replace the securities lent. The

Retirement Funds are also indemnified against losses resulting from violations of investment guidelines.

The majority of security loans are open-ended and can be terminated on demand by the Retirement Funds or the borrower. Maturities of investments made with cash collateral are not necessarily matched to the maturities of the securities loaned because most loans do not have a fixed maturity date. The risk that SWIB would be unable to return collateral to securities borrowers upon termination of the loan is low because the majority of investments made with cash collateral mature in one to two business days. The average maturities of the loans and the average maturities of the assets held in the collateral reinvestment pools did not materially differ at December 31, 2015.

Securities lending is allowed in certain commingled fund investments. As an investor in such funds, SWIB does not own the underlying securities and does not separately report on securities lending activity. All earnings of these funds are reported in the Statement of Changes in Fiduciary Net Position as "Net Appreciation (Depreciation) in Fair Value of Investments."

Derivatives

A derivative instrument, as defined by GASB Statement No. 53, is a financial instrument or other contract that has all of the following characteristics:

- **Settlement Factors**
  It has (1) one or more reference rates and (2) one or more notional amounts or payment provisions or both. Those terms determine the amount of the settlement or settlements and, in some cases, whether or not a settlement is required.
- **Leverage**
  It requires no initial net investment or an initial net investment that is smaller than would be required for other types of contracts that would be expected to have a similar response to changes in market factors.
- **Net Settlement**
  Its terms require or permit net settlement, it can readily be settled net by a means outside the contract, or it provides for delivery of an asset that puts the recipient in a position not substantially different from net settlement.

Derivatives may be used to implement investment strategies for the Retirement Funds. All derivative instruments are subjected to risk analysis and monitoring processes at the portfolio, asset class and fund levels. Investment guidelines define allowable derivative activity for each portfolio and are based on the investment objectives which have been approved by the Board of Trustees. Where derivatives are permitted, guidelines stipulate allowable instruments and the manner and degree to which they are to be used.

Gains and losses for all derivative instruments are reported in the Statement of Changes in Fiduciary Net Position as “Net Appreciation (Depreciation) in Fair Value of Investments.” SWIB invests in derivative investments directly, as well as indirectly through commingled or pooled investments. Information relating to investments held in commingled funds has not been separately disclosed in the financial statements or the accompanying footnotes, consistent with GASB reporting requirements.

A derivative can take the form of an individually-negotiated contract between the Retirement Funds and a specific counterparty. These types of negotiated positions are known as over-the-counter (OTC) contracts. OTC contracts can be structured as either “uncleared” or “cleared.”

Uncleared OTC contracts are non-standardized bilateral contracts between counterparties and do not include the use of a centralized intermediary, such as a clearinghouse. Uncleared OTC transactions are subject to regulatory requirements with respect to data reporting and recordkeeping, trading relationship documentation, business conduct standards, portfolio reconciliation, and margin collection and posting. For these transactions, master netting agreements and credit support annexes governing the credit relationship and collateral exchange between two counterparties are put in place to mitigate counterparty credit risk.

Cleared OTC contracts offer additional protections to trade participants. These types of transactions employ the use of an intermediary between counterparties. The intermediary, known as a clearinghouse, serves to facilitate trading and mitigate risks. While not completely standardized, these contracts involve a high degree of standardization. Once cleared, the clearinghouse steps in as the counterparty to all trades. Regulatory bodies govern the tools and procedures for risk mitigation (such as margin requirements and daily mark-to-market).

In addition to trading OTC, derivative contracts can also be transacted on established exchanges. These types of contracts are called “exchange-traded” and are completely standardized. Like cleared OTC contracts, the clearinghouse is an intermediary to the trade, reducing risks and standardizing the exchange of margin. The table, **Derivative Contract Types**, summarizes the differences between OTC and exchange-traded contracts.

Retirement Funds Derivative Contract Types		
Uncleared (OTC)	**Cleared (OTC)**	**Exchange-Traded**
Trades negotiated over-the-counter	Trades negotiated over-the-counter	Trades executed on organized exchanges
Customized contracts are agreed upon by counterparties	Trades limited to standardized terms	Trades limited to standardized contracts
Traded between counterparties	All Trades are booked with clearinghouse, which is counterparty to all trades	All Trades are booked with exchange's clearinghouse, which is counterparty to all trades
Margin (collateral) often exchanged but subject to negotiation between counterparties.	Mandatory margin requirements	Mandatory margin requirements
Common example: Forward Contracts	Common example: Credit Default Swaps	Common example: Futures Contracts

Inherent in the use of uncleared OTC derivatives, the Retirement Funds may be exposed to counterparty credit risk. Counterparty credit risk is the risk that a derivative counterparty may fail to meet its payment obligations under the terms of the derivative contract. SWIB seeks to mitigate this risk through counterparty credit evaluations and approvals, counterparty credit limits, and exposure monitoring procedures. Additionally, policies have been established which seek to implement master netting arrangements with counterparties that permit the closeout and netting of transactions with the same counterparty upon the occurrence of certain events, such as payment default, rating downgrade, bankruptcy, illegality or force majeure. Agreements may also require daily collateral postings to further mitigate credit risk. Cash collateral posted by SWIB for uncleared OTC positions was $0 at December 31, 2015. In addition, no securities were pledged as collateral relating to uncleared OTC positions.

The Retirement Funds uncleared OTC positions included foreign currency contracts, options and total return swaps. The table, **OTC Derivative Investments Subject to Counterparty Credit Risk**, summarizes by credit rating the Retirement Funds' exposure to OTC derivative instruments' counterparty credit risk as of December 31, 2015, without respect to any collateral or netting arrangement.

Retirement Funds
OTC Derivative Investments Subject to Counterparty Credit Risk
As of December 31, 2015
(In Thousands)

Counterparty Credit Rating		Payable	Receivable	Fair Value
AA		$ (59,563)	$ 58,677	$ (886)
A		(1,157,759)	1,160,342	2,583
BBB		(1,542,875)	1,554,127	11,252
	Total	$ (2,760,197)	$ 2, 773,146	$ 12,949

The aggregate fair value of receivables relating to uncleared OTC derivative contracts was $2.8 billion at December 31, 2015. These amounts represent the maximum loss that would be recognized at the reporting date if all counterparties failed to perform as contracted. This maximum exposure is reduced to $0 at December 31, 2015 when counterparty collateral and master netting arrangements are taken into account. The number of uncleared OTC counterparties with credit exposure at year-end was 10.

