

WISCONSIN



1848

2019 Retirement Funds

# ANNUAL REPORT

**SWIB** STATE OF WISCONSIN  
INVESTMENT BOARD

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# INTRODUCTION

## Message from the Executive Director/Chief Investment Officer

An annual report is just that – an account of what happened over the course of a specific 365 day period. In 2019, both funds in the Wisconsin Retirement System (WRS), the Core Trust Fund (CTF) and the Variable Trust Fund (VTF), earned very strong gross returns of 19.9 percent and 28.6 percent, respectively. However, the true value that the State of Wisconsin Investment Board (SWIB) provides to WRS participants is measured over time periods stretching much further than one year. With the COVID-19 pandemic roiling markets in 2020, SWIB's prudent and sophisticated investment strategy that focuses on the long term is particularly important to the WRS's lasting success.

Executing that strategy requires top talent and technology, and SWIB continued to make investments in both in 2019. Talent and technology give SWIB the ability to manage a significant portion of the WRS's assets internally, and that helps allow SWIB to meet the challenges of the current market environment and beyond.

The Department of Employee Trust Funds Board has set an actuarial assumed rate of return of 7.0 percent for the WRS to remain fully funded. The CTF, the larger of the two WRS trust funds, ended 2019 with a 10-year gross return of 8.5 percent. The VTF, an optional stock-only fund, had a 10-year gross return of 11.2 percent. Both funds exceeded their performance benchmarks over the last one-, five-, and ten-year periods.

From 2009 through 2018, net investment income earned by SWIB represented 79 percent of total funding for the WRS. The U.S. public pension average during that time was only 59 percent, which indicates that in Wisconsin, public employers and employees bear less of the burden than those in most other states. When looking over the 20-year period ending in 2019, SWIB's active management and diversified investments generated \$37.2 billion for the CTF above what SWIB would have earned by simply investing in a low-cost passive portfolio consisting of 60 percent global equities and 40 percent U.S. investment grade bonds (assuming no contributions or withdrawals). *That* is the SWIB edge which provides so much long-term value to WRS participants.

The WRS is one of the few fully funded public pension plans in the U.S. It is the ninth largest public pension fund in America and the 25th largest public or private pension fund in the world. More than 652,000 current and former state and local government employees and their families count on the WRS for a portion of their retirement security. Keeping the WRS strong and stable is a responsibility we at SWIB are honored to have.

This 2019 Retirement Funds Annual Report proudly looks back at last year, but our vision at SWIB remains fixed on a horizon that is many years into the future.



David Villa  
Executive Director/Chief Investment Officer

# Agency Overview

In addition to the WRS trust funds, SWIB also serves the state by investing the assets of the State Investment Fund, University of Wisconsin System Trusts Funds, Injured Patients and Families Compensation Fund and other funds.

SWIB was created under section 15.76 of the state statutes and its duties to invest these funds are provided in Chapter 25 of the statutes. SWIB is a fiduciary and is governed by the “prudent investor” standard, which requires it to use the diligence, skill, and care that a prudent person acting in a similar capacity and with the same resources would use in managing a large public pension fund. The law also requires SWIB to make investment decisions and conduct its operations solely to fulfill the purpose of the funds under management.

## Strong Governance

SWIB is governed by a nine-person, independent Board of Trustees. Trustees appoint the executive director and set the governing policies for SWIB. The executive director/chief investment officer (ED/CIO) oversees the staff, develops and recommends agency and investment policies for Board adoption, and ensures adherence to state law and policies. The ED/CIO serves as chair of the Investment Committee. The Investment Committee provides oversight of SWIB’s investments and reports to and makes recommendations to the Trustees.

The creation of an executive leadership Management Council by SWIB’s Board of Trustees occurred in October 2018, at the same time the ED and CIO roles were combined. This structure provides leadership the opportunity to collaborate, to discuss innovative ideas and how to best implement them, and to drive strategy.

## Experienced Staff

SWIB’s investments are managed by its own professional staff and by outside management firms. SWIB’s staff consists of 235 authorized positions (as of December 2019) and includes portfolio managers, investment analysts, and traders who are responsible for daily investment decisions made within the parameters of the investment policy, as well as highly-trained professionals with legal, technical, accounting, and operational expertise. About 89 percent of SWIB investment management staff hold advanced degrees and/or professional certifications.

## Internal Management

Having a strong internal management program provides a significant financial benefit to the WRS. SWIB’s Board of Trustees has committed to internal active management. Internally managing more than 50 percent of WRS assets helps keep SWIB’s costs lower than its peers, according to CEM Benchmarking, an independent provider of objective cost benchmarking for public pension plans. In addition to cost savings, SWIB’s active management has created billions in value added compared to a simple passively constructed portfolio.

## Growing a Strong Future

Historically, markets tend to be cyclical with periods of strong performance and periods of decline. Because SWIB is a long-term investor, it can be more patient than many other investors. However, it must also be responsible and committed to a thoughtful investment strategy that can weather both positive and negative market conditions. SWIB’s investment strategy is designed to provide moderate downside protection from dramatic market downturns, while still earning

reasonable returns in other market conditions. According to Callan Associates, Inc., a firm that provides independent research, education, decision support, and advice to public pension plans and other institutional investors, the Core Fund's gross investment returns as of December 31, 2019 performed in the approximate top third of a peer median group over the last one-, three- and five-year periods. While Callan's comparisons are only shown gross of fees, Callan expressed that SWIB's performance would likely rank even higher over these periods, if shown net of fees, because SWIB consistently has lower costs than its peers.

To meet the market challenges SWIB anticipates for the next five to seven years, SWIB will rely on more robust and complex investment strategies. To

continue to manage risk and optimize costs, SWIB will strengthen its already award-winning staff to deal with the complexity of managing assets in a more challenging environment. SWIB will continue to build out the infrastructure and technology needed to support the investments SWIB makes on behalf of the over 652,000 WRS participants. Actively managing the trust funds in a diversified portfolio is vital to the long-term success of SWIB and the WRS.

SWIB's long-term goal is to provide prudent and cost-effective management of the funds held in trust. This is achieved through strong governance, people, processes, and innovative investment strategies.

## MISSION

To be a trusted and skilled global investment organization contributing to a strong financial future for the beneficiaries of the funds entrusted to us.

## VISION

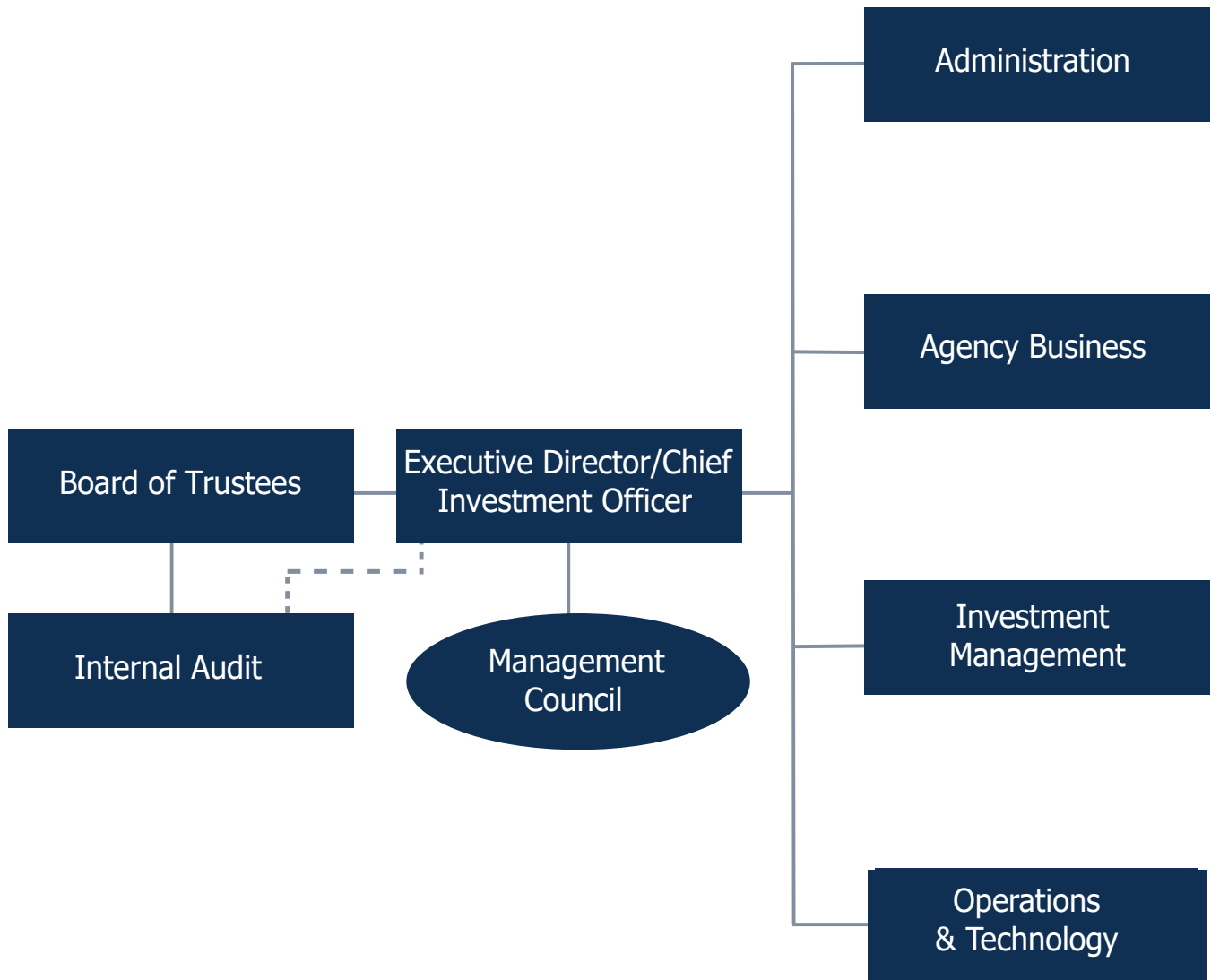
SWIB will be an innovative, agile, integrated organization that optimizes investment returns while managing risk and cost over the long term.

## FUTURE DIRECTION

Throughout our history, we have been committed to contributing to a strong financial future for the beneficiaries of the funds entrusted to us. We understand that carrying that commitment into the future demands more than maintaining the status quo.

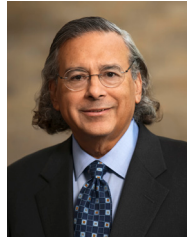
As a global investment management organization, our mission requires that we keep pace with ever-changing financial markets while remaining true to our values and operating principles. Accordingly, we continually seek to effectively manage risk, optimize costs and achieve the target returns for our funds over the long term.

