The Audit and Finance Committee of the Board of Trustees will review and discuss the Annual Report at its Sept. 13 meeting.

2021 Retirement Funds

ANNUAL REPORT

SWIB STATE OF WISCONSIN INVESTMENT BOARD

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INTRODUCTION

Message from the
Executive Director/Chief Investment Officer

In 2021, SWIB generated strong investment returns in a volatile market environment dominated by the ongoing effects of the coronavirus pandemic. The year began with positive momentum from the faster-than-expected development and rapid deployment of effective vaccines against COVID-19, which accelerated timelines for re-opening economies. This, coupled with additional fiscal stimulus and continued highly accommodative monetary policy, provided a strong tailwind for most risk assets like equity and non-investment grade bonds.

The Wisconsin Retirement System (WRS) Core Trust Fund achieved a net return of 16.89%, representing outperformance of 65 basis points relative to its benchmark. The WRS Variable Trust Fund, an optional stock-only fund, ended 2021 with a net return of 19.95%.

This performance means WRS annuitants received the highest Core Fund annuity increase in more than two decades. Actively employed WRS participants also benefited from a double-digit effective rate of interest for 2021. Contribution rates for WRS employers and employees alike are remaining relatively stable.

SWIB met and exceeded several of its organizational goals during 2021. SWIB enhanced its existing investment capabilities and access to new markets with the implementation and support of several new instruments while also improving its collateral management through a new liquidity strategy. SWIB continued to mature and strengthen its data management and information security programs while also advancing the implementation of a new portfolio management system. SWIB's ongoing commitment to investing in its platforms is a key component to better supporting cost-efficient, internal investment strategies. SWIB made continued progress on recruitment and retention and also established and built out its Risk Management Division.

SWIB's earnings help fuel one of the only fully funded pension systems in the U.S. About 652,000 current and former employees of Wisconsin state and local governments count on the WRS to help provide their families with a more secure retirement. In uncertain and unpredictable times like these, the WRS is a steady economic pillar for the state of Wisconsin.

Edwin Denson
Executive Director/Chief Investment Officer

Agency Overview

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

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.

Experienced Staff

SWIB's investments are managed by its own professional staff and by outside management firms. SWIB's staff consists of 290 authorized positions (as of Dec. 31, 2021) 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 81% 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. SWIB optimizes its costs, invests in its infrastructure, and spends less than its peers, according to CEM Benchmarking, an independent provider of objective cost benchmarking for public pension plans. As of Dec. 31, 2021, about half of SWIB's WRS assets under management were managed internally. 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 Dec. 31, 2021 performed at or above the top quartile of peer U.S. pension plans over the last three-, five-, and ten-year periods, with median performance in 2021. Also, Callan states "SWIB maintains a cost-effective mix of internal and external investment management that provides a material total fund cost advantage vs. peers."

To meet the market challenges SWIB anticipates for the next several 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 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. More information may be found in SWIB's 2022 Goals, Strategies & Performance Report: **swib.state.wi.us/publications**.

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.

VALUES

Values are the fundamental beliefs of our organization. They are guiding principles that explain our desired behaviors in the workplace and ensure we are on the right path. We believe in these values and will uphold them.

People - We believe people are the core of SWIB's mission. We value our people beyond their work, and encourage intellectual curiosity, transparency, candor, and respect. We're passionate about recruiting, developing, and retaining our talent. We respect, appreciate, and accept all SWIB employees and are committed to cultivating and preserving a diverse and inclusive workplace.