Counterparty credit risk is mitigated by an intermediary for cleared OTC and exchange-traded derivative contracts. For these types of derivative investments, a clearinghouse interposes itself as counterparty to all trades and extends a guarantee that trades will be settled as originally intended. To ensure performance, margin requirements are imposed. The requirements are established with the intent to cover nearly all expected price changes based on market risk. Margin payments are settled daily based upon the price movements of the contracts, thereby significantly reducing counterparty credit risk. The Retirement Funds posted $138.2 million in cash and $263.9 million in securities as collateral with clearing brokers as of December 31, 2015.

Foreign Currency Spot and Forward Contracts
Foreign Currency Spot and Forward contracts are uncleared OTC agreements between two counterparties to exchange designated currencies at a specific time in the future. No cash is exchanged when a foreign exchange spot or forward contract is initiated. Depending upon market movements, forward contracts may require collateral postings either to SWIB or to counterparties. Spot contracts are exempt from collateralization. For deliverable contracts, amounts due are paid or received

on the contracted settle date. In other instances (most often in emerging markets), contracts are established as non-deliverable forwards (NDFs). Unlike deliverable contracts, NDFs are only settled in U.S. dollars.

Currency exposure management is permitted through the use of currency derivative instruments. Direct hedging of currency exposure back to the U.S. dollar is permitted when consistent with the strategy of the portfolio. Cross-currency exposure management to transfer out of an exposed currency and into a benchmark currency is permitted. In some portfolios, currencies of non-benchmark countries may be held through the use of forward contracts, provided that the notional value of any single non-benchmark currency does not exceed 5% of the market value of the portfolio. SWIB may employ discretionary currency overlay strategies at the total fund and asset class level when currency market conditions suggest such strategies are warranted.

Losses may arise from future changes in the value of the underlying currency, or if the counterparties do not perform under the terms of the contract. Spot and forward contracts are valued daily with the changes in fair value included in "Net Appreciation (Depreciation) in Fair Value of Investments" on the Statement of Changes in Fiduciary Net Position. The net receivable or payable for spot and forward contracts is reflected as "Foreign Currency Contracts" on the Statement of Fiduciary Net Position. The table, **Foreign Currency Spot and Forward Contracts**, presents the fair value of foreign currency spot and forward contract assets and liabilities held by the Retirement Funds as of December 31, 2015.

Retirement Funds
Foreign Currency Spot and Forward Contracts
December 31, 2015
(In Thousands)

Currency	Notional (local currency)	Fair Value ($US)	Unrealized Gain/(Loss) ($US)
Foreign Currency Contract Receivables			
Australian Dollar	159,326	115,883	(153)
British Pound Sterling	62,307	91,837	(2,063)
Canadian Dollar	168,625	121,395	(3,634)
Chilean Peso	5,563,000	7,807	(129)
Danish Krone	197,980	28,822	399
Euro Currency Unit	249,290	270,832	2,439
Hong Kong Dollar	242,441	31,283	(1)
Indian Rupee	2,688,504	40,371	384
Indonesian Rupiah	58,075,000	4,113	66
Israeli New Shekel	27,486	7,064	(20)
Japanese Yen	35,378,125	294,146	4,010
Malaysian Ringgit	2,000	464	2
Mexican New Peso	236,158	13,631	(180)
New Zealand Dollar	4,839	3,312	100
Norwegian Krone	284,658	32,158	(1,074)
Russian Ruble	356,350	4,820	(180)
Singapore Dollar	33,324	23,488	(108)
South African Rand	6,000	386	(7)
Swedish Krona	1,066,510	126,518	2,812
Swiss Franc	62,757	62,702	1,089
U.S. Dollar	982,996	982,996	-
		2,264,028	3,752
Foreign Currency Contract Payables			
Australian Dollar	(35,815)	(26,053)	27
Brazilian Real	(40,438)	(10,064)	287
British Pound Sterling	(152,016)	(224,060)	4,673
Canadian Dollar	(52,670)	(37,916)	273
Colombian Peso	(4,763,460)	(1,499)	(70)
Danish Krone	(342,989)	(49,932)	(1,076)
Euro Currency Unit	(290,803)	(315,950)	(3,494)
Hong Kong Dollar	(246,811)	(31,847)	1
Indian Rupee	(801,750)	(12,112)	(50)
Indonesian Rupiah	(93,520,173)	(6,671)	(65)
Israeli New Shekel	(28,749)	(7,389)	22
Japanese Yen	(14,716,905)	(122,349)	(1,001)
Mexican New Peso	(259,316)	(15,002)	265
New Zealand Dollar	(10,104)	(6,907)	(122)
Norwegian Krone	(181,341)	(20,487)	493
Peruvian Nuevo Sol	(20,168)	(5,865)	69
Polish Zloty	(21,915)	(5,549)	(23)
Russian Ruble	(47,766)	(645)	65
Singapore Dollar	(31,041)	(21,878)	110
South African Rand	(22,600)	(1,456)	114
Swedish Krona	(309,314)	(36,693)	(737)
Swiss Franc	(24,952)	(24,929)	(238)
U.S. Dollar	(1,275,501)	(1,275,501)	-
		(2,260,754)	(477)
Total		$3,274	$3,275

Futures Contracts

A futures contract is an exchange-traded agreement to buy or sell a financial instrument, index or commodity at an agreed upon price and time in the future.

The fair value of futures contracts represents the unrealized gain/(loss) on the contracts, since trade inception, and is reflected as "Financial Futures Contracts" on the Statement of Fiduciary Net Position. Futures contracts are marked to market daily, based upon the closing market price of the contract at the board of trade or exchange on which they are traded. Gains and losses resulting from investments in futures contracts are included in the "Net Appreciation (Depreciation) in Fair Value of Investments" on the Statement of Changes in Fiduciary Net Position.

Futures contracts involve, to varying degrees, risk of loss in excess of the margin deposited with the clearinghouse. Losses may arise from future changes in the value of the underlying instrument.

Futures contracts may be entered into for purposes such as the following:

- To efficiently gain or adjust market exposures for trust fund rebalancing,
- To adjust sector, interest rate, or duration exposures,
- To securitize cash or as act a substitute for cash market transactions.

The table, **Futures Contracts**, presents the Retirement Funds investments in futures contracts as of December 31, 2015.

Retirement Funds
Futures Contracts
As of December 31, 2015
(In Thousands)

Futures Contract Description	Position	Expiration	Notional Amount	Fair Value*
Commodity	Long	Jan 16 - Mar 16	$ 1,766,129	$ (5,690)
Currency	Long	Mar 16	11,849	20
Equity	Long	Mar 16	3,021,505	13,318
Equity	Short	Mar 16	(10,686)	(122)
Fixed Income	Long	Mar 16	6,106,131	(7,765)
Fixed Income	Short	Mar 16	(1,587)	(8)
		Total	$ 10,893,341	$ (247)

* Fair Value includes foreign currency gains/(losses).