# Agency Management





## MANAGEMENT COUNCIL



**David Villa**  
**Executive Director/  
Chief Investment Officer**



**Rochelle Klaskin**  
**Deputy Executive Director/  
Chief Administrative Officer**



**Mike Jacobs**  
**Agency Business Director**



**Edwin Denson**  
**Managing Director  
Asset & Risk  
Allocation**



**Brian Hellmer**  
**Managing Director  
Global Public Market  
Strategies**



**Anne-Marie Fink**  
**Managing Director,  
Private Markets &  
Funds Alpha**

## Investment Services Leaders



**Sara Chandler**  
**Chief Legal Counsel**



**Brandon Brickner**  
**Internal Audit Director**

# Board of Trustees

The Board of Trustees is responsible for setting long-term investment policies, asset allocation, benchmarks, and fund level risk and monitoring investment performance. The Board is comprised of the following, per section 15.76 of the state statutes:

- Six public members appointed by the Governor and confirmed by the state Senate including four with at least 10 years investment experience, and one with at least 10 years financial experience and who works for a local government in the Local Government Investment Pool
- Educator participant in the Wisconsin Retirement System (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

## Public Members\*

1. David Stein, Board Chair, Executive Vice President and Head of Retail Banking, Associated Banc-Corp, Madison
2. Kristi Palmer, Finance Director, Marathon County (appointed December 2019)
3. Mark Doll, Retired Executive Vice President and Chief Investment Officer, Northwestern Mutual Life Insurance Co., Milwaukee
4. Barbara Nick, President and Chief Executive Officer, Dairyland Power Cooperative, La Crosse
5. Tim Sheehy, President, Metropolitan Milwaukee Association of Commerce, Milwaukee
6. Esther Ancel, Emeritus Professor of Finance, UW-Milwaukee (appointed June 2019)

## WRS Participant Members\*

1. Dave Schalow, Educator, Professor of Business, UW-Stevens Point (appointed March 2019)
2. Robert Conlin, Board Secretary, Non-educator, Department Secretary, Employee Trust Funds

## Department of Administration

1. Joel Brennan, Department Secretary

\* Appointed Board members serve six-year terms.



David Stein



Kristi Palmer



Mark Doll



Barbara Nick



Tim Sheehy



Esther Ancel



Dave Schalow



Robert Conlin



Joel Brennan

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# FINANCIAL SECTION



# STATE OF WISCONSIN | Legislative Audit Bureau

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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 Board of Trustees, and  
Mr. David Villa, Executive Director/Chief Investment Officer  
State of Wisconsin Investment Board

### **Report on the Financial Statements**

We have audited the accompanying Statement of Net Investment Position and the Statement of Changes in Net Investment Position, and the related notes to the financial statements of the Core Retirement Investment Trust Fund and the Variable Retirement Investment Trust Fund (Retirement Funds) of the State of Wisconsin as of and for the year ended December 31, 2019.

#### **Management's Responsibility for the Financial Statements**

Management of the State of Wisconsin Investment Board (SWIB) 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 opinions 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 opinions on these financial statements.

## **Opinions**

In our opinion, the financial statements referred to in the first paragraph present fairly, in all material respects, the financial position of the Retirement Funds as of December 31, 2019, and the respective changes in financial position thereof 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 investment activity of the Retirement Funds attributable to SWIB and do not purport to, and do not, present fairly the financial position of SWIB or the State of Wisconsin as of December 31, 2019, or the changes in financial position, or where applicable, its cash flows for the year then ended, in accordance with accounting principles generally accepted in the United States of America.

As discussed in Note 2C 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 opinions are not modified with respect to these matters.

## **Other Matters**

*Required Supplementary Information*—Accounting principles generally accepted in the United States of America require that the management discussion and analysis, which precedes the financial statements, be presented to supplement the financial statements. Such information, although not a part of the financial statements, is required by the Governmental Accounting Standards Board, 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.

*Accompanying Information*—Our audit was conducted for the purpose of forming opinions on the financial statements of the Retirement Funds. The introduction section on pages 3 through 10 of the annual report is presented for purposes of additional analysis and is not a required part of

the financial statements. Such information has not been subjected to the auditing procedures applied in the audit of the financial statements and, accordingly, we do not express an opinion or provide any assurance on it.

### **Other Reporting Required by *Government Auditing Standards***

In accordance with *Government Auditing Standards*, we will also issue a report dated August 26, 2020, on our consideration of SWIB'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 solely to describe the scope of our testing of internal control over financial reporting and compliance and the result of that testing, and not to provide an opinion on the effectiveness of SWIB's 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 SWIB's internal control over financial reporting and compliance.

LEGISLATIVE AUDIT BUREAU



Joe Chrisman  
State Auditor

August 26, 2020

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# Retirement Funds

## Management Discussion & Analysis

The Retirement Funds' discussion and analysis of the financial activities for the calendar year ended December 31, 2019, is presented by management as an introduction to the financial statements. It is meant to assist the reader in understanding the financial statements by providing an overall review of the financial activities during the year as well as to provide a comparison of the prior year's activity and results.

### Overview of Basic Financial Statements

The State of Wisconsin Investment Board (SWIB) is responsible for managing the assets of the Wisconsin Retirement System (WRS). The Core Retirement Investment Trust Fund (Core Fund) and Variable Retirement Investment Trust Fund (Variable Fund), collectively the Retirement Funds, represent the assets of the WRS. Following this section are the financial statements and footnotes which reflect only the investment activity of the Retirement Funds. Retirement reserves, contribution revenue, and benefit expense are specifically excluded from presentation in these statements, although contribution revenue and benefit expenses are reflected in "Net Disbursements" in the Statement of Changes in Net Investment Position. The Wisconsin Department of Employee Trust Funds (ETF) prepares a Comprehensive Annual Financial Report, and it can be found on their website: [www.etf.wi.gov](http://www.etf.wi.gov).

The **Statement of Net Investment Position** provides information on the financial position of the Retirement Funds at December 31, 2019. It reflects the investment assets available for payment of future benefits and any liabilities related to the investments.

The **Statement of Changes in Net Investment Position** presents the results of the investing activities for the twelve months ending December 31, 2019.

The **Notes to the Financial Statements** provide additional information that is essential to a full understanding of the data presented in the financial statements. The notes provide more detail about accounting policies, significant account balances and activities, material risks, obligations, contingencies, and subsequent events, if any.

The financial statements and related notes are prepared in accordance with Governmental Accounting Standards Board (GASB) Pronouncements.

### Retirement Funds

Approximately 652,000 people participate in the WRS, including current and former employees of Wisconsin's state agencies, most local governments, and school districts in Wisconsin. Contributions made to the WRS by these employees, and their employers, are invested by SWIB to finance retirement and other benefits. The Retirement Funds had a combined Net Investment Position of \$116.5 billion as of December 31, 2019.

### Core Retirement Investment Trust Fund

The larger of the two trust funds comprising the WRS is the Core Fund with a Net Investment Position of \$107.8 billion at December 31, 2019. All WRS members have at least half, and most have all, of their pension contributions invested in the Core Fund. It is a diversified, balanced fund invested for

#### Time-Weighted Annualized Returns As of December 31, 2019 (Gross of external management fees and costs)

	1-Year Return %	5-Year Return %	10-Year Return %	20-Year Return %
Core Fund	19.9	7.8	8.5	6.4
Benchmark	19.2	7.5	8.1	6.0
Variable Fund	28.6	9.8	11.2	5.9
Benchmark	28.3	9.7	11.0	5.6

the long-term needs of the WRS. Diversification helps to stabilize the effects of market changes. The investment objective of this trust fund is to meet or exceed an average 7.0% annual nominal return over the long-term, which is set by ETF with input from outside consultants using a number of factors including market returns, estimated wage growth and other actuarial assumptions.

The financial statements reflect the investment activity of the Core Fund as well as changes in cash balances due to net disbursements managed by ETF. Net disbursements include, but are not limited to, benefit payments, contribution receipts, transfers to/from the Variable Fund, and administrative expenses.

Condensed Core Fund financial information for the calendar years ending December 31, 2019 and December 31, 2018 is included in the below table entitled **Core Fund Condensed Financial Information**.

**Cash and Cash Equivalents (C&CE)** increased by \$611.5 million, or 16%, when comparing calendar year-end 2019 to 2018. The increase in the C&CE balance can be explained by an increase in securitized cash positions within certain synthetic portfolios. Securitized cash is invested in derivative instruments which provide SWIB with similar returns as if the physical securities were held, but with a greater degree of liquidity. Securitized cash positions can fluctuate throughout

Core Fund Condensed Financial Information (In Thousands)			
	2019	2018	% Change
Cash and Cash Equivalents	\$ 4,432,392	\$ 3,820,858	16
Receivables	6,861,026	3,842,022	79
Invested Securities Lending Collateral	441,770	445,786	(1)
Prepaid Expenses	30,537	9,774	212
Investments	116,873,889	101,449,272	15
Total Investment Assets	128,639,614	109,567,712	17
Payables and Other Liabilities	6,116,079	3,799,521	61
Securities Lending Collateral Liability	441,770	445,786	(1)
Short Sales	4,464,308	3,002,001	49
Obligations Under Reverse Repurchase Agreements	9,844,991	8,834,034	11
Total Investment Liabilities	20,867,148	16,081,342	30
Net Investment Position Held in Trust	\$ 107,772,466	\$ 93,486,370	15
Investment Income (Loss)	\$ 18,605,966	\$ (2,890,277)	744
Investment Expense	(841,437)	(694,988)	21
Net Investment Income (Loss)	17,764,529	(3,585,265)	595
Net Disbursements - Department of			
Employee Trust Funds	(3,478,433)	(3,199,793)	9
Net Increase (Decrease) in Net Investment Position Held in Trust	\$ 14,286,096	\$ (6,785,058)	311

## Retirement Funds

### Management Discussion and Analysis

the year depending on a variety of conditions. At calendar year-end 2019, SWIB used its securitized cash positions to adjust risk and exposure to desired levels for internal portfolio restructuring/rebalancing activities. Additionally, increased liquidity was reserved to accommodate the funding of a new investment strategy in early 2020.

SWIB also used derivatives to implement strategic investment positions. As in other instances, derivatives used for these strategies require defined levels of cash to conservatively provide for adequate levels of margin and to adjust risk.

The increase in C&CE was partially offset by the maturity of a short-term foreign discount bill held at calendar year-end 2018 that was used within an active investment strategy. The cash received upon maturity was subsequently reinvested in longer term investments. Short-term investments with maturities generally less than three months are included in C&CE.

The balance in **Receivables** increased by \$3.0 billion, or 79%, when comparing year-end 2019 to 2018. The largest contributor to the change was an increase in the balance for investment sales receivable, which is dependent upon the timing and settlement of pending sales transactions. The year-over-year increase was due to an ongoing transition at calendar year-end. The transition reallocated balances within the same asset class from a passive, externally managed account to an active, internally managed account. Other routine rebalancing activities, where investment positions were sold but pending settlement, also contributed to the change in Receivables at December 31, 2019.

The Receivables balance also comprises SWIB's use of To Be Announced (TBA) securities, which accounts for 32% of the Receivables balance at calendar year-end 2019. TBA securities are derivative contracts that consist of mortgage-backed securities (MBS) issued by the Government National Mortgage Association, a government entity, and by government-sponsored enterprises, such as the Federal National Mortgage Association or the Federal Home Loan Mortgage Corp. The term TBA is derived from the fact that the actual MBS

that will be delivered to fulfill a TBA trade is not designated at the time the trade is made. Instead, the specific pool of mortgages making up the MBS is announced 48 hours prior to the established trade settlement date. Eligibility rules and standards for MBS pools deliverable into TBA contracts ensure that delivered MBS pools are fungible. TBA securities sold create a receivable on the Statement of Net Investment Position because payment for TBA securities is not made until the settlement date.

**Invested Securities Lending Collateral** and **Securities Lending Collateral Liability** decreased by \$4.0 million as of December 31, 2019, compared to December 31, 2018. These collateral balances represent cash received as collateral for securities lending transactions. SWIB increased its overall securities lending activity in 2019. The decrease in cash received as collateral was offset by an increase in securities received as collateral. The use of securities as collateral provides a more efficient option for securities lending activities, and therefore, reduced the demand for cash collateral in 2019.

Cash received as collateral for securities borrowed can be used by SWIB's internally managed portfolios to back short positions. As discussed later in this section, SWIB increased its internal shorting capacity in 2019. Investment policies permit the use of both cash and treasury securities as collateral to back short positions. The use of treasury securities as collateral provides a more efficient option to increase SWIB's internal shorting capacity. As a result, the demand for cash to be used as collateral for short positions decreased in 2019.