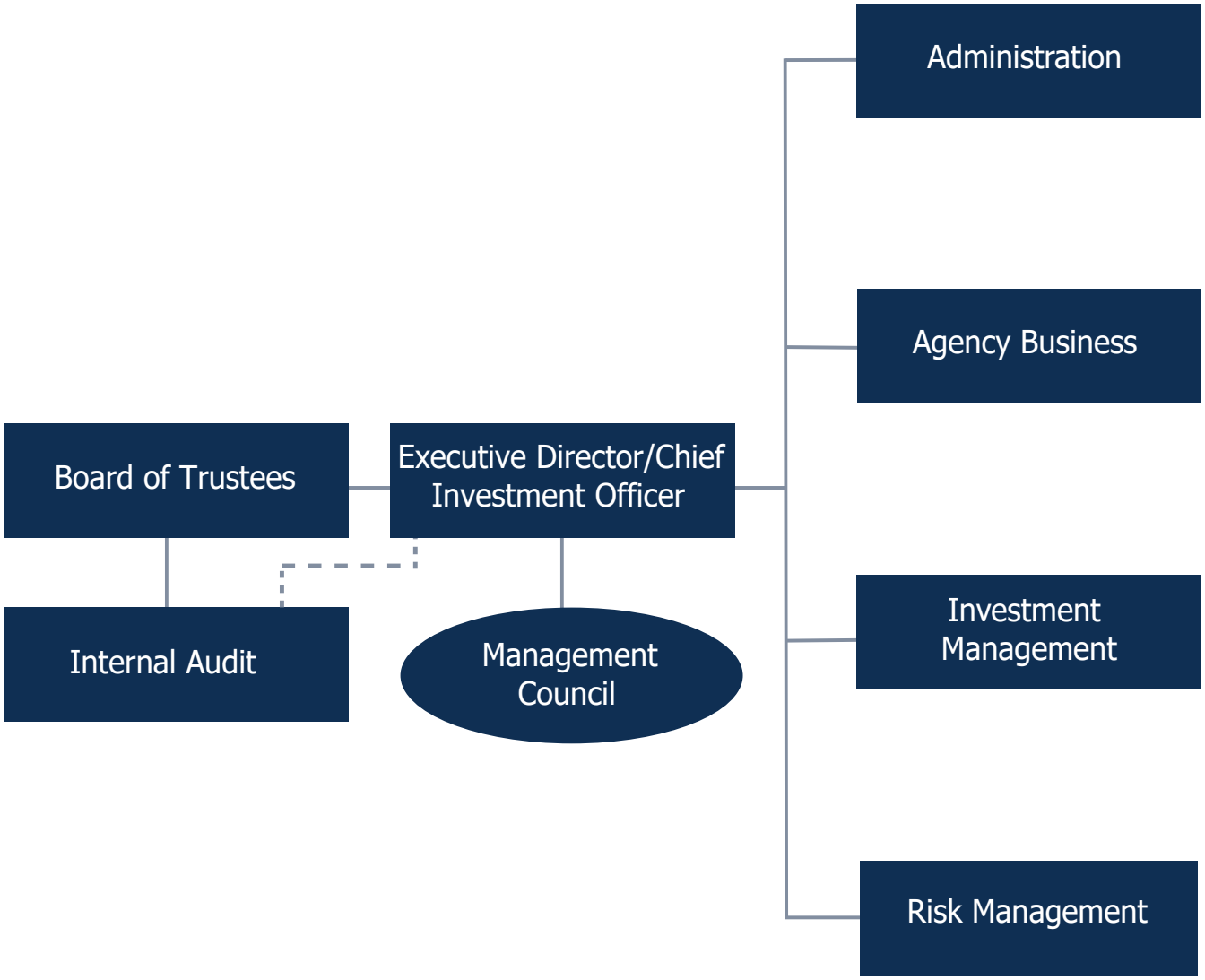
Excellence - We strive to exceed expectations and take pride in the quality of our work. We are motivated to continually improve and expand our viewpoints. We are results focused and process driven.

Integrity - We hold ourselves to the highest ethical standards in meeting our fiduciary duty. We maintain our internal and external relationships on a solid foundation of trust, dependability, accountability, and openness.

Innovation - We believe innovation is critical to SWIB's success and requires each person to have a genuine interest in creativity, prudently embrace change, and challenge the norm.

Collaboration - We operate as one team, seeking ways to contribute our individual talents toward achieving our shared mission. We value diverse ideas and recognize that thoughtful collaboration requires commitment, openness, preparation, and hard work.

Agency Management



MANAGEMENT COUNCIL

Edwin Denson
Executive Director/
Chief Investment Officer

Rochelle Klaskin
Deputy Executive Director/
Chief Administrative Officer

Mike Jacobs
Agency Business Director

Brian Hellmer
Global Public Market
Strategies Chief
Investment Officer

Anne-Marie Fink
Private Markets &
Funds Alpha Chief
Investment Officer

Management Council as of Dec. 31, 2021
See **swib.state.wi.us** for current Managment Council

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 (Board as of Dec. 31, 2021. See **swib.state.wi.us** for current Board):

- 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


David Stein


Barbara Nick


Clyde Tinnen


Kristi Palmer


Tim Sheehy


Esther Ancel


Dave Schalow


John Voelker


Joel Brennan

Public Members*

1. David Stein, Board Chair, Executive Vice President and Head of Retail Banking, Associated Banc-Corp, Madison
2. Barbara Nick, Board Vice Chair, Retired President and Chief Executive Officer, Dairyland Power Co-op, La Crosse
3. Clyde Tinnen, Corporate Partner, Foley & Lardner LLP, Milwaukee
4. Kristi Palmer, Finance Director, Marathon County
5. Tim Sheehy, President, Metropolitan Milwaukee Association of Commerce, Milwaukee (resigned in 2022, succeeded by Jeff DeAngelis)
6. Esther Ancel, Emeritus Professor of Finance, UW-Milwaukee

WRS Participant Members*

1. Dave Schalow, Educator, Professor of Business, UW-Stevens Point
2. John Voelker, Non-educator, Department Secretary, Employee Trust Funds

Department of Administration

1. Joel Brennan, Department Secretary (succeeded by Kathy Blumenfeld in 2022)

* Appointed Board members serve six-year terms.

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FINANCIAL SECTION

STATE OF WISCONSIN
Legislative Audit Bureau

Joe Chrisman
State Auditor

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Madison, Wisconsin 53703

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

Senator Robert Cowles, Co-chairperson
Joint Legislative Audit Committee

Members of the Board of Trustees, and
Mr. Edwin Denson, Executive Director/Chief Investment Officer
State of Wisconsin Investment Board

Report on the Audit of the Financial Statements

Opinions

We have audited the Statement of Net Investment Position and the Statement of Changes in Net Investment Position 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, 2021, and the related notes to the financial statements.