The table, **Futures Contracts with Interest Rate Sensitivity,** presents the interest rate sensitivity of fixed income futures contracts as of December 31, 2015. Duration, which is stated in years, is the measure of price sensitivity of a fixed income security to an interest rate change of 100 basis points. Duration statistics presented in this table are weighted by the notional value of each position to compute an average duration for the contract types held.

Retirement Funds
Futures Contracts with Interest Rate Sensitivity
As of December 31, 2015
(In Thousands)

Contract Type	Position	Notional Amount	Fair Value	Weighted Average Duration (Years)
U.S. Treasury Notes	Long	$5,041,559	$(9,966)	3.5
U.S. Treasury Bonds	Long	969,398	1,874	16.1
U.S. Treasury Bonds	Short	(1,587)	(8)	16.4
International Government Bonds	Long	95,174	326	7.2
Total		$ 6,104,544	$ (7,774)	

Options

An option contract gives the purchaser of the contract the right, but not the obligation, to buy (call) or sell (put) the security or index underlying the contract at an agreed upon price on or before the expiration of the option contract. The seller of the contract is subject to market risk, while the purchaser is subject to credit risk and market risk, to the extent of the premium paid to enter into the contract.

Trust fund rebalancing policies and certain portfolio investment guidelines permit the use of exchange-traded and uncleared OTC options. Investment Guidelines allow options to be used to improve market exposure efficiency, enhance expected returns, or provide market exposure hedges. Exchange rules require that the seller of short exchange-traded option contracts cover these positions either by collateral deposits in the form of cash or by pledging, in escrow, the actual securities that would be transferred to the option purchaser in the event the option contract were exercised.

The fair value of option contracts is based upon the closing market price of the contract and is reflected as “Option Contracts” on the Statement of Fiduciary Net Position. Gains and losses as a result of investments in option contracts are included in the “Net Appreciation (Depreciation) in Fair Value of Investments” on the Statement of Changes in Fiduciary Net Position. The table, **Option Contracts**, presents the fair value of option contracts as of December 31, 2015.

Retirement Funds
Option Contracts
As of December 31, 2015
(In Thousands)

Description	Contract Type	Position	Exchange-Traded (EXCH) vs. OTC	Expiration	Notional	Fair Value	Unrealized Gain (loss)
Commodity	Call	Long	EXCH	Apr 16	$ 1,722	$ 6	$(125)
	Call	Short	EXCH	Apr 16	(861)	(54)	(22)
	Put	Short	EXCH	Jan 16	(41)	-	-
Currency	Call	Short	EXCH	Jan 16	(55,858)	(56)	180
	Put	Short	EXCH	Jan 16	(44,820)	(295)	(81)
Equity	Call	Long	EXCH	Jan 16 - Jan 17	33,222	423	(1,034)
	Call	Long	OTC	Mar 16	3,960	173	(6)
	Call	Short	EXCH	Jan 16	(22,549)	(301)	378
	Call	Short	OTC	Mar 16	(2,547)	(29)	10
	Put	Short	EXCH	Jan 16 - Mar 16	(148,790)	(927)	581
	Put	Short	OTC	Jan 16 - Mar 16	(145,184)	(119)	700
Total					$ (381,746)	$ (1,179)	$ 581

Swaps

Swaps are negotiated contractual agreements between two counterparties which can be cleared or uncleared OTC investments. Throughout the calendar year, the Retirement Funds held positions in Total Return Swaps (TRS), Interest Rate Swaps (IRS) and Credit Default Swaps (CDS).

As is specified in SWIB's investment guidelines, swaps may be used as an alternative to physical securities when it is deemed advantageous for portfolio construction. In addition, swaps may be used to adjust asset class exposures for the Retirement Funds. Guideline limits and soft risk parameters for each portfolio are applied to the aggregate exposures which includes both physical and synthetic securities. A synthetic security is created by combining securities to mirror the properties of another security.

The table, **Open Swap Positions**, lists the open swap contracts held at December 31, 2015. As noted in the table, certain swap terms are based on the 3-month London Interbank Offering Rate (LIBOR).

Retirement Funds
Open Swap Positions
As of December 31, 2015
(In Thousands)

Description	Date Initiated	Maturity Date	Reference Rates	Notional Amount	Fair Value
Total Return Swaps	Sep-15	Sep-16	Pay 3-month LIBOR, Receive Equity Index Return	$ 499,350	$ 9,597
Interest Rate Swaps*	Jan-15	Jan-25	Pay Fixed 2.08, Receive 3-month LIBOR	1,128	7
Interest Rate Swaps*	Jan-15	Jan-25	Pay Fixed 2.14, Receive 3-month LIBOR	2,512	2
Interest Rate Swaps*	Feb-15	Feb-45	Pay Fixed 2.34, Receive 3-month LIBOR	2,200	148
Total				$ 505,190	$ 9,754

* Denotes instrument that is highly sensitive to interest rate changes

IRS positions represent cleared OTC contracts where fair value is determined using the closing price as reported by the applicable clearinghouse. TRS positions represent uncleared OTC contracts where fair value is determined based on the change in quoted market price of the underlying equity index. The fair value of swaps represents the unrealized gain/(loss) on the contracts, since trade inception, and is reflected as "Swaps" on the Statement of Fiduciary Net Position. Any interest owed but not yet paid relating to TRS contracts is reported within the account "Investment Payables" on the Statement of Fiduciary Net Position.

Gains and losses resulting from investments in all swap contracts are included in the "Net Appreciation (Depreciation) in Fair Value of Investments" on the Statement of Changes in Fiduciary Net Position. Interest expense relating to TRS contracts is reported as "Investment Expense" on the Statement of Changes in Fiduciary Net Position.

Short Sell Obligations

The Retirement Funds may sell a security it does not own in anticipation of purchasing the security later at a lower price. This is known as a short sale transaction. For the duration of the short sale transaction, a liability is recorded under “Short Sell Obligations” on the Statement of Fiduciary Net Position. The liability presented on the Statement of Fiduciary Net Position represents the fair value of the shorted securities necessary for delivery to the purchaser and is marked-to-market daily. Realized and unrealized gains and losses associated with short sales are recorded on the Statement of Changes in Fiduciary Net Position and within in the “Net Appreciation (Depreciation) in Fair Value of Investments” account. Prior to executing a short sale, SWIB will borrow the security from a party currently holding it. While the transaction is open, the Retirement Funds incur expenses for securities borrowing costs. In addition, as a security borrower, the Retirement Funds may incur dividend and interest expense, as such payments must be remitted to the security lender during the course of the loan. During the duration of the borrow, there may be corporate action elections requiring the borrower to deliver items such as cash or securities to the lender. Expenses resulting from short sales are included in “Investment Expense” on the Statement of Changes in Fiduciary Net Position.