The balance in **Prepaid Expenses** increased by \$20.8 million in 2019. This change is not representative of a change in total expenses, but rather reflects a difference in timing for the billing and payment of the Core Fund operating budget expenses in 2019, as compared to the prior year.

**Investments** increased by \$15.4 billion, or 15% over the prior year. Investment returns play a large role in this change and a more detailed discussion on performance is included in the Investment

Income discussion which follows.

**Payables & Other Liabilities** increased by \$2.3 billion, or 61% as of December 31, 2019 compared to the prior year-end balance. The largest contributor to this change was an increase in the balance for investment purchases payable, which is dependent upon the timing and settlement of pending purchase transactions. Corresponding with the increases in the Receivables balance, the increase in Payables & Other Liabilities was due to a pending transition at calendar year-end. The transition reallocated balances within the same asset class from a passive, externally managed account to an active, internally managed account. Other routine rebalancing activities, where investment positions were purchased but pending settlement, also contributed to the change in Payables & Other Liabilities at December 31, 2019.

The Payables & Other Liabilities balance also comprises SWIB's use of To Be Announced (TBA) securities, which accounts for 51% of the Payables & Other Liabilities balance at calendar year-end 2019. Purchased TBA securities create a payable on the Statement of Net Investment Position because payment for TBA securities is not made until the settlement date.

**Short Sales** increased by \$1.5 billion, or 49%, when comparing year-end 2019 to the prior year-end. A

short sale transaction is created when a security not owned by the portfolio is sold in anticipation of purchasing the security at a lower price in the future. The increase in short sales is largely due to an internal equity strategy that magnifies active risk positions including the use of shorting to take advantage of securities that are deemed to be mispriced. The increased use of this strategy incorporates the use of long and short positions to take advantage of securities that are deemed to be either undervalued or overvalued. This strategy is expected to provide a more balanced impact from active positions and provide the ability to better manage risk.

### **Obligations Under Reverse Repurchase**

**Agreements** increased by \$1.0 billion, or 11%, when comparing year-end 2019 to 2018. Reverse repurchase agreements involve the sale of assets with the simultaneous agreement to repurchase those assets for a pre-determined price, plus interest, at a future date. The proceeds from these agreements are invested in Treasury Inflation-Protected Securities (TIPS). During 2019, SWIB increased its capacity to participate in reverse repurchase agreements, providing a low-cost way to obtain financing needed to maintain SWIB's strategic allocation targets. The increase in reverse repurchase agreements corresponds with the overall increase in the Core Fund's assets under management.

Core Fund Time Weighted Annualized Asset Class Returns		
	2019 Return %	2018 Return %
Public Equities <sup>1</sup>	28.0	-9.2
Fixed Income <sup>1</sup>	10.5	-0.8
Inflation Sensitive <sup>1</sup>	8.4	-0.5
Real Estate <sup>2</sup>	6.0	8.8
Private Equity/Debt <sup>2</sup>	10.0	15.9
Multi Asset <sup>2</sup>	20.6	-6.6
<sup>1</sup> Gross of external management fees and costs		
<sup>2</sup> Net of external management fees		

Calendar year 2019 **Investment Income** was \$18.6 billion compared to negative \$2.9 billion for calendar year 2018, an increase of \$21.5 billion. The increase in income in 2019 is attributable to a total Core Fund investment return of 19.9% as compared to -3.3% for the previous year. Asset class returns for calendar year 2019 and 2018 are presented in the table entitled **Core Fund Time Weighted Annualized Asset Class Returns**.

**Investment Expense** includes most transaction-related expenses, external management fees, and administrative-related expenses. Transaction-related expenses are incurred as part of executing a trade or investment strategy and include interest and dividend expenses and securities lending fees. Transaction-related expenses often represent

## Retirement Funds

### Management Discussion and Analysis

payments to counterparties, rather than vendors, and are not invoiced to SWIB. SWIB does not include transaction-related expenses in its Total Cost of Management Plan as they are already captured in gross investment returns. Two types of transaction-related expenses, commission and trade execution fees, are excluded from Investment Expense and included in “Net Increase (Decrease) in the Fair Value of Investments” on the Statement of Changes in Net Investment Position as these fees are not readily separable from the acquisition or disposal of an investment. External management fees include base and performance fees paid to external managers. Administrative-related expenses include operating expenses, legal fees, custodial bank fees, research and data services, and investment consulting fees.

Investment Expense increased by \$146.4 million, or 21%, over the prior year. Approximately \$124.7 million of this change is due to an increase in transaction-related expenses, which was comprised of interest and dividends paid to counterparties as a result of increases in reverse repurchase agreements and short sale transactions as previously discussed. While short sale transactions are open, the Retirement Funds may incur dividend and interest expense and as such, payments must be remitted to the security lender during the course of the loan. Interest and dividend expense accounted for \$339.5 million, or 40%, of the total Core Fund’s investment expenses for the year-ended December 31, 2019.

The remaining increase in Investment Expense

is primarily from increased base fees paid to external managers due to increased assets under management with such managers. The total amount of Core Fund assets managed externally grew by \$11.8 billion in 2019 due to positive returns as well as increased allocations to external managers focused on active equity, fixed income, and private market transactions. Because base management fees are primarily calculated as a percentage of assets under management, asset growth resulted in higher fees in 2019. Core Fund assets that are externally managed are generally invested in active strategies where SWIB seeks to capitalize on external managers’ expertise in, or access to, highly specialized markets or products.

Variable Fund Condensed Financial Information (In Thousands)			
	2019	2018	% Change
Cash and Cash Equivalents	\$ 231,054	\$ 205,390	12
Receivables	18,894	35,436	(47)
Invested Securities Lending Collateral	29,697	20,843	42
Prepaid Expenses	1,614	-	100
Investments	8,458,299	6,863,944	23
Total Investment Assets	8,739,558	7,125,613	23
Payables and Other Liabilities	23,546	4,881	382
Securities Lending Collateral Liability	29,697	20,843	42
Total Investment Liabilities	53,243	25,724	107
Net Investment Position Held in Trust	\$ 8,686,315	\$ 7,099,889	22
Investment Income (Loss)	\$ 1,965,060	\$ (595,904)	430
Investment Expense	(7,284)	(7,075)	3
Net Investment Income (Loss)	1,957,776	(602,979)	425
Net Disbursements - Department of Employee Trust Funds	(371,350)	(475,572)	(22)
Net Increase (Decrease) in Net Investment Position Held in Trust	\$ 1,586,426	\$ (1,078,551)	247



#### Variable Retirement Investment Trust Fund

Active employees participating in the WRS have the option of allocating half of their pension fund contributions into the Variable Fund, which almost entirely consists of global equity investments. Approximately 15% of WRS members participate in the Variable Fund, with a Net Investment Position of \$8.7 billion at December 31, 2019. By law, the Variable Fund invests primarily in equity securities and provides participants the potential for higher returns while bearing greater risk. The investment objective of the Variable Fund is to meet or exceed broad equity market indices over a full market cycle.

Condensed Variable Fund financial information for the calendar years ended December 31, 2019 and December 31, 2018 is included in the table entitled **Variable Fund Condensed Financial Information**.

Variable Fund **Cash and Cash Equivalents** increased by \$25.7 million, or 12%, when comparing year-end 2019 to 2018. This increase is largely attributable to an increase in cash balances held at year-end in anticipation for near-term benefit payments and routine rebalancing activities.

**Receivables** decreased by \$16.5 million or 47% and **Payables & Other Liabilities** increased by \$18.7 million, or 382%, between calendar years primarily due to changes in pending investment sales and purchases at year-end. The changes were

due to normal trading activity, which can fluctuate from month-to-month and year-to-year, depending upon market conditions and trade opportunities.

**Invested Securities Lending Collateral** and **Securities Lending Collateral Liability** represent cash collateral held for securities lending transactions. The \$8.9 million change in these accounts was caused by an increase in Variable Fund equity loans collateralized with cash.

The balance in **Prepaid Expenses** increased by \$1.6 million in 2019. This change is not representative of a change in total expenses, but rather reflects a difference in timing for the billing and payment of the Variable Fund operating budget expenses in 2019, as compared to the prior year.

Calendar year 2019 **Investment Income** was \$2.0 billion compared to negative \$0.6 billion for calendar year 2018, an increase of \$2.6 billion. The increase in income was the result of a total Variable Fund gross investment return of 28.6%, as compared to -7.9% in 2018. The Variable Fund has an asset allocation target of 70% domestic and 30% international equities to satisfy its equity market mandate. Its performance therefore highly correlates with broader equity market trends during the year. As with the Core Fund, SWIB has implemented a long-term approach to investing Variable Fund assets. As of December 31, 2019, the Variable Fund's 20-year annualized gross return was 5.9%, outperforming the benchmark return of 5.6%.

# Retirement Funds

## Financial Statements

Statement of Net Investment Position As of December 31, 2019 (In Thousands)			
	Core Retirement Investment Trust Fund	Variable Retirement Investment Trust Fund	
<b>Investment Assets</b>			
Cash and Cash Equivalents	\$ 4,432,392	\$ 231,054	
Receivables:			
Interest & Dividends	370,054	16,608	
Securities Lending Income	1,965	483	
Investment Sales	6,489,007	1,803	
Invested Securities Lending Collateral	441,770	29,697	
Prepaid Expenses	30,537	1,614	
Investments (at fair value):			
Equities	57,580,752	8,430,538	
Fixed Income	36,427,253	-	
Limited Partnerships	14,770,360	-	
Multi Asset	5,353,262	-	
Real Estate	1,374,070	-	
Preferred Securities	455,693	26,038	
Convertible Securities	4,067	-	
To Be Announced Securities	913,743	-	
Foreign Currency Contracts	7,942	374	
Option Contracts	(6,029)	-	
Futures Contracts	(31,261)	1,349	
Swaps	24,037	-	
Total Investment Assets	128,639,614	8,739,558	
<b>Investment Liabilities</b>			
Payable for Investments Purchased	5,894,177	22,071	
Obligations Under Reverse Repurchase Agreements	9,844,991	-	
Short Sales	4,464,308	-	
Collateral Due to Counterparty	104,694	270	
Accounts Payable	93,938	1,101	
Other Liabilities	23,270	104	
Securities Lending Collateral Liability	441,770	29,697	
Total Investment Liabilities	20,867,148	53,243	
<b>Net Investment Position Held in Trust</b>	<b>\$ 107,772,466</b>	<b>\$ 8,686,315</b>	
The accompanying notes are an integral part of this statement.			

Statement of Changes in Net Investment Position  
For the Calendar Year Ended December 31, 2019  
(In Thousands)

	Core Retirement Investment Trust Fund	Variable Retirement Investment Trust Fund
<b>Additions</b>		
Investment Income:		
Net Increase in the Fair Value of Investments	\$ 16,322,119	\$ 1,802,239
Interest	763,608	4,309
Dividends	1,234,035	152,247
Securities Lending Income	35,716	6,265
Limited Partnership Income	199,609	-
Income from Real Estate	50,879	-
<b>Less</b>		
Investment Expense	833,117	6,702
Securities Lending Fees	8,320	582
<b>Net Investment Income</b>	<u>17,764,529</u>	<u>1,957,776</u>
<b>Deductions</b>		
Net Disbursements - Department of Employee Trust Funds	<u>(3,478,433)</u>	<u>(371,350)</u>
<b>Net Increase in Net Investment Position Held in Trust</b>	14,286,096	1,586,426
<b>Net Investment Position Held in Trust:</b>		
Beginning of the Year	93,486,370	7,099,889
End of the Year	<u>\$ 107,772,466</u>	<u>\$ 8,686,315</u>

The accompanying notes are an integral part of this statement.