In our opinion, the accompanying financial statements referred to above present fairly, in all material respects, the financial position of the Retirement Funds of the State of Wisconsin, as of December 31, 2021, and the changes in financial position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinions

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,* issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the Auditor's Responsibility for the Audit of the Financial Statements section of our report. We are required to be independent of the State of Wisconsin Investment Board (SWIB), and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Emphases of Matter

As discussed in Note 1 to the financial statements, the financial statements present only the investment activity of the Retirement Funds and do not purport to, and do not, present fairly the financial position of SWIB or the State of Wisconsin as of December 31, 2021, or the changes in financial position for the year then ended, in accordance with accounting principles generally accepted in the United States of America.

As described in Note 2C to the financial statements, the financial statements include investments that do not have readily ascertainable market prices. Some of these investments are valued based on a variety of third-party pricing methods and others, such as private fund investments, are reported based on net asset

value. Because of the inherent uncertainty of valuation, these estimated values may differ from the values that could be realized in a secondary market transaction or the amount ultimately realized.

As discussed in Note 2E to the financial statements, SWIB changed its accounting and financial reporting for certain external investment management fees for externally managed assets beginning in 2021. These external investment management fees are reported in the Net Increase (Decrease) in the Fair Value of Investments account on the Statement of Changes in Net Investment Position. In addition, as discussed in Note 2E, SWIB changed its financial reporting to combine the prior Real Estate account and Limited Partnerships account into the Private Fund Investments account on the Statement of Net Investment Position.

Our opinions are not modified with respect to these matters.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for 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 for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinions. Reasonable assurance is a high level of assurance but is not absolute assurance. Therefore reasonable assurance is not a guarantee that an audit conducted in accordance with auditing standards generally accepted in the United States of America and *Government Auditing Standards* will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgement made by a reasonable user based on the financial statements.

In performing an audit in accordance with auditing standards generally accepted in the United States of America and *Government Auditing Standards*, we exercised professional judgement and maintained professional skepticism throughout the audit. We also identified and assessed the risks of material misstatement of the financial statements, whether due to fraud or error, and designed and performed audit procedures responsive to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. In addition, we obtained an understanding of internal control relevant to the audit 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 SWIB's internal control. Accordingly, no such opinion is expressed. We also evaluated the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, and evaluated the overall presentation of the financial statements.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management discussion and analysis found on pages 16 through 21 be presented to supplement the financial statements.

Such information is the responsibility of management and, although not a part of the financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the 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 express an opinion or provide any assurance.

Other Information

Management is responsible for the other information included in SWIB's *2021 Retirement Funds Annual Report*. The other information comprises the introduction section on pages 3 through 9 but does not include the financial statements and our auditor's report thereon. Our opinions on the financial statements do not cover the other information, and we do not express an opinion or provide any other form of assurance thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the financial statements, or whether the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated September 1, 2022, and published in report 22-12, on our consideration of SWIB's internal control over financial reporting; on our testing 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 in considering SWIB's internal control over financial reporting and compliance.

LEGISLATIVE AUDIT BUREAU

Legislative Audit Bureau

September 1, 2022

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Retirement Funds
Management Discussion & Analysis

The Retirement Funds' discussion and analysis of the financial activities for the calendar year ended Dec. 31, 2021 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 while also comparing the current year's activities and results against the prior year

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 an Annual Comprehensive Financial Report, which can be found on their website: **etf.wi.gov.**

The **Statement of Net Investment Position** provides information on the financial position of the Retirement Funds at Dec. 31, 2021. 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 Dec. 31, 2021.

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

More than 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 $147.2 billion as of Dec. 31, 2021.

Time-Weighted Annualized Returns

As of December 31, 2021

	Net of All Fees and Costs	Net of External Manager Fees		
	One Year	Five Years	Ten Years	Twenty Years
Core Fund	16.9%	12.5%	10.1%	7.9%
Core Fund Benchmark	16.3%	11.9%	9.7%	7.7%
Variable Fund	20.0%	15.5%	13.8%	8.5%
Variable Fund Benchmark	20.2%	15.6%	13.7%	8.7%

Core Retirement Investment Trust Fund

The larger of the two trust funds comprising the WRS is the Core Fund. The Core Fund had a Net Investment Position of $136.3 billion at Dec. 31, 2021. 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 the long-term needs of the WRS. Diversification helps stabilize the effects of market changes. The investment objective of this trust fund is to meet or exceed an annual average nominal return of 6.8% over the long-term. This return target is set by ETF with input from external consultants using several 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 Dec. 31, 2021 and Dec. 31, 2020 is included in the table below entitled **Core Fund Condensed Financial Information**.

Cash and Cash Equivalents (C&CE) decreased by $15.3 million, or less than 1%. Several events can cause changes in cash and cash equivalents,

Core Fund Condensed Financial Information (In Thousands)