Risks arise from short sales due to the possible illiquidity of the securities markets and from potential adverse movements in security values. The cost to acquire the securities sold short may exceed the amount of proceeds initially received, as well as the amount of the liability recorded as “Short Sell Obligations” in the Statement of Fiduciary Net Position. Short sales expose the short seller to potentially unlimited liability because there is no upward limit on the price a shorted security could attain. Certain portfolio guidelines permit short sales and mitigate risks in various ways, such as: limiting the total value of short sales as a percentage of portfolio value, establishing portfolio vs. benchmark tracking error limits and monitoring other statistical and economic risk measures of the portfolio. Investment performance and risk associated with each portfolio is measured against benchmarks and monitored by management.

When a short sale occurs, the shorting portfolio must borrow the security and deliver it to the buyer. If the shorted security is owned by another Retirement Fund portfolio, investment policies allow the borrowing of the shorted securities from other Retirement Fund portfolios, including inter-fund borrowings. In addition to borrowing securities from existing Retirement Fund portfolios, SWIB may borrow securities from external sources. These borrowings are facilitated by SWIB’s custodian.

Except in the case of borrowings within the same trust fund, the Retirement Funds are required to post collateral to the lender, at the required rate of 102% for in-currency loans and 105% for cross-currency loans. The Retirement Funds posted $372.7 million in cash collateral to security lenders representing $13.8 million in excess of the fair market value of the securities borrowed as of December 31, 2015. If the security lender recalled the security and SWIB was not able to supply the lender with the security, the lender would be permitted to use SWIB's collateral to fund the purchase of the security.

Multi Asset

SWIB employs portfolio strategies which involve investments across multiple asset classes. The "Multi Asset Investments" account on the Statement of Fiduciary Net Position consists primarily of risk parity and hedge fund multi asset strategies. Risk parity and hedge fund investments are either in the form of a commingled fund, with ownership through fund shares, or a limited partnership.

The risk parity portfolios seek to equally weight asset allocation risk across multiple assets and geographies. Exposures are expected to deliver improved risk and return tradeoffs versus conventional portfolios comprised primarily of stocks and bonds. The risk parity portfolios also intend to provide more diversified exposure over various economic environments.

The Retirement Funds invest in a diversified set of hedge fund strategies, invested across multiple asset classes. In general, a hedge fund is a private investment fund that seeks to produce absolute returns using a broad range of strategies with low to moderate levels of volatility, typically employing both long and short positions. An allocation to a diversified hedge fund portfolio is intended to have low correlation to traditional publicly traded equities.

Hedge funds can be illiquid, either by virtue of the illiquidity of underlying assets or due to lock-up terms. However, SWIB has taken steps to minimize this risk by investing in hedge funds with more liquid asset classes and by structuring its investments to stagger lock-up periods. Hedge funds also use leverage to varying degrees, and while it is possible that a hedge fund can lose a significant portion of its capital, SWIB has limited the amount it invests in hedge funds in total and with any individual hedge fund manager.

As of December 31, 2015, the majority of SWIB's risk parity and hedge fund investments are reflected within the "Multi Asset Investments" account on the Statement of Fiduciary Net Position.

Long-Term Receivables

Included in "Investment Sales Receivable" account on the Statement of Fiduciary Net Position is $115.5 million in receivables as of December 31, 2015 which are due on or before July 2017. These receivables represent amounts due from third parties related to the sale of private equity limited partnership interests and do not include unrealized gains/losses due to foreign exchange fluctuations.

Investment Policy and Asset Allocation

SWIB's Board of Trustees has established investment guidelines pursuant to a comprehensive and ongoing evaluation of the appropriate risk and return standards for each fund under management. Trustees have a fiduciary responsibility, with respect to the Retirement Funds, to act solely in the interest of the WRS. The Board of Trustees consists of nine members meeting specific requirements as follows:

- Six Governor appointed and State Senate approved members including:
    - Four with at least ten years investment experience
    - One with at least ten years financial experience and who works for a local government participant in the Local Government Investment Pool
    - One additional member
- Educator participant in the WRS appointed by the Teachers Retirement Board
- Non-educator participant in the WRS appointed by the Wisconsin Retirement Board
- Secretary of the Department of Administration or designee

The Board of Trustees approved guidelines are intended to assist in development of a diversified portfolio of investments, tailored to accomplish the purpose of each fund within acceptable risk parameters. They represent a delegation of standing authority to the SWIB's Executive Director and investment managers within the organization to make prudent investments within the investment guidelines, pursuant to sections 15.02(4) and 25.16(1) of the Wisconsin Statutes and section IB 2.02 of the Wisconsin Administrative Code.

Additionally the Investment Committee (IC) was created to provide oversight of SWIB investments within the parameters established by the Board of Trustees. Oversight includes analysis of risk and return of the portfolio, asset class, and Core and Variable Funds. The IC is responsible for proposing to the Board of Trustees changes to investment guidelines for internally managed portfolios, for approving investment guidelines or strategies for externally managed portfolios, approving the general strategies for each asset class, and for approving individual strategies within the Multi Asset portfolios.

The Board of Trustees adopts the Retirement Funds' asset allocation policy, based on recommendations by the IC and asset allocation consultant. SWIB undertakes a review of its strategic asset allocation plan every other year, including asset/liability modeling, to determine a suitable target allocation for each asset class included in the Core and Variable Fund. The strategic nature of these reviews contemplates a long-term time horizon over which potential results are evaluated. This exercise is not an attempt to predict short-term market movements, but an effort to understand the long-term impacts of poor, normal and above average market results. In the "off year" of the two-year cycle, structural asset allocation adjustments and other funding initiatives are considered.

In addition to potential future market impact, SWIB also contemplates the objectives of the funds, the impact of actuarial analysis and the soundness of investment return and risk expectations. SWIB's asset allocation policies reflect the Board of Trustee's program of risk allocation that involves reduced equity exposure coupled with leveraged low-volatility assets, such as "fixed income" securities. This investment strategy results in Core Fund strategic targets which exceed 100% of invested assets. Currently the Core Fund has adopted an asset allocation target of 7% leverage, however over time it is anticipated that SWIB will move toward an asset allocation that includes 20% leveraging of low volatility assets. As SWIB increases the degree of leverage as it moves toward the destination target asset allocation, the Board of Trustees will be informed of the nature and method used for each incremental step. Before implementing leverage beyond 10%, the Board of Trustees, SWIB's asset allocation consultant and staff will engage in additional focused asset allocation discussion.