# Retirement Funds

## Notes to Financial Statements

### 1. Description of Funds

The Wisconsin Legislature created the State of Wisconsin Investment Board (SWIB) for the sole purpose of providing professional investment management for the funds entrusted to it, including the assets of the Core Retirement Investment Trust Fund (Core Fund) and the Variable Retirement Investment Trust Fund (Variable Fund). The Board of Trustees for SWIB is responsible for the overall professional investment management of the assets of the Wisconsin Retirement System (WRS). The Core Fund and the Variable Fund, collectively the Retirement Funds, represent the investment assets of the WRS.

The statements presented here in solely reflect the investment activity of the Retirement Funds. Excluded from presentation in these statements are, for example, retirement reserves, contribution revenue, and benefit expense. The statements are not intended to present the financial activity for the State of Wisconsin as a whole.

The notes and related tables included in this section are presented for the Retirement Funds as a whole, unless specified.

All of the Retirement Funds' administrative operating expenses, which totaled \$48.4 million for the year-ended December 31, 2019, are funded through employer and employee contributions and investment earnings. Administrative operating expenses, in addition to external management fees, legal fees, custodial bank fees, investment research and data expenses, investment consulting fees, and most transaction-related fees such as dividend and interest expense, are included in "Investment Expense" in the Statement of Changes in Net Investment Position. Two types of transaction-related expenses, commission and trade execution fees, are excluded from Investment Expense and included in the Net Increase (Decrease) in the Fair

Value of Investments" on the Statement of Changes in Net Investment Position as these fees are not readily separable from the acquisition or disposal of an investment.

#### **A. Core Retirement Investment Trust Fund**

The Core Fund is managed by SWIB with oversight by a Board of Trustees as authorized in section 25.15 and 25.17 of the Wisconsin Statutes. The Core Fund and SWIB are not registered with the Securities and Exchange Commission as an investment company. The investments of the Core Fund consist of a diversified portfolio of securities. SWIB is required to make investment management decisions for the Retirement Funds solely for the benefit of the members of the WRS. Section 25.182 of the Wisconsin Statutes authorizes SWIB to manage the Core Fund in accordance with the "prudent investor" standard of responsibility. This standard is described in section 25.15(2) of the Wisconsin Statutes, which requires that SWIB manage the Retirement Funds with the diligence, skill, and care that a prudent person acting in a similar capacity and with the same resources would use in managing a large public pension fund.

The Core Fund consists primarily of assets invested for the WRS, which is administered by the Department of Employee Trust Funds (ETF) in accordance with Chapter 40 of the Wisconsin Statutes. All WRS contributions are invested in this trust fund unless participants have elected to have one-half of their contributions invested in the Variable Fund. In addition to the retirement contributions, the assets of various other benefit programs are invested in the Core Fund. Information regarding the other programs invested in the Core Fund can be found in the Comprehensive Annual Financial Report, prepared by ETF and located on their website: [www.etf.wi.gov](http://www.etf.wi.gov).

**B. Variable Retirement Investment Trust Fund**

The Variable Fund is managed by SWIB with oversight by a Board of Trustees as authorized by section 25.15 and 25.17 of the Wisconsin Statutes. The Variable Fund and SWIB are not registered with the Securities and Exchange Commission as an investment company. Section 25.17(5) of the Wisconsin Statutes states that assets of the Variable Fund shall be invested primarily in equity securities that shall include common stocks, real estate, or other recognized forms of equities whether or not subject to indebtedness, including securities convertible into common stocks and securities of corporations in the venture capital stage. Subject to that requirement, SWIB may invest the Variable Fund in any manner consistent with the “prudent investor” standard of responsibility in section 25.15(2) of the Wisconsin Statutes, which requires that SWIB manage the trust funds with the diligence, skill, and care that a prudent person acting in a similar capacity and with the same resources would use in managing a large public pension fund.

The Variable Fund consists primarily of the assets invested for the WRS. In addition, there are two other retirement/benefit plans invested in the Variable Fund. Additional information regarding the Variable Fund can also be found in the Comprehensive Annual Financial Report, prepared by ETF and located on their website: [www.etf.wi.gov](http://www.etf.wi.gov).

Participation in the Variable Fund is at the option of the employee. Participants can elect to invest one-half of their retirement contributions and matching amounts of employer contributions to this fund, and have the remainder invested in the Core Fund. Individual participants in the Variable Fund have a one-time option to terminate their Variable Fund participation and transfer their account to the Core Fund.

## 2. Significant Accounting Policies

**A. Basis of Presentation**

The accompanying financial statements were prepared in conformity with generally accepted accounting principles (GAAP) for governments as prescribed by the Governmental Accounting

Standards Board (GASB).

**B. Measurement Focus and Basis of Accounting**

The financial statements are prepared based upon the flow of economic resources measurement focus and the full accrual basis of accounting. Under the accrual basis of accounting, revenues are recognized in the accounting period in which they are earned and become measurable, and expenses are recognized in the period incurred, if measurable. 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.

**C. Valuation of Securities**

The investments of the Retirement Funds are reported in the Statement of Net Investment 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 Net Investment Position as “Net Increase (Decrease) in the Fair Value of Investments.”

The fair value of the Retirement Funds’ assets is 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 Cash and Cash Equivalents category reported on the Statement of Net Investment 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

## Retirement Funds

### Notes to Financial Statements

Bills, short-term investment funds, and other U.S. or foreign 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 Net Investment Position, is priced using approaches that value each holding based on the best available information using the following hierarchy of pricing sources:

1. Custodian-supplied prices for assets that can be priced in accordance with the pricing hierarchy established with SWIB’s custodian
2. Prices provided by a third party with expertise in the debt market

For private market 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.

Certain portfolios make investments in privately-held companies alongside a strategic partner, such as a limited partnership fund manager. These co-investments are valued by SWIB’s strategic partner, who often employ independent valuation agents and use a variety of methodologies such as reviews of subsequent financing rounds, discounted cash flow analyses, cash flow multiples analyses, reviews of market comparable sales or metrics, and reviews of third-party appraisals.

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 employs portfolio strategies which involve investments across multiple asset classes. The “Multi Asset” category on the Statement of Net Investment Position consists primarily of hedge funds. 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 or independent valuation agent. 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 are discussed in Note 5.

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

#### ***D. 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.

### **3. Deposit and Investment Risk**

#### ***A. 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 derivative instruments is found in Note 5.

The table entitled **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, 2019. Included in this table are fixed income securities, including certain short-term securities, classified as cash equivalents on the Statement of Net Investment 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. See Note 6 for additional information regarding the securities lending program.

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.

SWIB held \$9.8 billion in reverse repurchase agreements at December 31, 2019. 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.

Credit Quality Distribution As of December 31, 2019 (In Thousands)		
Rating	Fair Value	% of Total
AAA/Aaa	\$ 501,441	1.2%
A-1/P-1	5,682	-
AA/Aa	23,279,226	56.5
A-2/P-2	238,456	0.6
A	2,599,258	6.3
BBB/Baa	4,857,290	11.8
BB/Ba	1,893,733	4.6
B	1,290,841	3.1
CCC/Caa or below	259,063	0.6
Not Rated	1,477,792	3.6
Commingled Fixed Income Funds	4,835,231	11.7
Total	\$ 41,238,013	100%

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. The counterparty credit exposure is 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, 2019 is summarized in the table entitled **Reverse Repurchase Agreements, Counterparty Credit Exposure**.

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 0.98% and 2.13% at December 31, 2019. Portfolio guidelines require agreements to mature between one and 90 days.



## Retirement Funds

### Notes to Financial Statements

Reverse Repurchase Agreements Counterparty Credit Exposure As of December 31, 2019 (In Thousands)	
Fair Value of Collateral Held by Counterparty	\$ 10,115,115
Less:	
Cash due to Counterparty	\$9,844,991
Collateral and Interest due to Counterparty	173,503
Total due to Counterparty	10,018,494
Net Counterparty Credit Exposure	\$ 96,621

The cash due to counterparties resulting from reverse repurchase agreements is reported as “Obligations Under Reverse Repurchase Agreements” and the interest due to counterparties is included in “Other Liabilities” on the Statement of Net Investment Position. The underlying assets, as well as the reinvested proceeds, are reported in the “Investments” section on the Statement of Net Investment Position.

#### **B. 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 \$367.0 million as of December 31, 2019. Of the total, \$61.2 million was collateralized by securities borrowed. Depository insurance covered another \$47.4 million of the total. The remaining deposits, totaling \$258.4 million, were uninsured and uncollateralized. These uninsured deposits represent the U.S. dollar equivalent of balances held in foreign currencies in SWIB’s custodian’s nominee name, cash posted as collateral for derivative transactions, and cash collateral posted in excess of the market value of securities borrowed by SWIB for short sales. In addition to cash deposits, the Retirement Funds also held \$66.3 million in certificates of deposit, all of which were covered by depository insurance as of December 31, 2019.

*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 five repurchase agreements totaling \$411.5 million as of December 31, 2019. These repurchase agreements were tri-party agreements held in a short-term cash management portfolio managed by SWIB’s

custodian. The underlying securities for these agreements were held by the tri-party 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. 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.

#### **C. 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, 2019.

#### ***D. 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 instruments 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 0.0% and 13.75% at December 31, 2019.

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 entitled **Interest Rate Sensitivity by Investment Type** presents the aggregated interest rate exposure for the Retirement Funds' assets at December 31, 2019. 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 instruments 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 derivative contracts can be found in Note 5.

SWIB invests in securities with contractual cash flows, such as asset-backed securities and U.S. government agencies. These types of structured product investments may be highly sensitive to interest rate changes in that they can be subject to early payment in a period of declining interest rates. The resulting changes in timing, or possible reduction in expected total cash flows, affect the fair value of these securities.

#### ***E. 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, and currencies in which a portfolio has taken on a long (short) active position, will decline (appreciate) 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

## Retirement Funds

### Notes to Financial Statements

portfolio. These guidelines address the foreign currency management activities permitted for each portfolio based on the portfolio 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 derivative instruments is discussed in Note 5.

The table entitled **Currency Exposures by Investment Type** presents the Retirement Fund investments which were exposed to foreign currency risk at December 31, 2019.

The fair value hierarchy gives the highest priority to Level 1 inputs and the lowest priority to Level 3. When the inputs used to measure fair value fall within different levels of the hierarchy, the level within which the fair value measurement is categorized is based on the lowest level input that is significant to fair value. The categorization of investments within the hierarchy is based upon the pricing transparency of the instrument and does not represent the investment's overall risk.

Commingled investments are not categorized under the fair value hierarchy but are disclosed within this note as investments measured at net asset value (NAV).

#### 4. Fair Value of Investments

Fair value measurements of the investments held by the WRS are categorized by the hierarchy established by GAAP. The hierarchy, which has three levels, is based on the valuation inputs used to measure the fair value of the investment.

Level 1 – Investments reflect unadjusted quoted prices in active markets for identical assets.

Level 2 – Investments reflect prices that are based on inputs that are either directly or indirectly observable for an asset (including quoted prices for similar assets), which may include inputs in markets that are not considered to be active.

Level 3 – Investments reflect prices based upon valuation techniques in which significant inputs or significant value drivers are unobservable.