	2021	2020	% Change
Cash and Cash Equivalents	$ 6,244,362	$ 6,259,669	-
Receivables	11,303,533	11,601,938	(3)
Invested Securities Lending Collateral	360,458	777,813	(54)
Prepaid Expenses	19,744	12,632	56
Capital Assets	1,071	-	-
Investments	158,161,557	129,604,270	22
Total Investment Assets	176,090,725	148,256,322	19
Payables and Other Liabilities	13,650,364	10,181,483	34
Securities Lending Collateral Liability	1,121,458	777,813	44
Short Sales	8,050,666	6,479,968	24
Obligations Under Reverse Repurchase Agreements	17,012,077	10,658,825	60
Total Investment Liabilities	39,834,565	28,098,089	42
Net Investment Position Held in Trust	$ 136,256,160	$ 120,158,233	13
Investment Income (Loss)	$ 20,386,188	$ 16,603,027	23
Investment Expense	(429,532)	(734,853)	(42)
Net Investment Income (Loss)	19,956,656	15,868,174	26
Net Disbursements - Department of Employee Trust Funds	(3,858,729)	(3,482,407)	11
Net Increase (Decrease) in Net Investment Position Held in Trust	$ 16,097,927	$ 12,385,767	30

including rebalancing the Core Fund's asset allocation and changes in investment strategies at year-end. Also, securitized cash positions and synthetic exposure accounts used to manage liquidity and leverage can change significantly during a given period. These investment strategies require adequate levels of margin to meet risk mitigation requirements.

The balance in **Receivables** decreased by $298.4 million, or 3%, during 2021. The timing and settlement of securities transactions are the largest contributors to changes in the Receivables balance. Approximately 86% of the Receivables balance at year-end related to To Be Announced (TBA) securities. 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 contract 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. Sold TBA contracts create a receivable on the Statement of Net Investment Position as payment for TBA securities is not made until the settlement date.

Other routine rebalancing activities, where investment positions were sold but pending settlement, also contributed to the receivables balance at Dec. 31, 2021.

Invested Securities Lending Collateral decreased by $417.4 million or 54%, during 2021. The balance consists of cash received as collateral for securities lending transactions. As of Dec. 31, 2021, SWIB's securities lending agent released $761 million in cash from the Invested Securities Lending Collateral pool to SWIB. This cash, included in Cash and Cash Equivalents, plus Invested Securities Lending Collateral equals the Securities Lending Collateral Liability at Dec. 31, 2021. The cash released provides liquidity for other investment strategies.

Securities Lending Collateral Liability increased by $343.6 million or 44%, during the year. This was driven by an increase in lending activities primarily used to support Core Fund liquidity needs. Investment policies permit the use of both cash and treasury securities as collateral to support short positions.

Prepaid Expenses increased by $7.1 million, or 56%, during 2021. This change is not representative of a change in total expenses, but rather reflects a difference in timing for the billing and payment of Core Fund Internal Operating Expenses in 2021, as compared to the prior year.

Capital Assets of $1.1 million were recorded as of Dec. 31, 2021. These assets are linked to costs incurred for SWIB's pending move to a new office. Capital assets will be depreciated and expensed over their estimated useful lives once they are placed into service.

Investments increased by $28.6 billion, or 22%, during the year. Strong investment returns generated during the year primarily drove the increase. Significant drivers of these returns are included in the upcoming discussion of Investment Income.

Payables & Other Liabilities increased by $3.5 billion, or 34%, during 2021. 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. Investment purchases payable primarily relate to SWIB's use of TBA securities, which accounted for 91% of the investment purchases payable balance at Dec. 31, 2021. Purchased TBA securities create a payable on the Statement of Net Investment Position as payment for TBA securities is not made until the settlement date. Other routine rebalancing activities, where investment positions were purchased but pending settlement, also contributed to the balance of Payables & Other Liabilities at Dec. 31, 2021.

Short Sales increased by $1.6 billion, or 24%, during 2021. 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 internal equity and fixed income strategies designed to increase active risk.

Obligations Under Reverse Repurchase Agreements increased by $6.4 billion, or 60%, during 2021. 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 2021, SWIB increased its capacity to participate in reverse repurchase agreements, providing access to low-cost 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.

Driven by a 2021 net return of 16.9%, the Core Fund generated $20.4 billion in **Investment Income** during 2021. This represents an increase of $3.8 billion, or 23%, against the investment income generated during 2020, when the Core Fund's net return approximated 15.2%. Asset class returns for calendar year 2021 and 2020 are presented in the table entitled **Core Fund Time Weighted Annualized Asset Class Returns**.

Core Fund
Time Weighted Annualized Asset Class Returns
Net of External Management Fees

	2021 Return %	2020 Return %
Public Equities	19.0	16.4
Fixed Income	-0.6	8.9
Inflation Sensitive	6.0	11.4
Real Estate	16.1	1.1
Private Equity/Debt	41.5	19.1
Multi-Asset[1]	16.3	14.9

[1]Multi-Asset includes cross-asset class strategies. Investments may be categorized differently than they are within the financial statements.

Investment Expense includes most transaction related expenses, certain external management fees, and expenses tied to Core Fund operations. More detailed expense categories are presented on the Statement of Changes in Net Investment Position.

Transaction related expenses are reflected in Investment Operating Expense and Securities Lending Fees. These expenses are often related to the execution of specific investment transactions like short sales. In this example, the dividends a shorted security pays are reflected as dividend expense. Two transaction related expense types, commissions and trade execution fees, are excluded from Investment Operating Expense and are instead 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 fees, and, in some cases, performance fees paid to external managers. Administrative-related expenses are included in Internal Operating Expenses. Professional Services Expenses include legal fees, research and data services, and investment consulting fees.