SWIB's asset allocation review process also includes assumptions regarding expected rates of return. Long-term (e.g., 30-year) expected real rates of return on pension plan investments are determined using a building block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected real rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The table, **Asset Allocation Targets and Expected Returns,** presents the current policy asset allocation targets, the destination asset allocation targets and the best estimates of expected geometric rates of return for each major asset class as of December 31, 2015.

Retirement Funds
Asset Allocation Targets and Expected Returns
As of December 31, 2015

Core Fund Asset Class	Current Asset Allocation %	Destination Target Asset Allocation %	Long-Term Expected Nominal Rate of Return %	Long-Term Expected Real Rate of Return %
U.S. Equities	27 %	23 %	7.6 %	4.7 %
International Equities	24.5	22	8.5	5.6
Fixed Income	27.5	37	4.4	1.6
Inflation Sensitive Assets	10	20	4.2	1.4
Real Estate	7	7	6.5	3.6
Private Equity/Debt	7	7	9.4	6.5
Multi-Asset	4	4	6.7	3.8
Total Core Fund	107 %	120 %	7.4 %	4.5 %
Variable Fund Asset Class				
U.S. Equities	70 %	70 %	7.6 %	4.7 %
International Equities	30	30	8.5	5.6
Total Variable Fund	100 %	100 %	7.9 %	5.0 %

New England Pension Consultants Long-Term US CPI (Inflation) Forecast: 2.75%
Asset Allocations are managed within established ranges. Percentages may differ from actual monthly allocations.

For purposes of determining asset allocation targets, investments may be categorized differently than they are within the financial statements. For example, SWIB's management considers inflation sensitive assets separately from other "fixed income" investments for asset allocation purposes.

Unfunded Capital Commitments

SWIB entered into a number of agreements that commit the Core Fund to make investment purchases up to predetermined amounts over certain investment time periods. The unfunded capital commitments for private equity, real estate and multi asset investments not reported on the Statement of Fiduciary Net Position totaled $6.4 billion as of December 31, 2015.

Annual Money-Weighted Rate of Return

Money-weighted rate of return expresses investment performance, net of pension plan investment expense, adjusted for the changing amounts actually invested. For the year ended December 31, 2015, the money-weighted rate of return for the Core Fund was (0.63%) and (1.11%) for the Variable Fund.

4. Description Of Wisconsin Retirement System

WRS benefits and other plan provisions are established by Chapter 40 of the Wisconsin Statutes. Benefit terms may only be modified by the legislature. ETF, under the direction of the ETF Board, is responsible for the administration of the WRS.

Employee Trust Funds Board

The ETF Board has general oversight of ETF, appoints the ETF Secretary and oversees administration of the benefit programs, other than group insurance and deferred compensation. The ETF Board is comprised of 13 members, including:

- the Governor or the Governor's designee on the Group Insurance Board,
- the Administrator of the Department of Administration's Division of Personnel Management or the Administrator's designee,
- 4 members appointed by the Teachers Retirement Board (an advisory board to the ETF Board),
- 4 members appointed by the Wisconsin Retirement Board (an advisory board to the ETF Board),
- a public member who is not a participant in or beneficiary of the Wisconsin Retirement System, with at least 5 years of experience in actuarial analysis, administration of an employee benefit plan or significant administrative responsibility in a major insurer,
- a WRS annuitant, and
- a participant in the Wisconsin retirement system who is a technical college or public school district educational support personnel employee.

WRS Employers

The WRS is open to all public employers in Wisconsin. Participation is optional, except that participation is mandatory for school districts with respect to teachers, some municipalities with respect to police and firefighters, and all counties except Milwaukee County. As of December 31, 2015, the number of participating employers was:

State Agencies, UW & Public Authorities	58
Cities	152
Counties	71
4th Class Cities	36
Villages	264
Towns	247
School Districts	424
Cooperative Educational Service Agencies	12
Wisconsin Technical College System Districts	16
Special Districts	207
Total Employers	1,487

WRS Membership

Any employee of a participating employer who is expected to work at least 1,200 hours per year (880 hours per year for teachers and school district educational support employees) must be covered by the WRS. As of December 31, 2015, the WRS membership consisted of:

Current Employees:	
General	133,385
Teachers	99,261
Elected / Executive / Judges	1,396
Protective with Social Security	19,301
Protective without Social Security	2,734
Total Current Employees	256,077
Inactive Participants:	
Terminated Participants	161,851
Alternate Payees	4,111
Total Inactive Participants	165,962
Retirees and Beneficiaries Currently Receiving Benefits:	
Retirement Annuities	184,180
Disability Annuities	6,305
Death Beneficiary Annuities	1,310
Total Annuitants	191,795
Total Participants	613,834

WRS Benefits

The WRS provides retirement benefits as well as death and disability benefits. Vesting requirements have changed over time, as follows:

- Participants in the system prior to January 1, 1990, were fully vested at the time they met participation requirements;
- For participants entering the system from January 1, 1990, to April 23, 1998, creditable service in each of five years was required for vesting;
- All active participants in the system at any time from April 24, 1998 to June 30, 2011 are fully vested;
- 2011 Wisconsin Act 32 generally required participants hired on or after July 1, 2011 to have five years of creditable service to be vested.

Employees who retire at or after age 65 (54 for protective occupations and 62 for elected officials and executive service retirement plan participants) are entitled to a retirement benefit based on a formula factor, their final average earnings, and creditable service. Formula factors are shown in the table below.

Employment Category	Service Before 1/1/2000	Service Between 2000 and 2011	Service After 2011
General and Teachers	1.765 %	1.6 %	1.6%
Executive and Elected	2.165	2.0*	1.6*
Protective with Social Security	2.165	2.0	2.0
Protective without Social Security	2.665	2.5	2.5

*2011 Wisconsin Act 10 changed the Executive and Elected formula factor from 2.0% to 1.6%. The effective date of the change varies among different employee categories, and generally applies to the services earned after Act 10 effective date (i.e., June 29, 2011).

Final average earnings is the average of the participant's three highest annual earnings periods. Creditable service includes current service and prior service for which a participant received earnings and made contributions as required. Creditable service also includes creditable military service. The retirement benefit will be calculated as a money purchase benefit based on the employee’s contributions plus matching employer's contributions, with interest, if that benefit is higher than the formula benefit.