Interest Rate Sensitivity by Investment Type <sup>1</sup> As of December 31, 2019 (In Thousands)			
Investment Type	Fair Value	Weighted Average Duration (Years)	Weighted Average Maturity (Days)
U.S. Treasury Inflation Protected Securities	\$16,848,689	7.4	
Corporate Bonds & Private Placements	10,789,513	6.4	
U.S. Treasury Securities	5,343,008	8.4	
Foreign Government/Agency Bonds	1,889,736	6.9	
Repurchase Agreements	411,534		2
Asset Backed Securities	387,359	1.9	
U.S. Government Agencies	286,913	3.2	
Commercial Paper	251,331		22
Municipal Bonds	194,700	11.4	
Commingled Funds			
Short Term Cash Management	3,758,685		20
Emerging Market Fixed Income	998,688	5.9	
Exchange Traded	77,857	5.8	
Total	<u>\$41,238,013</u>		

<sup>1</sup>Excludes derivatives. See note 5 for information about the interest rate sensitivity of derivative instruments.

## Retirement Funds

### Notes to Financial Statements

#### Currency Exposures by Investment Type<sup>1, 3</sup> As of December 31, 2019 Stated in U.S. Dollars (In Thousands)

Currency	Cash & Cash Equivalents	Equities	Fixed Income	Limited Partnerships	Preferred Securities	Futures Contracts	Short Sales <sup>2</sup>	Total <sup>4</sup>
Australia Dollar	\$ 8,908	\$ 930,656	\$ 23,022	\$ -	\$ -	\$ (356)	\$ (148,626)	\$ 813,604
Brazil Real	66	102,495	2,128	-	14,877	-	-	119,566
Canada Dollar	12,170	1,596,517	18,136	-	-	558	(219,290)	1,408,091
Chile Peso	15	11,902	-	-	-	-	-	11,917
Czech Republic Koruna	66	605	-	-	-	-	-	671
Denmark Krone	349	350,857	-	-	-	-	(37,957)	313,249
Euro Member Countries	30,353	5,567,118	237,609	988,410	288,100	777	(593,006)	6,519,361
Hong Kong Dollar	1,138	996,645	-	-	-	-	(24,091)	973,692
Hungary Forint	-	11,164	-	-	-	-	-	11,164
India Rupee	61	46,719	-	-	-	-	-	46,780
Indonesia Rupiah	132	22,806	-	-	-	-	-	22,938
Israel Shekel	250	29,958	-	-	-	-	(4,007)	26,201
Japan Yen	16,241	4,063,228	-	-	-	75	(477,368)	3,602,176
Korea (South) Won	51	243,352	-	-	400	-	-	243,803
Malaysia Ringgit	501	9,077	8,905	-	-	-	-	18,483
Mexico Peso	758	14,416	24,109	-	-	-	-	39,283
New Zealand Dollar	783	46,133	14,996	-	-	-	(11,763)	50,149
Norway Krone	458	117,254	-	-	-	-	(34,284)	83,428
Philippines Peso	294	10,269	-	-	-	-	-	10,563
Poland Zloty	304	28,962	4,802	-	-	-	-	34,068
Russia Ruble	5	-	-	-	-	-	-	5
Singapore Dollar	3,943	265,440	-	-	-	-	(23,931)	245,452
South Africa Rand	883	51,062	21,499	-	41	-	-	73,485
Sweden Krona	113	490,788	3,658	2,726	-	-	(75,618)	421,667
Switzerland Franc	458	1,446,884	-	-	-	-	(128,825)	1,318,517
Taiwan New Dollar	3	176,227	-	-	-	-	-	176,230
Thailand Baht	-	43,762	-	-	-	-	-	43,762
Turkey Lira	2	73,904	-	-	-	-	-	73,906
United Kingdom Pound	21,413	2,881,269	18,843	270,639	46	623	(199,774)	2,993,059
Total	\$ 99,718	\$ 19,629,469	\$ 377,707	\$ 1,261,775	\$ 303,464	\$ 1,677	\$ (1,978,540)	\$ 19,695,270

<sup>1</sup>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.

<sup>2</sup>Short Sales are reported as liabilities on the Statement of Net Investment Position. They are included in the above table because they have exposure to foreign currency risk.

<sup>3</sup>Investment types holding instruments denominated only in U. S. Dollars are not included in the above table. At calendar year-end, these include: Convertible Securities, Multi Asset, Real Estate, To Be Announced Securities, Option Contracts, Swaps and Obligations Under Reverse Repurchase Agreements.

<sup>4</sup>Values may not add due to rounding.



## Retirement Funds

### Notes to Financial Statements

#### **A. Fair Value Measurements**

The fair value measurements of investments as of December 31, 2019 are found in the table entitled **Investments by Fair Value Level**.

Securities classified as Level 1 are generally valued at the official closing price (usually the last trade price). Such investments generally include exchange-traded securities such as equities, preferred stock, certain derivative instruments, and exchange-traded funds. U.S. Treasury Bills and only the most recently-issued U.S. Treasury Notes and Bonds are classified as Level 1 as available pricing for these securities is similarly reliable to exchange-traded securities.

Securities classified as Level 2 are valued using observable inputs provided by third-party pricing services generally using either a bid evaluation or a matrix-pricing technique. Bid evaluations may include market quotations that are based on yields, maturities, call features, and ratings. Matrix-pricing is used to value securities based on their relationship to benchmark market prices for securities with similar interest rates, maturities, and credit ratings. Pricing in this level may also include market approaches that incorporate benchmark interest rates. Debt securities comprise the majority of the Level 2 investments as they are generally traded using a dealer market, with lower trading volumes than Level 1 securities. Over-the-counter derivative instruments, such as swaps, TBAs, and foreign exchange contracts, are also included in level 2 because they are priced using a market approach that considers benchmark interest rates and foreign exchange rates.

Level 3 investments are generally valued using significant inputs that are unobservable to the marketplace. This may occur if an investment is illiquid or its value is based on estimates. For the WRS, such investments primarily include directly-held real estate, which is valued using appraisals that include significant unobservable inputs. Asset Backed Securities included in Level 3 represent private placements that are valued at purchase price when third-party valuations are unavailable. Equities, convertibles, and preferred securities

included in the Level 3 hierarchy are generally privately-held securities valued using valuation models such as price multiples incorporating public company comparables, discounted cash flows and milestone valuation models. In some instances of privately-held preferred securities, fair value is determined based on recent financing rounds. Bank loans, which are included in corporate bonds and private placements within the Level 3 category, are priced by vendors using proprietary models which may incorporate unobservable inputs. Cash and Cash Equivalents included in Level 3 represent securities priced at cost. Typically, due to their short-term nature, cost approximates fair value for these investments. Other factors such as infrequent trading, an inactive market, or adjusted quoted prices may also result in Level 3 measurements.

#### **B. Investments Measured at NAV**

The fair value of investments in certain fixed income funds, private equity limited partnerships, stock funds, real estate limited partnerships, and hedge funds are based on the investments' net asset value (NAV) per share (or its equivalent), provided by the investee. The December 31, 2019 investments valued using NAV are shown in the table entitled **Investments Measured at NAV** and include commingled/pooled funds, private equity, and real estate limited partnerships.

#### **C. Private Equity and Real Estate Limited Partnerships**

The Private Equity Limited Partnerships participated in the following investment strategies at December 31, 2019:

*Buyout* – This strategy acquires shares of a private company in an attempt to gain a controlling interest.

*Mezzanine* – This strategy provides mezzanine debt to finance leveraged buyouts, recapitalizations, and corporate acquisitions.

*Special Situations* – This strategy can invest in public and private companies undergoing financial distress, a turnaround in business operations, or which are believed to be undervalued because of a discrete extraordinary event.

**Investments by Fair Value Level**  
**As of December 31, 2019**  
(In Thousands)

Asset Type	Fair Value			Total
	Level 1	Level 2	Level 3	
Cash Equivalents				
Certificates of Deposit	\$ -	\$ 47,303	\$ 16,002	\$ 63,305
Commercial Paper	-	-	251,331	251,331
Corporate Bonds & Private Placements	-	-	759	759
Total Cash Equivalents	-	47,303	268,092	315,395
Equities				
Domestic	38,596,296	21,307	39,438	38,657,041
International	19,583,916	-	45,553	19,629,469
Total Equities	58,180,212	21,307	84,991	58,286,510
Fixed Income				
U.S. Treasury Inflation Protected Securities	-	16,848,689	-	16,848,689
Corporate Bonds & Private Placements	-	10,140,094	62,006	10,202,100
U.S. Treasury Securities	68,068	5,274,940	-	5,343,008
Foreign Government/Agency Bonds	-	1,889,736	-	1,889,736
Asset Backed Securities	-	380,652	6,707	387,359
U.S. Government Agencies	-	286,813	-	286,813
Municipal Bonds	-	194,700	-	194,700
Exchange Traded Funds	77,857	-	-	77,857
Total Fixed Income	145,925	35,015,624	68,713	35,230,262
Real Estate	-	-	1,374,070	1,374,070
Preferred Securities				
Domestic	-	129,310	48,957	178,267
International	303,464	-	-	303,464
Total Preferred Securities	303,464	129,310	48,957	481,731
Convertibles	-	3,540	527	4,067
Derivatives				
Foreign Exchange Contracts	-	8,316	-	8,316
Futures	(29,912)	-	-	(29,912)
Options	(6,027)	(2)	-	(6,029)
Swaps	-	24,037	-	24,037
To Be Announced Securities	-	913,743	-	913,743
Total Derivatives	(35,939)	946,094	-	910,155
Equity Short Sales	(4,464,308)	-	-	(4,464,308)
Total	\$ 54,129,354	\$36,163,178	\$1,845,350	\$92,137,882

## Retirement Funds

### Notes to Financial Statements

#### Investments Measured at NAV As of December 31, 2019 (In Thousands)

Investments Measured at NAV	Fair Value	Unfunded Commitments <sup>8</sup>	Redemption Frequency	Redemption Notice Period <sup>9</sup>
Cash and Cash Equivalents <sup>1</sup>	\$ 3,758,685	\$ -	Daily	Same Day
Fixed Income <sup>2</sup>	1,477,172	323,275	Daily, N/A	5 days, N/A
Private Equity Limited Partnerships <sup>3</sup>	9,175,514	6,218,971	N/A	N/A
Equities <sup>4</sup>	7,724,778	-	Daily, Monthly	2-30 days
Real Estate Limited Partnerships <sup>5</sup>	5,594,846	1,808,954	Quarterly, Annually, N/A	30-90 days, Other, N/A
Hedge Funds <sup>6</sup>	5,353,262	680,748	Various (Note 4D)	Various (Note 4D)
Total <sup>7</sup>	<u>\$33,084,257</u>	<u>\$ 9,031,948</u>		

<sup>1</sup>This category consists of short term cash funds with the investment objective of safety of principal and liquidity while earning a competitive money market rate of return. The short-term cash funds have daily liquidity with same day notice.

<sup>2</sup>This category includes a long-only fixed income manager (68%), which can invest across the credit quality spectrum, in varying geographies, and can include derivatives, high yield and structured securities. The long-only manager requires a redemption notice period of 5 days and has daily liquidity. The remaining 32% of this category includes LLCs which invest in private real estate debt. These LLC investments distribute earnings over the life of the investment. The majority of these LLC investments have an average, estimated remaining life of less than 5 years. One LLC investment has an estimated remaining life of 5-10 years.

<sup>3</sup>Private Equity Limited Partnerships include direct, co-investments with existing SWIB general partners, direct secondary investments and fund of funds. These investments are illiquid and are generally not resold or redeemed. Distributions from each fund are received as the underlying investments are liquidated. The table entitled **Limited Partnerships - Estimated Remaining Life** provides an estimate of the period over which the underlying assets are expected to be liquidated. However, as of December 31, 2019, it is probable that approximately 4% of these investments will be sold in the secondary market at an amount different than the NAV per share provided by the investee. Buyers for these investments have been identified and the sale of these investments is expected to occur during 2020.