The Core Fund incurred $429.5 million in **Investment Expense** during 2021, representing a decrease of $305.3 million, or 42%, from the prior year. As noted, Investment Expense comprises several individual expense accounts on the financial statements. Investment Operating Expense accounted for $253.9 million, or 59%, of the Core Fund's total investment expenses for the year-ended Dec. 31, 2021. Investment Operating Expense increased by $45.3 million versus the prior year. Within Investment Operating Expense, Dividend expense increased by $47.1 million year-over-year as SWIB's equity short exposures increased over the course of 2021. Alternatively, interest expense paid to counterparties decreased $15.6 million as short-term interest rates remained low during 2021. This resulted in lower interest paid on reverse repurchase agreements. Reverse repurchase agreements are used to finance certain investment strategies.

The remaining decrease in **Investment Expense** was primarily driven by a decrease of approximately $266.7 million, or 88%, in base asset management fees paid to external asset managers. The majority of the expense decrease resulted from an accounting change implemented in 2021 for assets managed by third-party investment managers within certain external portfolios. The investment management fees for these investments are included in the net asset value of the fund and reflected in net investment income. There is no change to net investment position and net investment income from this change. Performance fees paid to external asset managers decreased by approximately $115 million, or 94% due to this change. Additional information can be found in Note 2E.

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 14% of WRS members participate in the Variable Fund, which maintained a Net Investment Position of $10.9 billion at Dec. 31, 2021. 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 Dec. 31, 2021 and Dec. 31, 2020 is included in the table entitled **Variable Fund Condensed Financial Information**.

Variable Fund **Cash and Cash Equivalents** increased by $425.4 million, or 304%, during 2021. This increase is largely attributable to an increase of cash held in a short-term investment pool at year-end. Routine rebalancing activities fluctuate throughout the year and can impact cash balances at a point in time.

Receivables decreased by $0.6 million, or 3%, and **Payables & Other Liabilities** decreased by $21.0 million, or 71%, during 2021. These changes were driven by pending investment sales and purchases at year-end. The changes were due to normal

Variable Fund Condensed Financial Information (In Thousands)

	2021	2020	% Change
Cash and Cash Equivalents	$ 565,481	$ 140,078	304
Receivables	20,461	21,061	(3)
Invested Securities Lending Collateral	35,975	32,872	9
Prepaid Expenses	8	1,652	(100)
Investments	10,347,042	9,434,895	10
Total Investment Assets	10,968,967	9,630,558	14
Payables and Other Liabilities	8,505	29,518	(71)
Securities Lending Collateral Liability	35,975	32,872	9
Total Investment Liabilities	44,480	62,390	(29)
Net Investment Position Held in Trust	$ 10,924,487	$ 9,568,168	14
Investment Income (Loss)	$ 1,851,420	$ 1,434,579	29
Investment Expense	(9,214)	(9,504)	(3)
Net Investment Income (Loss)	1,842,206	1,425,075	29
Net Disbursements - Department of Employee Trust Funds	(485,887)	(543,222)	(11)
Net Increase (Decrease) in Net Investment Position Held in Trust	$ 1,356,319	$ 881,853	54

investment activity, which can fluctuate during the year depending upon market conditions, asset transitions, and trade opportunities.

Invested Securities Lending Collateral and **Securities Lending Collateral Liability** represent cash collateral held for securities lending transactions. The $3.1 million, or 9%, increase in these accounts at Dec. 31, 2021 was driven by an increase in Variable Fund equity loans collateralized with cash.

Investment expenses decreased by $0.3 million, or 3%, during 2021. Expenses paid to external asset managers are generally paid based on the value of the underlying assets. Variable Fund expenses decreased partly due to an accounting change impacting how some external management fees are recorded, which is further detailed in Note 2E.

Driven by a net return of 20.0%, the Variable Fund generated $1.9 billion in **Investment Income** during 2021. This represents an increase of $416.8 million, or 29%, against the investment income generated during 2020, when the Variable Fund's net return approximated 17.5%.

The Variable Fund has an asset allocation target of 70% domestic and 30% international equities to satisfy its equity market mandate. Therefore, its performance 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 Dec. 31, 2021, the Variable Fund's 20-year annualized net of external management fees return was 8.5%.

Retirement Funds

Financial Statements

Statement of Net Investment Position As of December 31, 2021 (In Thousands)	Core Retirement Investment Trust Fund	Variable Retirement Investment Trust Fund
Investment Assets		
Cash and Cash Equivalents	$ 6,244,362	$ 565,481
Receivables:		
Interest & Dividends	435,207	15,706
Securities Lending Income	2,776	568
Investment Sales	10,865,550	4,187
Invested Securities Lending Collateral	360,458	35,975
Prepaid Expenses	19,744	8
Capital Assets	1,071	-
Investments (at fair value):		
Equities	73,452,678	10,326,132
Fixed Income	48,219,267	-
Private Fund Investments	26,573,553	-
Multi Asset	6,227,923	-
Preferred Securities	687,501	15,811
Convertible Securities	2,153	-
To Be Announced Securities	2,899,255	-
Foreign Currency Contracts	3,699	95
Option Contracts	(1,781)	(166)
Futures Contracts	71,619	5,170
Swaps	25,690	-
Total Investment Assets	$ 176,090,725	$ 10,968,967
Investment Liabilities		
Payable for Investments Purchased	$ 13,421,243	$ 5,669
Obligations Under Reverse Repurchase Agreements	17,012,077	-
Short Sales	8,050,666	-
Collateral Due to Counterparty	125,917	-
Accounts Payable	75,320	2,728
Other Liabilities	27,884	108
Securities Lending Collateral Liability	1,121,458	35,975
Total Investment Liabilities	$ 39,834,565	$ 44,480
Net Investment Position Held in Trust	$ 136,256,160	$ 10,924,487

The accompanying notes are an integral part of this statement.