Vested participants may retire at or after age 55 (50 for protective occupations) and receive an actuarially-reduced benefit. Participants terminating covered employment prior to eligibility for an annuity may either receive employee-required contributions plus interest as a separation benefit or leave contributions on deposit and defer application until eligible to receive a retirement benefit.

Post-Retirement Adjustments

The Employee Trust Funds Board may periodically adjust annuity payments from the retirement system based on annual investment performance in accordance with s. 40.27, Wis. Stat. An increase (or decrease) in annuity payments may result when investment gains (losses), together with other actuarial experience factors, create a surplus (shortfall) in the reserves, as determined by the system's consulting actuary. Annuity increases are not based on cost of living or other similar factors. For Core annuities, decreases may be applied only to previously granted increases. By law, Core annuities cannot be reduced to an amount below the original, guaranteed amount (the "floor") set at retirement.

The Core and Variable Fund annuity adjustments granted during recent years are as follows:

Year	Core Adjustment	Variable Adjustment
2006	0.8 %	3.0%
2007	3.0	10.0
2008	6.6	0.0
2009	-2.1	-42.0
2010	-1.3	22.0
2011	-1.2	11.0
2012	-7.0	-7.0
2013	-9.6	9.0
2014	4.7	25.0
2015	2.9	2.0

The negative Core annuity adjustments from 2009 to 2013 were primarily due to the Fund's $21.0 billion investment decline in 2008, caused by the global economic crisis. Core Fund gains and losses are recognized over a five-year period.

Long-term Receivables

The "Prior Service Contributions Receivable" on the Statement of Fiduciary Net Position represents the WRS unfunded actuarial accrued liability (UAAL), determined under the plan's Frozen Initial Liability funding methodology. This liability is being amortized as a level percentage of payroll over a 40-year period beginning January 1, 1990, for employers in the WRS prior to 2009. The remaining balance is expected to be fully amortized by December 31, 2029. Liabilities for employers joining the WRS beginning in 2009 are amortized over 30 years. Interest is assessed on the outstanding liability at year-end at the assumed earnings rate. The level-percentage-of-payroll amortization method results in a relatively lower dollar contribution in earlier years than in later years, when payrolls have increased. During the early years of the amortization period, payments made are less than annual interest assessments, resulting in an increase in the liability. As payrolls increase annually, prior service payments increase proportionally until they exceed annual interest and ultimately fully liquidate the liability at the end of the amortization period. State law requires the accrued retirement cost to be funded. As of December 31, 2015, the receivable balance was $26.0 million.

Variable Retirement Option

Prior to 1980, WRS participants could opt to have one-half of their required contributions and matching employer contributions invested in the Variable Fund. Retirement benefits were adjusted for the difference between the investment experience of the Core Fund and the Variable Fund. Provisions for allowing members to withdraw from the Variable Fund were added with the passage of Chapter 221, Laws of 1979. The Variable Fund was closed to new membership after April 30, 1980. 1999 Wisconsin Act 11 reopened the Variable Fund for existing and future participants, effective January 1, 2001. As of December 31, 2015, there were 60,207 active and inactive members and 40,152 annuitants participating in the Variable Fund.

Municipal Police and Firefighters Pension Group

As of March 31, 1978, administration of certain local funds for police officers and firefighters was assumed by the Wisconsin Retirement Fund. This included approximately 2,000 members. As of December 31, 2015, approximately 102 annuitants or their beneficiaries remained in the system. This group was closed to new members after January 1, 1948.

The liability for retirement benefits for these annuitants is funded by the employers, as benefit payments are made. Annuity reserves for these police and firefighter annuities are established by a transfer from the employer accumulation reserve at the time the annuity is approved. Earnings on these reserves are used to fund annuity adjustments on the same basis as for WRS annuitants. The unfunded liability for these annuitants as of December 31, 2015, was $2.9 million.

Annuity Supplement—General Fund

As authorized under 1985 Wis. Stats. § 40.27 (1), the State's General Fund provides certain supplemental annuity benefits to annuitants receiving a continuing annuity on or before September 1974. The benefit is subject to continuation of the appropriation by the Legislature. ETF serves as a clearing agent for its payment. Total supplemental annuity benefits paid were $0.3 million in 2015.

5. Contributions Made and Required

Required Contributions

Contribution rates are determined by the "entry age normal with a frozen initial liability" actuarial method. This is a "level contribution" actuarial method intended to keep employer and employee contribution rates at a level percentage of payroll over the years. This method determines the amount of contributions necessary to fund: 1) the current service cost, which represents the estimated amount necessary to pay for benefits earned by the employees during the current service year plus actuarial gains or losses arising from the difference between actual and assumed experience; and 2) the prior service cost, which represents the estimated amount necessary to pay for unfunded benefits earned prior to the employer becoming a participating employer in WRS and the past service cost of benefit improvements.

The 2015 contribution requirements were determined by the December 31, 2013, actuarial valuation.

Employee contributions are deducted from the employee's salary and remitted by the employer. Employers generally may not pay the employee required contribution. The employee required contribution is one-half of the actuarially-determined contribution rate for General category employees, which includes teachers; and employees in the Executive Group and Elected Officials category. Employee required contributions for Protective Occupation category employees are the same rate as General category employees. Employers are required to contribute the remainder of the actuarially-determined contribution rate.

Contribution rates in effect during 2015 by employment category were:

	Employer Current	Employer Prior *	Employee	Total
General and Teachers	6.8 %	0.0 %	6.8 %	13.6 %
Elected Officials, State Executive Retirement Plan	7.7	0.0	7.7	15.4
Protective Occupation with Social Security	9.5	0.0	6.8	16.3
Protective Occupation without Social Security	13.1	0.3	6.8	19.9

*The employer prior service contribution rate is a weighted average of individual employer rates.

Contributions required and made during 2015 were:

Contributions Required and Made	Contributions ($ in millions)	Percentage of Payroll
Employer Current Service	$ 967.7	7.15 %
Employer Prior Service*	1.6	0.01
Employee Required	921.9	6.81

*Employer Prior Service contributions are recorded on the Statement of Fiduciary Net Position as a reduction in the Prior Service Contribution Receivable. Contributions Made includes both mandatory and voluntary payments received from participating employers. Some Prior Service contributions received after year end are included in Contributions Made, but are not in the determination of Prior Service Contributions Receivable. This is due to a difference in how these payments are treated for actuarial and financial reporting purposes.

Employers also contributed $813,000 in reimbursement for benefits paid under the s. 62.13, Wis. Stat, Police and Firefighters Pension Program.