<sup>4</sup>This category includes long-only equity managers (68%) with various fundamental, quantitative and other approaches spanning various styles, geographies and market cap weights. The majority of these long-only manager investments can be redeemed monthly with between 10 and 15 business days' notice. One long-only manager investment can be redeemed daily with 30 days' notice. The remaining 32% of this category represents emerging markets equity index funds with an investment strategy designed to track the return of the given segment of the emerging equity markets. These investments can be redeemed daily with 2 business days' notice.

<sup>5</sup>This category includes funds that invest directly in real estate and real estate related assets. Approximately 72% of these investments are generally not resold or redeemed. Distributions from each fund will be received as the underlying investments are liquidated. The table entitled **Limited Partnerships - Estimated Remaining Life** provides an estimate of the period over which the underlying assets are expected to be liquidated. The remaining 28% of this category consists of open-ended funds that invest directly in real estate and real estate related assets. The majority of these investments can be redeemed quarterly with between 30 and 90 days' notice. One fund can be redeemed annually with notice provided in the first quarter of the calendar year.

<sup>6</sup>Hedge Fund investments are private investment funds that seek to produce absolute returns using a broad range of strategies. In certain instances, Hedge Fund investments are structured as limited partnerships, whereby participants receive distributions over the life of the fund. Estimated remaining life for the majority of funds structured as limited partnerships within the portfolio is between 5-10 years. One fund has an estimated remaining life of greater than 10 years. Additional information relating to Hedge Funds can be found in Note 4(D).

<sup>7</sup>SWIB had additional commitments of approximately \$1.5 billion, relating to funds that had secured commitments but not yet called capital as of December 31, 2019.

<sup>8</sup>SWIB had additional unfunded commitments of approximately \$190,356 relating to assets measured at fair value.

<sup>9</sup>Redemption terms described for NAV investments reflect contractual agreements and assume withdrawals are made without adverse market impact and under normal market conditions.

*Venture Capital* – This strategy invests in companies with potential for significant growth (generally small to early stage emerging firms).

The Real Estate Limited Partnerships generally consisted of the following investment strategies at December 31, 2019:

*Core* – Core investments are expected to deliver a significant percentage of their return from income and should demonstrate lower volatility than Opportunistic and Value investments due to lower leverage, higher occupancy, and asset location.

*Value* – Value investments typically have significant near-term leasing, repositioning, and/or renovation risk. This strategy is expected to have modest initial operating revenues with potential for substantial income growth and will likely encounter greater volatility than Core strategies, but lower volatility than Opportunistic strategies.

*Opportunistic* – Opportunistic investments usually have significant development, lease-up, financial restructuring, and/or liquidity risk with little or no initial operating income. This strategy typically uses the highest leverage, is expected to achieve most of its return from future capital gains and is likely to encounter greater volatility than Core and Value strategies.

Limited partnerships are generally structured to provide distributions to participants of the fund as the holdings of the partnership are liquidated over time. The table entitled **Limited Partnerships - Estimated Remaining Life** illustrates the

distribution of estimated remaining liquidation periods for the WRS private equity and real estate limited partnership holdings as of December 31, 2019.

#### **D. Hedge Funds**

Hedge Fund investments are private investment funds that seek to produce absolute returns using a broad range of strategies. The Retirement Funds participated in the following Hedge Fund strategies at December 31, 2019:

*Long-Short Equity* – This strategy invests both long and short in publicly-traded stocks. These managers vary in their use of short selling and leverage.

*Event-Driven* – This strategy seeks to gain an advantage from pricing inefficiencies that may occur before or after a corporate action or related event, such as a merger, spinoff, earnings call, bankruptcy, or restructuring.

*Tactical Trading* – This strategy invests their holdings in indexes, commodities, interest rate instruments, and currencies as a result of relative value or directional forecasts from a systematic or discretionary approach.

*Relative Value* – This strategy uses a range of fixed income arbitrage, insurance linked, long-short credit, and/or quantitative strategies that seek to take advantage of price differentials.

*Multistrategy* – This strategy employs a wide range of strategies and instruments in managing assets.

<b>Limited Partnerships - Estimated Remaining Life</b> <b>As of December 31, 2019</b> <b>(In Thousands)</b>					
<b>Limited Partnership Type</b>	<b>Estimated Remaining Life<sup>1</sup></b>				<b>Total</b>
	<b>&lt;5 Years</b>	<b>5-10 Years</b>	<b>&gt;10 Years</b>	<b>N/A<sup>2</sup></b>	
Private Equity	\$ 2,256,199	\$ 5,160,913	\$ 1,758,402	\$ -	\$ 9,175,514
Real Estate	567,233	3,388,701	54,071	1,584,841	5,594,846
Total	\$ 2,823,432	\$ 8,549,614	\$ 1,812,473	\$ 1,584,841	\$ 14,770,360
<sup>1</sup> Estimated remaining life represents subjective estimates, assuming normal market conditions.					
<sup>2</sup> N/A investments represent open-ended funds that are readily redeemable.					

## Retirement Funds

### Notes to Financial Statements

When redeeming Hedge Fund investments, the agreements governing the investment often require advanced notice and may restrict the timing of withdrawals. The table entitled **Hedge Fund Redemption Timing** depicts redemption terms, independent of other contractual restrictions like lock-up periods as discussed below, for SWIB's Hedge Fund investments at December 31, 2019.

Hedge Fund agreements can also include lock-up periods, which restrict investors from redeeming their investment during a specified time frame. Lock-up periods help portfolio managers mitigate liquidity risks. Lock-ups can be hard, where redemptions are not permitted for a specified time period, or soft, where redemptions are permitted provided the investor pays a penalty. In certain instances, a fund may have both hard and soft lock-up restrictions. In addition, in certain investments, Hedge Fund managers may be allowed to institute a rolling lock-up. A fund with a rolling lock-up period requires investors to commit to an initial

lock-up period, and, if the investor does not submit a redemption notice within a set time prior to expiration of the lock-up, the lock-up is reset.

The table entitled **Hedge Fund Lock-ups** reflects the lock-up terms for the Hedge Fund investments held at December 31, 2019.

Similar to lock-ups, Hedge Fund agreements also commonly incorporate gating restrictions. An investor-level gate limits redemption on a particular redemption date to a specified percentage of the investor's account value, while a fund-level gate may limit total investor withdrawals on a particular redemption date to a percentage of aggregated fund-level (or master fund-level) net asset value. In certain instances, funds can have both investor- and fund-level gates in place. Such funds are reflected in the Investor Level category. The table entitled **Hedge Fund Gates** summarizes the Hedge Fund gates in place at December 31, 2019.

Hedge Fund Redemption Timing As of December 31, 2019 (In Thousands)		
Redemption Frequency	Redemption Notice Period (Days)	Fair Value
Monthly	5 - 90	\$ 1,387,487
Quarterly <sup>1</sup>	30 - 90	3,240,880
Semi-Annual <sup>2</sup>	30	41,947
Other <sup>1,3</sup>	45 - 90, N/A	682,948
Total		\$ 5,353,262
<sup>1</sup> These categories include funds that are in the process of being fully redeemed, with final distribution expected in 2020.		
<sup>2</sup> This category includes funds that have a funding date of January 1, 2020. SWIB was contractually obligated to wire funds to the fund manager prior to the funding date.		
<sup>3</sup> This category includes funds that are subject to rolling locks, whereby the fund automatically re-locks unless a withdrawal request is submitted. This category also includes funds that are structured as limited partnerships, whereby withdrawals are not permitted but the participants receive distributions over the life of the fund.		

Hedge Fund Lock-ups As of December 31, 2019 (In Thousands)			
Hedge Fund Lock Type	Initial Duration of Lock (Years)	Year of Lock Expiration	Fair Value
Hard Lock <sup>1,2</sup>	1 - 3	2020 - 2022	\$ 589,911
Soft Lock	1	2020	91,067
Rolling Lock <sup>1</sup>	2 - 3	2020 - 2022	449,222
None <sup>1</sup>	N/A	N/A	4,121,524
Other <sup>3</sup>	N/A	N/A	101,538
Total			\$5,353,262
<sup>1</sup> These categories include funds that are in the process of being fully redeemed, with final distribution expected in 2020.			
<sup>2</sup> This category includes funds that have a funding date of January 1, 2020. SWIB was contractually obligated to wire funds to the fund manager prior to the funding date.			
<sup>3</sup> This category includes funds that are structured as limited partnerships, whereby withdrawals are not permitted but the participants receive distributions over the life of the fund.			



Hedge Fund Gates As of December 31, 2019 (In Thousands)		
Hedge Fund Gate Type	Gate Range	Fair Value
Investor Level <sup>1,2</sup>	12.5% - 25%	\$ 1,878,988
Fund Level <sup>1</sup>	8.33% - 30%	1,049,221
None <sup>1</sup>	N/A	2,323,515
Other <sup>3</sup>	N/A	101,538
Total		\$ 5,353,262
<sup>1</sup> These categories include funds that are in the process of being fully redeemed, with final distribution expected in 2020.		
<sup>2</sup> This category includes funds that have a funding date of January 1, 2020. SWIB was contractually obligated to wire funds to the fund manager prior to the funding date.		
<sup>3</sup> This category includes funds that are structured as limited partnerships, whereby withdrawals are not permitted but the participants receive distributions over the life of the fund.		

## 5. Derivative Instruments

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.

Derivative instruments 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. Where derivative instruments are permitted, guidelines stipulate allowable types 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 Net Investment Position as "Net Increase (Decrease) in the Fair Value of Investments."

SWIB invests in derivative instruments directly as well as indirectly through commingled or pooled investment vehicles. 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 instrument 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 parties 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

## Retirement Funds

### Notes to Financial Statements

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 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 entitled **Derivative Contract Types** summarizes the differences between OTC and exchange-traded contracts.

Collateral postings are commonplace for derivative contracts and vary based on the type of contract traded. SWIB posted \$247.9 million in cash and \$287.7 million in securities as collateral for derivative positions as of December 31, 2019. More information regarding collateral requirements is included below.

#### **A. Uncleared OTC Derivative Instruments**

Inherent in the use of uncleared OTC derivative instruments, the Retirement Funds may be

exposed to counterparty credit risk. Counterparty credit risk is the risk that a derivative instrument 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.

The table entitled **OTC Derivative Instruments Subject to Counterparty Credit Risk**, summarizes, by credit rating, the Retirement Funds' exposure to counterparty credit risk relating to uncleared OTC contracts as of December 31, 2019, without respect to any collateral or netting agreement.

The aggregate fair value of receivables relating to uncleared OTC derivative contracts was \$5.0 billion at December 31, 2019. This amount represents the maximum loss that would be recognized at

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 trade terms are agreed upon by counterparties	Trades limited to standardized terms	Trades limited to standardized terms
Traded bilaterally between counterparties	Trades are submitted through a clearinghouse, which is counterparty	Trades are booked with exchange's clearinghouse, which is counterparty
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

OTC Derivative Investments Subject to Counterparty Credit Risk As of December 31, 2019 (In Thousands)					
Counterparty Credit Rating	FX Receivables	Swap Receivables	To Be Announced Securities <sup>1</sup>	Warrants <sup>1,2</sup>	Total <sup>3</sup>
AA	\$ 814,883	\$ -	\$ -	\$ -	\$ 814,883
A	3,588,471	570,776	3,568	-	4,162,815
BBB	632	-	-	-	632
Not Rated	-	-	-	9,126	9,126
					<u>\$ 4,987,456</u>
<sup>1</sup> Exposure to counterparty credit risk for To Be Announced Securities and Warrants is limited to unrealized gains on open positions.					
<sup>2</sup> Warrants issued by privately held company that is not rated by statistical credit rating organization.					
<sup>3</sup> Aggregate amount of liabilities included in master netting arrangements was \$4.9 billion at December 31, 2019.					

the reporting date if all counterparties failed to perform as contracted. This maximum exposure is reduced to \$0 at December 31, 2019 when counterparty collateral and master netting arrangements are taken into account. The number of uncleared OTC counterparties with credit exposure at year end was 16.