Statement of Changes in Net Investment Position
For the Calendar Year Ended December 31, 2021
(In Thousands)

	Core Retirement Investment Trust Fund	Variable Retirement Investment Trust Fund
Additions		
Investment Income:		
Net Increase (Decrease) in the Fair Value of Investments	$ 17,921,101	$ 1,704,542
Investment Operating Income	2,425,212	139,672
Securities Lending Income	39,874	7,206
Less		
Investment Operating Expense	253,927	72
Internal Operating Expense	83,101	2,816
Custodial, Bank Fees & Operating Services	5,467	512
Professional Services Expenses	38,933	1,111
External Investment Management Fees	45,392	4,132
Securities Lending Fees	2,711	571
Net Investment Income (Loss)	$ 19,956,656	$ 1,842,206
Deductions		
Net Disbursements - Department of Employee Trust Funds	(3,858,729)	(485,887)
Net Increase (Decrease) in Net Investment Position Held in Trust	$ 16,097,927	$ 1,356,319
Net Investment Position Held in Trust:		
Beginning of the Year	$ 120,158,233	$ 9,568,168
End of the Year	$ 136,256,160	$ 10,924,487

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 herein 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.

Investment related expenses are charged directly to the Retirement Funds and funded through employer and employee contributions and investment earnings. Investment expenses are listed on the Statement of Changes in Net Investment Position. Transaction-related expenses, including commissions, trade execution fees, and fees for select externally managed funds, 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. These expenses are not readily separable from either the asset acquisition or monetization, or they are included in the net asset value 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 (SEC) 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. The WRS 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 Annual Comprehensive Financial Report, prepared by ETF and located on their website: **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 SEC 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 Annual Comprehensive Financial Report, prepared by ETF and located on their website: **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 are 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. Securities 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. 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, US Treasury Bills, short-term investment funds, and other US 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 as 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 markets

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 values provided by the general partner. Due to the reporting timing of private markets investment managers, reported fair values as of Dec. 31, 2021 are based on actual Sept. 30, 2021 reporting, which has been adjusted to reflect cash flows occurring from Oct. 1, 2021 through Dec. 31, 2021. The reported fair value is considered an estimate that may significantly differ from the value that could be realized in a secondary market transaction or the amount ultimately realized. The financial statements of the limited partnerships and real estate pooled funds are audited by independent auditors annually.

Certain portfolios invest in privately held companies alongside a strategic partner, such as a limited partnership fund manager. These co-investments are valued by SWIB's strategic partners, who often employ independent valuation agents and use a variety of methodologies including 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 investments owned by SWIB in limited liability companies 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 (OTC) 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 market 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 6.

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 as no independent price quotes are 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.

E. Accounting Changes

Beginning in 2021, SWIB's treatment of fees paid to some external investment managers in exchange for their management of SWIB investments in external portfolios was changed. This change impacted SWIB's holdings in private equity, real estate, hedge funds, and select public markets portfolios. The investment management fees for these investments are no longer included in External Investment Management Fees on the

Statement of Changes in Net Investment Position. Rather, they are now included in the Net Increase (Decrease) in the Fair Value of Investments within the Statement of Changes in Net Investment Position. This change has no net impact on the Net Investment Position Held in Trust on the Statement of Net Investment Position or on Net Investment Income (Loss) on the Statement of Changes in Net Investment Position. In addition, the reporting of fees paid to external investment managers in exchange for their management of SWIB investments within SWIB portfolios remains unchanged from prior years. These fees are included in External Investment Management Fees on the Statement of Changes in Net Investment Position.

Real estate fund investments previously classified as Real Estate on the Statement of Net Investment Position were combined with private equity and real estate limited partnerships. The category for these investments on the Statement of Net Investment Position was renamed Private Fund Investments.

3. Capital Assets

SWIB signed an agreement to lease office space at a future date. Certain costs incurred in relation to SWIB's future occupancy of this space are capitalizable in accordance with GAAP. As a result, SWIB has established a Capital Assets account within the Statement of Net Investment Position. Capital assets are initially valued at cost and include the purchase price or construction cost plus any costs necessary to place the asset into use. Normal maintenance and repair costs that do not materially add to the value or extend the life of a capital asset are not capitalized and are expensed as incurred.

As the benefits resulting from these costs are realized, Capital Assets will be reduced by depreciation and an associated expense will be recognized on the Statement of Changes in Net Investment Position. Depreciation is calculated using the straight-line method based upon useful lives varying from three to fifteen years, depending on the type of asset in accordance with GAAP guidance.

4. 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 always carry a minimum weighted average rating.

Information regarding SWIB's credit risk related to derivative instruments is found in Note 6.