Employee and Employer Additional Contributions

Contributions in addition to those required contributions by employees and/or employers may be made to the retirement system. These contributions are held in separate reserve accounts and are subject to certain restrictions as to amount, form of benefit payments, tax status, etc.

6. Net Pension Liability (Asset) Of Participating Employers—WRS

The components of the net pension liability (asset) of the participating employers at December 31, 2015, were as follows ($ in millions):

Total Pension Liability	$ 90,129.7*
Plan Fiduciary Net Position	88,504.7**
Participating Employers' Net Pension Liability (Asset)	$ 1,625.0
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	98.20%

*Starting with 2015, this item includes the impact of known Market Recognition Account deferred gains/losses on the liability for dividend payments.
**Immaterial difference may exist between the Plan Fiduciary Net Position used in the actuarial valuation and that reported in the Statement of Fiduciary Net Position, due to the timing of the actuarial valuation.

Additional information as of the latest actuarial valuations follows:

Actuarial Valuation Date:	December 31, 2014
Measurement Date of Net Pension Liability	December 31, 2015
Actuarial Cost Method:	Entry Age
Asset Valuation Method:	Fair Value
Long-Term Expected Rate of Return:	7.2%
Discount Rate:	7.2%
Salary Increases:	
Inflation	3.2%
Seniority/Merit	0.2% - 5.6%
Mortality:	Wisconsin 2012 Mortality Table
Post-retirement Adjustments	2.1%*

* No post-retirement adjustment is guaranteed. Actual adjustments are based on recognized investment return, actuarial experience and other factors. 2.1% is the assumed annual adjustment based on the investment return assumption and the post-retirement discount rate.

Starting with 2015, this item includes the impact of known Market Recognition Account deferred gains/losses on the liability for dividend payments.

Actuarial assumptions are based upon an experience study conducted in 2012 using experience from 2009 – 2011. The total pension liability as of December 31, 2015 is based upon a roll-forward of the liability calculated from the December 31, 2014 actuarial valuation.

A single discount rate of 7.20% was used to measure the total pension liability (asset). This single discount rate was based on the expected rate of return on pension plan investments of 7.20% and a long term bond rate of 3.57%. Because of the unique structure of WRS, the 7.20% expected rate of return implies that a dividend of approximately 2.1% will always be paid after reflecting known changes in the Market Recognition Account. For purposes of the single discount rate, it was assumed that the dividend would always be paid.

The projection of cash flows used to determine the single discount rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments (including expected dividends) of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the Net Pension Liability (Asset) to Changes in the Discount Rate
The following presents the plan's net pension liability (asset), calculated using a single discount rate of 7.20%, as well as what the plan's net pension liability (asset) would be if it were calculated using a single discount rate that is one percentage point lower or one percentage point higher:

	1% Decrease (6.2%)	Current Discount Rate (7.2%)	1% Increase (8.2%)
Total Pension Liability	$ 99,902.3	$ 90,129.7	$ 82,497.1
Plan Fiduciary Net Position	88,504.7	88,504.7	88,504.7
Net Pension Liability/(Asset)	$ 11,397.6	$ 1, 625.0	$ (6,007.6)

Amounts may not foot due to rounding.

For the WRS, the determination of liabilities also depends on the assumed dividend which is linked to the interest rate used in the liability calculation. Therefore, we have also shown an alternative set of Sensitivity Analysis which varies the assumed dividend in conjunction with the change in the discount rate. For the liabilities shown below, the assumed dividend was 1.1% for the 6.2% discount rate, 2.1% for the 7.2% discount rate, and 3.0% for the 8.2% discount rate. ($ in millions):

	1% Decrease (6.2%)	Current Discount Rate (7.2%)	1% Increase (8.2%)
Total Pension Liability	$ 93,535.4	$ 90,129.7	$ 86,506.1
Plan Fiduciary Net Position	88,504.7	88,504.7	88,504.7
Net Pension Liability/(Asset)	$ 5,030.7	$ 1,625.0	$ (1,998.5)

Amounts may not foot due to rounding.

7. Statutory Reserves

The following reserves have been established to reflect legal restrictions on the use of pension trust funds.

Employee Accumulation Reserve
As authorized by Wis. Stats. § 40.04 (4), this reserve includes all required and voluntary employee contributions, including contributions made by the employer on behalf of the employee. This reserve may only be used to pay lump sum benefits or transfers to the Annuity Reserve to fund annuities. All legal restrictions on use of this reserve were met during the year. The Employee Accumulation Reserve is fully funded.

Employee Accumulation Reserve balances ($ in millions) as of December 31, 2015, were:

	Core	Variable	Total
Employee Required	$ 15,078.0	$ 1,459.0	$ 16,537.0
Employee Additional	156.0	13.9	169.9
Total	$ 15,234.0	$ 1,472.9	$ 16,706.9

Employer Accumulation Reserve

As authorized by Wis. Stat. § 40.04 (5), this reserve includes all required employer contributions, including contributions for amortization of the unfunded accrued actuarial liability. This reserve may only be used to pay lump sum benefits or transfers to the Annuity Reserve to fund annuities. All legal restrictions on use of this reserve were met during the year. The Employer Accumulation Reserve is 99.9% funded.

Employer Accumulation Reserve balances ($ in millions) as of December 31, 2015, were:

	Core	Variable	Police & Firefighters	Total
Employer Accumulation	$ 20,546.4	$ 1,459.1	$ 0.0	$ 22,005.5
Less: Unfunded Actuarial Accrued Liability	0.0	0.0	(2.9)	(2.9)
Net Employer Accumulation	$ 20,546.4	$ 1,459.1	$ (2.9)	$ 22,002.6

Annuity Reserve

As authorized by Wis. Stat. § 40.04 (6), this reserve includes the present value of all annuities. The present value of new annuities is transferred from the Employee Accumulation Reserve and the Employer Accumulation Reserve to the Annuity Reserve. This reserve may only be used for the payment of annuities and death benefits to annuitants. All legal restrictions on use of this reserve were met during the year. The Annuity Reserve is fully funded.

Annuity Reserve Balances ($ in millions) as of December 31, 2015 were:

	Core	Variable	Police & Firefighters	Total
Annuity Reserve	$ 49,211.2	$ 3,706.3	$7.7	$ 52, 925.2

Market Recognition Account

As authorized by Wis. Stat. § 40.04 (3), this reserve is used to smooth the flow of investment income into the Employee, Employer, and Annuity Reserves and other benefit plans invested in the Core Fund. Under the Market Recognition Account (MRA), all investment income, including realized and unrealized market gains and losses, is deposited into the MRA. At year-end, income equal to the assumed earnings rate is recognized. Any surplus or shortfall in earnings is recognized equally over five years.