**B. Cleared OTC and Exchange-Traded Derivatives**

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.

**C. Foreign Currency Spot and Forward Contracts**

Foreign Currency Spot and Forward contracts are uncleared OTC agreements between two parties 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 settlement 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 seeking to transfer out of an exposed currency and into a benchmark currency is permitted. In select 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.



## Retirement Funds

### Notes to Financial Statements

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 Increase (Decrease) in Fair Value of Investments" on the Statement of Changes in Net Investment Position. The net receivable or payable for spot and forward contracts is reflected as "Foreign Currency Contracts" on the Statement of Net Investment Position. The table entitled **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, 2019.

#### D. 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 specified date in the future.

The fair value of futures contracts represents the unrealized gain/(loss) on the contracts since trade inception and is reflected as "Futures Contracts" on the Statement of Net Investment 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 Increase (Decrease) in the Fair Value of Investments" on the Statement of Changes in Net Investment 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 rebalancing,
- To adjust sector, interest rate, or duration exposures, and
- To securitize cash or act as a substitute for cash market transactions.

The table entitled **Futures Contracts** presents the Retirement Funds investments in futures contracts as of December 31, 2019.

The table entitled **Futures Contracts with Interest Rate Sensitivity** presents the interest rate sensitivity of fixed income futures contracts as of December 31, 2019. 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.

Futures Contracts As of December 31, 2019 (In Thousands)				
Futures Contract Description	Position	Expiration	Notional Amount	Fair Value <sup>1</sup>
Commodity	Long	Jan 20 - Apr 20	\$ 88,416	\$ 2,664
	Short	Jan 20 - Mar 20	(33,093)	(113)
Currency	Long	Mar 20	87,918	1,284
	Short	Mar 20	(38,785)	(194)
Equity Index	Long	Jan 20 - Mar 20	2,117,002	11,988
	Short	Jan 20 - Apr 20	(284,674)	(5,644)
Fixed Income	Long	Mar 20	9,782,696	(65,436)
	Short	Mar 20	(3,096,191)	25,539
Total			<u>\$ 8,623,289</u>	<u>\$ (29,912)</u>

<sup>1</sup>Fair Value includes foreign currency gains/(losses).

Foreign Currency Spot and Forward Contracts As of December 31, 2019 (In Thousands)			
Currency	Notional (Local Currency)	Fair Value (\$US)	Unrealized Gain/(Loss) (\$US)
<b>Foreign Currency Contract Receivables</b>			
Australia Dollar	169,256	\$ 119,003	\$ 2,778
Brazil Real	102,088	25,317	673
Canada Dollar	160,675	123,913	2,260
Chile Peso	29,174,841	38,820	1,284
China Yuan Renminbi	224,055	32,083	225
Colombia Peso	11,004,997	3,341	172
Czech Republic Koruna	685,751	30,291	446
Denmark Krone	131,480	19,763	135
Egypt Pound	83,596	5,193	297
Euro Member Countries	217,705	244,549	1,587
Hong Kong Dollar	294,084	37,738	147
Hungary Forint	1,396,858	4,744	45
India Rupee	3,239,107	45,258	128
Indonesia Rupiah	488,170,073	34,925	570
Israel Shekel	44,234	12,826	67
Japan Yen	23,251,938	214,081	(176)
Korea (South) Won	13,623,395	11,819	167
Mexico Peso	453,320	23,752	478
New Zealand Dollar	38,255	25,811	836
Norway Krone	3,472,087	395,194	15,513
Peru Sol	24,161	7,278	121
Philippines Peso	243,844	4,794	7
Poland Zloty	129,143	34,101	658
Russia Ruble	2,148,307	34,353	1,074
Singapore Dollar	70,747	52,632	628
Sweden Krona	3,365,807	360,430	7,927
Switzerland Franc	196,298	202,817	2,897
Taiwan New Dollar	421,359	14,164	242
Thailand Baht	144,028	4,817	41
Turkey Lira	35,801	5,944	(93)
United Kingdom Pound	110,722	146,720	1,420
United States Dollar	2,087,515	2,087,515	-
Total Receivables		\$ 4,403,986	\$ 42,554

## Retirement Funds

### Notes to Financial Statements

Foreign Currency Spot and Forward Contracts As of December 31, 2019 (In Thousands)			
Currency	Notional (local currency)	Fair Value (\$US)	Unrealized Gain/(Loss) (\$US)
<b>Foreign Currency Contract Payables</b>			
Australia Dollar	(173,633)	\$ (122,069)	\$ (2,375)
Brazil Real	(41,887)	(10,402)	(494)
Canada Dollar	(206,831)	(159,505)	(2,702)
Chile Peso	(11,288,902)	(15,025)	(555)
China Yuan Renminbi	(95,244)	(13,605)	(47)
Colombia Peso	(29,410,088)	(8,928)	(444)
Czech Republic Koruna	(192,988)	(8,524)	(178)
Denmark Krone	(387,406)	(58,216)	(497)
Euro Member Countries	(1,258,125)	(1,414,686)	(15,835)
Hong Kong Dollar	(239,147)	(30,690)	(74)
Hungary Forint	(3,148,823)	(10,695)	(141)
India Rupee	(609,796)	(8,496)	(66)
Indonesia Rupiah	(166,546,392)	(11,960)	(255)
Israel Shekel	(16,586)	(4,815)	(25)
Japan Yen	(27,795,081)	(255,844)	(237)
Korea (South) Won	(6,128,397)	(5,317)	(157)
Mexico Peso	(259,381)	(13,707)	(304)
New Zealand Dollar	(97,944)	(66,125)	(1,901)
Norway Krone	(193,690)	(22,043)	(830)
Peru Sol	(21,716)	(6,542)	(136)
Philippines Peso	(197,765)	(3,890)	(15)
Poland Zloty	(11,437)	(3,020)	(74)
Singapore Dollar	(43,861)	(32,621)	(331)
South Africa Rand	(210,668)	(14,985)	(697)
Sweden Krona	(816,924)	(87,293)	(1,153)
Switzerland Franc	(117,301)	(121,211)	(1,346)
Taiwan New Dollar	(455,505)	(15,312)	(68)
Thailand Baht	(123,684)	(4,137)	(53)
Turkey Lira	(16,590)	(2,736)	14
United Kingdom Pound	(190,791)	(252,782)	(3,560)
United States Dollar	(1,610,489)	(1,610,489)	-
Total Payables		\$ (4,395,670)	\$ (34,536)
Net		\$ 8,316	\$ 8,018

### E. 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 date of the 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 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. In the case of OTC options, investment guidelines mitigate counterparty credit risk by establishing minimum credit ratings and requiring master netting agreements with provisions for collateral exchanges.

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 Net Investment Position. Gains and losses as a result of investments in option contracts are included in the "Net Increase (Decrease) in the Fair Value of Investments" on the Statement of

Futures Contracts with Interest Rate Sensitivity As of December 31, 2019 (In Thousands)				
Contract Type	Position	Notional Amount	Fair Value	Weighted Average Duration (Years)
U.S. Treasury Notes	Long	\$ 7,792,879	\$ (17,697)	3.5
U.S. Treasury Notes	Short	(2,672,240)	23,501	6.4
U.S. Treasury Bonds	Long	1,989,817	(47,739)	17.0
U.S. Treasury Bonds	Short	(6,721)	211	18.1
Foreign Government Bonds	Short	(417,230)	1,827	5.1
Total		<u>\$ 6,686,505</u>	<u>\$ (39,897)</u>	

Option Contracts As of December 31, 2019 (In Thousands)							
Description	Contract Type	Position	Exchange-Traded (EXCH) vs. OTC	Expiration	Notional	Fair Value	Unrealized Gain/(Loss)
Equity	CALL	Short	EXCH	Jan 20 - Apr 20	\$ (18,648)	\$ (620)	\$ (166)
Equity	PUT	Short	EXCH	Jan 20 - May 20	(56,123)	(499)	759
Equity	PUT	Long	EXCH	Jan 20 - Feb 20	8,901	251	(49)
Equity Index	CALL	Short	EXCH	Jan 20 - Mar 20	(226,155)	(4,342)	(2,643)
Equity Index	PUT	Short	EXCH	Jan 20 - Mar 20	(226,155)	(852)	1,861
Equity Index	PUT	Long	EXCH	Jan 20 - Mar 20	26,748	29	(51)
Fixed Income Index	PUT	Long	EXCH	Feb 20	2,032	4	(2)
Total					<u>\$ (489,400)</u>	<u>\$ (6,029)</u>	<u>\$ (291)</u>

## Retirement Funds

### Notes to Financial Statements

Changes in Net Investment Position. The table entitled **Option Contracts** presents the fair value of option contracts as of December 31, 2019. The Retirement Funds did not hold OTC options at December 31, 2019.

#### F. Swaps

Swaps are negotiated contractual agreements between two parties which can be cleared or uncleared OTC investments. 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 a security or combination of securities that mirrors the properties of another reference security.

Throughout the calendar year, the Retirement Funds held positions in Total Return Swaps (TRS) and Credit Default Swaps (CDS). The table entitled **Open Swap Positions** lists the open swap contracts held at December 31, 2019.

The open CDS contracts represent cleared OTC positions where SWIB sold (bought) credit protection. Under the terms of the contract, SWIB receives (pays) periodic payments and, in exchange, agrees to pay (receive) a formula-determined amount to counterparties for losses incurred if stipulated credit events occur. CDS spreads are sensitive to credit spread and interest rate changes. The fair value of CDS is determined using the closing price as reported by the applicable clearinghouse.

The open TRS contracts represent uncleared OTC positions where SWIB receives (pays) the return of the underlying equity index and, in exchange, agrees to pay (receive) the stipulated

Open Swap Positions As of December 31, 2019 (In Thousands)					
Type	Maturity Date	Reference Rate	Notional Amount	Fair Value	Unrealized Gain/(Loss)
Credit Default	Dec-24	NA <sup>1</sup>	\$ 215,000	\$ 5,574	\$ 99
Credit Default	Dec-24	NA <sup>1</sup>	39,600	3,815	(30)
Credit Default	Dec-24	NA <sup>2</sup>	30,000	(1,009)	26
Credit Default	Dec-24	NA <sup>2</sup>	(155,000)	(4,019)	74
Total Return	Jan-20	Pay Equity Index Return, Receive 3-month LIBOR plus Spread	(110,414)	(33)	(33)
Total Return	Jan-20	Pay 3-month LIBOR plus Spread, Receive Equity Index Return	54,384	4,690	4,690
Total Return	Apr-20	Pay 3-month LIBOR plus Spread, Receive Equity Index Return	54,834	5,072	5,072
Total Return	Jun-20	Pay 3-month LIBOR plus Spread, Receive Equity Index Return	63,943	826	826
Total Return	Jul-20	Pay 3-month LIBOR plus Spread, Receive Equity Index Return	54,834	5,072	5,072
Total Return	Sep-20	Pay 3-month LIBOR plus Spread, Receive Equity Index Return	56,054	1,554	1,554
Total Return	Dec-20	Pay 3-month LIBOR plus Spread, Receive Equity Index Return	98,566	(262)	(262)
Total Return	Feb-21	Pay 3-month LIBOR plus Spread, Receive Equity Index Return	57,982	2,757	2,757
Total			\$ 459,783	\$ 24,037	\$ 19,845

<sup>1</sup>SWIB sold credit protection in exchange for periodic payments.