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 Dec. 31, 2021. 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'

Credit Quality Distribution
As of December 31, 2021
(In Thousands)

Rating	Fair Value	% of Total
AAA/Aaa	$ 529,669	1.0%
AA/Aa	29,717,181	54.3
A	3,082,226	5.6
A-1/P-1	54,709	0.1
A-2/P-2	201,642	0.4
A-3/P-3	17,978	0.0
BBB/Baa	7,603,105	13.9
BB/Ba	2,384,348	4.4
B	1,968,407	3.6
CCC/Caa or below	814,370	1.5
Not Rated	1,467,599	2.7
Commingled Fixed Income Funds	6,843,327	12.5
Total	$ 54,684,561	100%

Reverse Repurchase Agreements Counterparty Credit Exposure As of December 31, 2021 (In Thousands)		
Fair Value of Collateral Held by Counterparty		$ 17,327,331
Less:		
Cash due to Counterparty	$ 17,012,077	
Collateral and Interest due to Counterparty	184,732	
Total due to Counterparty		17,196,809
Net Counterparty Credit Exposure		$ 130,522

securities lending collateral reinvestment pools, which are managed by SWIB's custodian. See Note 7 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 $17.0 billion in reverse repurchase agreements at Dec. 31, 2021. Investment guidelines permit certain portfolios to enter into reverse repurchase agreements, which are a sale of securities with a simultaneous agreement to repurchase the securities in the future at the same price plus a stated rate of interest. The market value of the securities underlying reverse repurchase agreements exceeds the cash received, providing the counterparty a margin against a decline in market value of the securities. If the counterparty defaults on their obligation to sell these securities back to SWIB or provide cash of equal value, SWIB could suffer an economic loss equal to the difference between the market value of the underlying securities plus accrued interest and the agreement obligation, including accrued interest.

SWIB enters into reverse repurchase agreements with various counterparties and such transactions are governed by Master Repurchase Agreements (MRA). MRAs are negotiated contracts and contain terms in which SWIB seeks to minimize counterparty credit risk. SWIB also controls credit exposures by limiting trades with any one counterparty to stipulated amounts. 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 Dec. 31, 2021 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% and 0.22% at Dec. 31, 2021. Portfolio guidelines require agreements to mature between one and 90 days. 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.

B. Custodial Credit Risk

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 US 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 carry insurance covering errors and omissions and they must provide SWIB with an annual report on internal controls, prepared in accordance with the Statement on Standards for Attestation Engagements. In addition, SWIB management has established a system of controls for the oversight of services and related processes performed by the custodian. SWIB's current custodial bank was selected in accordance with these guidelines and meets all the requirements stipulated in the custodial credit risk policy.

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 $620.7 million as of Dec. 31, 2021. Of the total, $123.4 million was collateralized by securities borrowed. Depository insurance covered another $36.2 million of the total. The remaining deposits, totaling $461.1 million, were uninsured and uncollateralized. These uninsured deposits represent the US 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 held $24.0 million in certificates of deposit as of Dec. 31, 2021.

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 repurchase agreements totaling $268.8 million as of Dec. 31, 2021. 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.

The Core Trust Fund holds committed repos with a major equity derivative clearing organization (counterparty) for an agreed upon commitment amount, from which the counterparty can fully or partially draw upon at their discretion during the commitment period. A separate account is established at the asset custodian in SWIB's name to hold the available cash and the collateral from the counterparty if any of the commitment amount is drawn. For the undrawn commitment amount, the counterparty pays SWIB a commitment fee. Any cash amounts drawn are structured as repo transactions where SWIB receives a fee and US Treasuries as collateral with a margin percentage greater than 100%. Draws are limited to a maximum of 30 days, so the term of each repo transaction is also limited to 30 days. The counterparty is rated AA+ and is a Systematically Important Financial Market Utility. Collateral is marked to market daily. A separate financial services company acts as SWIB's agent and provides indemnification in the event of the counterparty's default.

The Retirements Funds, under a Master Repurchase Agreement (MRA), hold mortgage series trust certificates issued by a loan originator. The loan originator, acting as trust sponsor, places Government National Mortgage Association (Ginnie-Mae) eligible loans in a trust and issues trust certificates. The trust sponsor sells trust certificates to SWIB's counterparty in a repo transaction under a separate MRA between the trust sponsor and the counterparty. The sponsor and owner trustee utilize a custodian for the loan documents. SWIB purchases the trust certificates and provides funding to the counterparty which provides funding to the loan originator/ trust sponsor. The trust certificates have been pledged by the counterparty to SWIB under the MRA between SWIB and the counterparty. The trust certificates are collateralized by the pool of mortgage loans custodied at the custodian. The counterparty is required to make margin adjustments when the value of the collateral pool, based on TBA pricing, falls below the required margin threshold. The collateral held is greater than 100%, and the repurchase transactions have one-month terms.

During 2021, SWIB entered into Institutional Client Account Agreements with prime brokers. These agreements include, but are not limited to the execution, settlement, and clearance of securities, commodities, and other financial products and transactions, including borrowings related to the transactions, commodities, other financial assets, and the extension of credit to SWIB. The Account Agreement is treated as a "master netting agreement", a "securities contract" within the meaning of the United States Bankruptcy Code, or a "netting contract" within the meaning of the Federal Deposit Insurance Corporation Improvement Act of 1991.