Year-end balances in the MRA ($ in millions) for the last five years after annual distributions were as follows:

As of:	MRA
December 31, 2011	$ (5,340)
December 31, 2012	2,451
December 31, 2013	4,721
December 31, 2014	2,540
December 31, 2015	$ (3,404)

8. Contingencies, Unusual Events, And Subsequent Events

Loss Contingency

On September 5, 2008, the Internal Revenue Service (IRS) provided SWIB with a “Notice of Transferee Liability”. This claim seeks taxes, penalties and interest relating to the sale of Shockley Communications Corporation (SCC) stock in 2001.

SWIB is classified as a tax exempt entity by the IRS. However, the IRS asserts that the shareholders’ sale of SCC stock in 2001 should have been characterized as a sale of assets by SCC, on which SCC should have paid income taxes. Based on the theory of transferee liability, the IRS asserts that the former SCC shareholders, including SWIB, are liable for SCC's unpaid taxes, penalties and interest.

SWIB has filed a petition in the United States Tax Court contesting the proposed IRS assessment. In April 2014, SWIB and the IRS agreed to stay the Tax Court proceeding pending the resolution of the tax case initiated by the principal shareholders of SCC challenging the IRS’ characterization of the SCC sale. In 2015, the Tax Court found that the principal shareholders of SCC were liable as putative transferees for the tax, penalties and interest owed by SCC related to its sale. Although SWIB plans to continue to aggressively contest the IRS' assertions of SWIB's tax liability, and SWIB has separate and distinct arguments from the principal shareholders of SCC, SWIB now believes it is prudent to accrue a potential loss from the SCC transaction based on the Tax Court's adverse opinion. SWIB's potential liability, as a putative transferee of SCC assets, is reasonably estimated to be between $16.6 million and $49.8 million as of December 31, 2015. Although results may differ, this estimated range of loss is based on a possible settlement strategy with the IRS and the maximum potential liability to the IRS for the taxes, interest and potential penalties of SCC based on the Tax Court's decision against the principal shareholders. Accordingly, SWIB has accrued a loss of $16.6 million, which represents the estimated minimum amount of the possible loss to which SWIB believes it may be exposed.

Required Supplementary Information

Wisconsin Retirement System
Schedules of Changes in Net Pension Liability (Asset) and Related Ratios[1]
(Dollar Amounts in Millions)

Calendar Year Ended, December 31	2015	2014	2013
Total Pension Liability			
Service Cost	$ 1,787.9	$ 1,757.0	$ 1,745.0
Interest on the Total Pension Liability	$ 6,347.1	$ 6,089.3	$ 5,680.7
Benefit Changes	$ -	$ -	$ -
Difference between Expected and Actual Experience	$ (4,247.3)	$ 437.3	$ 2,659.9
Assumption Changes	$ 1,412.0	$ -	$ -
Benefit Payments, including refunds of employee contributions	$ (4,861.2)	$ (4,574.6)	$ (4,258.0)
Net Change in Total Pension Liability	$ 438.5	$ 3,708.9	$ 5,827.7
Total Pension Liability - Beginning	$ 89,691.2	$ 85,982.2	$ 80,154.6
Total Pension Liability - Ending (a)	$ 90,129.7	$ 89,691.2	$ 85,982.2
Plan Fiduciary Net Position			
Employer Contributions	$ 977.7	$ 987.8	$ 914.7
Employee Contributions	$ 937.2	$ 941.9	$ 871.3
Pension Plan Net Investment Income	$ (673.1)	$ 4,891.0	$ 11,347.3
Benefit Payments, including refunds of employee contributions	$ (4,861.2)	$ (4,574.6)	$ (4,258.0)
Pension Plan Administrative Expense	$ (22.7)	$ (24.0)	$ (22.9)
Net Change in Plan Fiduciary Net Position	$ (3,642.1)	$ 2,222.0	$ 8,852.4
Plan Fiduciary Net Position - Beginning	$ 92,146.8	$ 89,924.7	$ 81,072.3
Plan Fiduciary Net Position - Ending (b)	$ 88,504.7	$ 92,146.8	$ 89,924.7
Net Pension Liability/(Asset) - Ending (a) - (b)	$ 1,625.0	$ (2,455.6)	$ (3,942.5)
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	98.20%	102.74%	$ 104.59%
Covered Employee Payroll	$ 13,530.5	$ 13,219.5	$ 12,884.8
Net Pension Liability/(Asset) as a Percentage of Covered Employee Payroll	12.01%	(18.58%)	$ (30.60%)

[1] Immaterial differences may exist between the amounts in this schedules and those reported in the Statement of Fiduciary Net Position and the Statement of Changes in Fiduciary Net Position due to the timing of the actuarial valuation.
Amounts may not foot due to rounding

Schedule of Employer Contributions

Wisconsin Retirement System
Schedule Of Employer Contributions
(Dollar Amounts in Millions)

Calendar Year Ending December 31,	Actuarially Determined Contributions	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2013	905.1	905.1	-	12,884.8	7.02%
2014	977.1	977.1	-	13,219.5	7.39%
2015	967.7	967.7	-	13,530.5	7.15%

Schedule of Investment Returns

Wisconsin Retirement System
Schedule Of Investment Returns
Last Ten Calendar Years
Annual Money-Weighted Rate Of Return (IRR), Net of Investment Expenses

	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
Core Trust Fund	(0.63%)	5.44%	13.18%	13.40%	1.25%	11.92%	21.76%	(26.31%)	8.52%	15.48%
Variable Trust Fund	(1.11%)	7.24%	28.78%	16.94%	(3.02%)	15.23%	33.06%	(38.96%)	5.57%	17.51%

Notes to Required Supplementary Information

Significant methods and assumptions used in calculating the Actuarially Determined Contribution:

Valuation Date:	December 31, 2013
Actuarial Cost Method:	Frozen Entry Age
Amortization Method:	Level Percent – Closed Amortization Period
Amortization Period:	30 Year closed from date of participation in WRS
Asset Valuation Method:	Five Year Smoothed Market (Closed)
Actuarial Assumptions	
Net Investment Rate of Return:	7.2%
Discount Rate	
Pre-retirement:	7.2%
Post-retirement:	5.0%
Salary Increases	
Inflation:	3.2%
Seniority/Merit:	0.1% - 5.6%
Post-retirement Benefit Adjustments:	2.1%*

** No post-retirement adjustment is guaranteed. Actual adjustments are based on recognized investment return, actuarial experience and other factors. 2.1% is the assumed annual adjustment based on the investment return assumption and the post-retirement discount rate.*