<sup>2</sup>SWIB bought credit protection in exchange for periodic payments.

rate benchmark. The rate benchmark is based on the 3-month London Interbank Offering Rate (LIBOR) and is sensitive to interest rate changes. The fair value for TRS is determined based on the change in quoted market price of the underlying equity index and represents the unrealized gain/(loss) on the contracts since trade inception.

The fair value of CDS and TRS is reflected as “Swaps” on the Statement of Net Investment Position. Gains and losses resulting from investments in swap contracts are included in the “Net Increase (Decrease) in the Fair Value of Investments” on the Statement of Changes in Net Investment Position. Any interest owed but not yet paid relating to swap contracts is reported within “Other Liabilities” on the Statement of Net Position. Interest expense relating to swap contracts is reported as “Investment Expense” on the Statement of Changes in Net Investment Position.

#### G. To Be Announced Securities

To be announced mortgage-backed (TBA) securities are uncleared OTC forward contracts consisting of mortgage-backed securities (MBS) issued by Government National Mortgage Association, a government entity, and by government-sponsored enterprises such as, the Federal National Mortgage Association or the Federal Home Loan Mortgage Corp. The term TBA is derived from the fact that the actual MBS that will be delivered to fulfill a TBA trade is not designated at the time the trade is made. Instead, the specific pool of mortgages comprising the MBS is announced 48 hours prior to the established trade settlement date. Eligibility rules and standards for MBS pools deliverable into TBA contracts ensure that delivered MBS pools are fungible. Payment for TBA securities is not made until the settlement date.

Certain portfolio investment guidelines allow for both long and short TBA positions. To mitigate counterparty credit risk, guidelines establish minimum credit ratings and require master netting agreements which include provisions for collateral exchanges.

TBA Contracts As of December 31, 2019 (In Thousands)				
Position	Contract Maturity	Fair Value	Unrealized Gain/(Loss)	Weighted Average Duration (Years)
Long	Jan 20	\$2,976,944	\$ 3,341	3.0
Short	Jan 20	(2,063,201)	(2,644)	3.2
Total		\$ 913,743	\$ 697	

TBAs, much like their underlying MBS securities, may be highly sensitive to interest rate changes. This is because the MBS pool on which these forward contracts are based can be subject to early payment in a period of declining interest rates. The price of TBAs can fluctuate as the marketplace predicts changes in timing, or possible reductions in expected cash flows, associated with a change in interest rates. The table entitled **TBA Contracts** includes the interest rate sensitivity of TBA contracts as of December 31, 2019. 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 fair value of each position to compute an average duration for the contracts held.

The fair value of TBAs is reflected in “To Be Announced Securities” on the Statement of Net Investment Position. The unrealized gain/loss associated with these contracts is included within the “Net Increase (Decrease) in the Fair Value of Investments” on the Statement of Changes in Net Investment Position.

#### H. Warrants

A warrant is a contract that entitles the holder to buy the underlying stock of the issuing company at a specified price. Warrants and options are similar in that the two instruments allow the holder special rights to buy securities. However, warrants differ from options in that they provide additional financing to the issuing company when exercised.



## Retirement Funds

### Notes to Financial Statements

As of December 31, 2019, SWIB held warrant contracts giving SWIB the right to purchase 169,582 shares of preferred stock at a price of 1 Euro per share. SWIB was issued these warrants in 2017 in conjunction with an investment in a privately held company. The \$9.3 million fair value of these warrants is based upon a third-party valuation and is included in the "Equities" section on the Statement of Net Investment Position. The associated unrealized gain of \$9.1 million is included in the "Net Increase (Decrease) in the Fair Value of Investments" on the Statement of Changes in Net Investment Position.

#### 6. Securities Lending Transactions

State statutes and Board 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 acts as 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 with the lending agent equal to at least 102% of the loaned securities' fair value, including interest accrued, as of the delivery date, 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 with the lending agent totaling at least 105% of the loaned securities' fair value, including interest accrued, as of the delivery date. 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, 2019, the fair value of the securities on loan to counterparties was approximately \$12.0 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 it earns the Overnight Bank Funding rate plus 10 basis points. See Note 7 for additional information relating to short sales.

At December 31, 2019, the Retirement Funds had minimal credit risk exposure to borrowers as loans are collateralized in excess of 100%. 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 mitigated by the highly liquid nature of investments held in the collateral reinvestment pools. The average maturities of the loans and the average maturities of the assets held in the collateral reinvestment pools were similar at December 31, 2019.

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 Net Investment Position as “Net Increase (Decrease) in the Fair Value of Investments.”

## 7. Short Sales

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 Sales” on the Statement of Net Investment Position. The liability presented on the Statement of Net Investment 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 Net Investment Position, in the “Net Increase (Decrease) in Fair Value of Investments” category. Prior to executing a short sale, SWIB borrows 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 Net Investment 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 Sales” in the Statement of Net Investment Position. Short sales expose the short seller to potentially unlimited liability as there is no upward

limit on the price a shorted security can reach. Certain portfolio guidelines permit short sales and mitigate risks in various ways including limiting the total value of short sales as a percentage of portfolio value, establishing portfolio versus 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 \$63.7 million in cash and \$2,948.5 million in securities as collateral to security lenders representing \$88.5 million in excess of the fair market value of the securities borrowed as of December 31, 2019. 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.

## 8. Investment Policy and Asset Allocation

As part of its fiduciary responsibilities, SWIB is required by section 25.15(2)(b) of the Wisconsin Statutes to “diversify investments in order to minimize the risk of large losses, unless under the circumstances it is clearly prudent not to do so, considering each trust’s or fund’s portfolio as a whole at any point in time.” SWIB exercises this duty in part by establishing its investment policy and by setting the asset allocation.

SWIB’s Board of Trustees has established the

## Retirement Funds

### Notes to Financial Statements

asset allocation pursuant to a comprehensive and ongoing evaluation of the appropriate risk and return standards for each fund under management. 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-approved investment policy for the WRS is intended to assist in development of a diversified portfolio of investments within acceptable risk parameters. The policy represents a delegation of standing authority to the Executive Director/Chief Investment Officer and investment managers within the organization to make prudent investments within the investment guidelines, pursuant to sections 15.02(4) and 25.15(2) 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 investment returns of the portfolios, asset classes, and Core and Variable Funds. The IC is responsible for proposing to the Board of Trustees changes to the WRS investment policy, approving investment guidelines or strategies for internally-managed portfolios, approving the general strategies for each asset class, and for approving new investment instruments and derivatives strategies. The Board of Trustees reserves all rights to modify and amend IC guidelines at any time at its discretion.

The IC approved WRS Investment Guidelines

include several policies, including a derivatives use policy, rebalancing procedures, and a leverage use policy. The derivatives use policy sets forth the objectives, monitoring, and reporting guidelines relating to derivative investments. The rebalancing procedures used in both mandatory and discretionary asset class rebalancing are described in the Investment Guidelines, and the leverage use policy describes SWIB's leverage philosophy. The total amount of financial leverage is approved by the Board of Trustees through the WRS asset allocation process.

The Board adopts the Retirement Funds' asset allocation policy, based on recommendations by the IC, the Board's asset allocation consultant, Executive Director/Chief Investment Officer, and Managing Director of Asset and Risk Allocation. SWIB undertakes a comprehensive 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 Funds, and an annual review to assess whether any interim adjustments should be made. 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 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's program of risk allocation that involves reducing equity exposure by leveraging 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 Board has approved an asset allocation target of 10% financial leverage for the Core Fund subject to an allowable range of up to 15%.

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 entitled **Asset Allocation Targets and Expected Returns** presents the policy asset allocation targets and the best estimates of expected geometric rates of return for each major asset class as of December 31, 2019.

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.

## 9. Related-Party Disclosure

During the calendar year, the Core Fund entered into reverse repurchase agreement transactions with the State Investment Fund (SIF), for which the investment assets are managed by SWIB, as a counterparty. The transactions were governed by an MRA, and investment guidelines limit exposure with the SIF to \$3.0 billion. Credit exposure is also managed through the transfer of margin between the Core Fund and SIF. As of December 31, 2019, the Core Fund held \$1.9 billion in a bilateral reverse repurchase agreement with the SIF. The repurchase agreement was an overnight agreement collateralized with U.S. Treasury securities in the amount of 102%. The Core Fund enters into similar

**Asset Allocation Targets and Expected Returns<sup>2</sup>**  
**As of December 31, 2019**

<b>Core Fund Asset Class</b>	<b>Asset Allocation %</b>	<b>Long-Term Expected Nominal Rate of Return %</b>	<b>Long-Term Expected Real Rate of Return %<sup>1</sup></b>
Global Equities	49	8.0	5.1
Fixed Income	24.5	4.9	2.1
Inflation Sensitive Assets	15.5	4.0	1.2
Private Equity/Debt	9	10.6	7.6
Real Estate	8	6.3	3.5
Multi Asset	4	6.9	4.0
<b>Total Core Fund</b>	<b>110</b>	<b>7.5</b>	<b>4.6</b>
<b>Variable Fund Asset Class</b>			
U.S. Equities	70	7.5	4.6
International Equities	30	8.2	5.3
<b>Total Variable Fund</b>	<b>100</b>	<b>7.8</b>	<b>4.9</b>

<sup>1</sup>New England Pension Consultants Long Term US CPI (Inflation) Forecast: 2.75%

<sup>2</sup>Asset Allocations are managed within established ranges; target percentages may differ from actual monthly allocations.

reverse repurchase agreement transactions with other counterparties. The Core Fund is also a participant in the SIF, with an investment totaling \$2.7 billion at December 31, 2019. The SIF is a short-term, commingled fund with the investment objective of safety of principal and liquidity while earning a competitive money market rate of return.

## 10. Contingencies

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. The principal shareholders of SCC were issued similar notices from the IRS and have been litigating their case through the Tax Court and United States Court of Appeals. In April 2014, SWIB and the IRS agreed to stay the Tax Court proceeding with respect to SWIB 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. In October 2017, the 11th Circuit Court of Appeals upheld the 2015 Tax Court opinion with respect to the principal shareholders

of SCC; concluding its litigation. Because SWIB has separate and distinct arguments from the principal shareholders of SCC, the Tax Court granted SWIB the opportunity to pursue its case with the Court. In 2018, SWIB's tax counsel and the IRS filed briefs with the Tax Court. In January 2020, SWIB was informed that the Tax Court had ruled in favor of the IRS. While SWIB has the option to appeal, as well as the ability to negotiate the final payment amount with the IRS, the adverse ruling from the Tax Court makes it more likely that SWIB's liability exposure will be higher than previously estimated.

Although SWIB's case is still ongoing, SWIB determined it was prudent to accrue a potential loss from the SCC transaction based on the Tax Court's adverse opinions against the principal shareholders and SWIB. SWIB's potential liability, as a putative transferee of SCC assets, is reasonably estimated to be between \$30.0 million and \$59.6 million as of December 31, 2019. 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 and SWIB. Accordingly, since calendar year 2015, SWIB has accrued a loss of \$30 million, which represents the estimated minimum amount of the possible loss to which SWIB believes it may be exposed. Of the total \$30 million accrued loss, \$10 million was accrued in calendar year 2019 to account for the Tax Court's most recent adverse ruling.

In the ordinary course of operations, SWIB may be party to other various legal actions. SWIB's Chief Legal Counsel handles these matters either directly or with assistance of outside legal counsel. As of December 31, 2019, these matters are not anticipated to have a material financial impact on the WRS's financial position.





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