SWIB manages relationships with prime brokers, including instructing asset transfers and margin movements regarding collateral. Collateral is held by the prime brokers and any affiliated entity and is commingled in their accounts along with the right of rehypothecation in accordance with applicable law. Collateral consists of cash, treasuries, and securities subject to prime broker rules and standard terms. Separate agreements govern lock-up rates and fees for borrows, as well as lending and other fees, as applicable. Margin calculation is included in the lock-up terms and rates charged may vary by portfolio. Certain changes can only be made with advance notice based on a lock-up term of 29 days. The prime brokers are designated as Systemically Important Financial Institutions (SIFI). Although SWIB monitors these counterparties, there is no guarantee the counterparty will not become insolvent and there is no certainty that SWIB would not incur losses due to its assets being unavailable for a period of time, ultimately receiving less than a full recovery of its assets, or both.

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 US government, representing 5% or more of the Retirement Funds' value at Dec. 31, 2021.

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 several 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 17.0% as of Dec. 31, 2021.

SWIB analyzes long and 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 require management within a range of a targeted duration, while others require a weighted average maturity at or below a specified number of days or years.

The **Interest Rate Sensitivity by Investment Type** table presents the aggregated interest rate exposure for the Retirement Funds' assets at Dec. 31, 2021. 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. This duration measure is calculated using reset dates for some floating rate instruments, such as term loans. Information about the interest rate sensitivity of derivative contracts is included in Note 6.

SWIB invests in securities with contractual cash flows, such as asset-backed securities and US government agencies. These types of structured product investments may be highly sensitive to interest rate changes as they may 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 or short active position, will decline or appreciate in value relative to the US 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 US or foreign governments or central banks, currency controls, or political developments in the US or abroad.

SWIB's policies include foreign currency risk management objectives relating to each individual portfolio. These guidelines address the foreign currency management activities permitted for each portfolio based on the 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 6.

Interest Rate Sensitivity by Investment Type[1]
As of December 31, 2021
(In Thousands)

Investment Type	Fair Value	Weighted Average Duration (Years)	Weighted Average Maturity (Days)
U.S. Treasury Inflation Protected Securities	$21,183,185	7.6	
Corporate Bonds & Private Placements	14,676,074	6.9	
U.S. Treasury Securities	5,576,699	8.5	
U.S. Government Agencies	2,312,676	4.8	
Foreign Government/Agency Bonds	2,268,939	7.2	
Asset Backed Securities	832,864	3.3	
Commercial Paper	284,302		69
Repurchase Agreements	268,766		3
Municipal Bonds	188,657	11.5	
Commingled Funds			
Short Term Cash Management	5,404,746		57
Emerging Market Fixed Income	1,221,762	4.9	
Exchange Traded	465,891	7.6	
Total	$54,684,561		

[1]Excludes derivatives. See Note 6 for information about the interest rate sensitivity of derivative instruments.

Currency Exposures by Investment Type[1, 3]
As of December 31, 2021
Stated in U.S. Dollars (In Thousands)

Currency	Cash & Cash Equivalents	Equities	Fixed Income	Private Fund Investments	Preferred Securities	Futures Contracts	Short Sales[2]	Options	Swaps	Total[4]
Australia Dollar	$ 11,677	$ 966,643	$ 31,718	$ -	$ -	$ 268	$ (220,666)	$ -	$ -	$ 789,640
Brazil Real	1,004	60,621	14,844	-	64,833	-	-	-	-	141,302
Canada Dollar	85,883	1,869,006	23,033	-	-	2,184	(309,765)	-	-	1,670,341
Chile Peso	73	9,379	-	-	-	-	-	-	-	9,452
China Yuan Renminbi (Onshore)	(33)	-	-	-	-	-	-	-	(130)	(163)
Colombian Peso	4	117	-	-	-	-	-		-	121
Czech Republic Koruna	1	1,372	2,299	-	-	-	-	-	-	3,672
Denmark Krone	706	562,801	-	-	-	-	(188,052)	-	-	375,455
Euro Member Countries	21,749	6,978,639	334,061	1,741,436	175,624	5,645	(1,176,868)	(140)	2,949	8,083,095
Hong Kong Dollar	6,401	985,886	-	-	-	(302)	(41,310)	-	-	950,675
Hungary Forint	804	30,165	1,681	-	-	-	-	-	-	32,650
India Rupee	-	168,292	-	-	-	-	-	-	-	168,292
Indonesia Rupiah	18	20,404	-	-	-	-	-	-	-	20,422
Israel Shekel	573	53,239	-	-	-	-	(14,779)	-	-	39,033
Japan Yen	908	4,389,940	-	-	-	953	(761,888)	-	-	3,629,913
Korea (South) Won	-	324,509	-	-	379	-	-	-	-	324,888
Malaysia Ringgit	415	8,457	32,473	-	-	-	-	-	-	41,345
Mexico Peso	(410)	2,014	45,042	-	-	-	-	-	(1,114)	45,532
New Zealand Dollar	630	71,953	16,393	-	-	-	(26,627)	-	-	62,349
Norway Krone	901	254,611	-	-	-	-	(50,961)	-	-	204,551
Peruvian Sol	5	82	-	-	-	-	-		-	87
Philippines Peso	54	824	-	-	-	-	-	-	-	878
Poland Zloty	30	47,663	18,491	-	-	-	-	-	-	66,184
Russia Ruble	126	-	3,632	-	-	-	-	-	-	3,758
Singapore Dollar	2,846	135,809	-	-	-	-	(49,799)	-	-	88,856
South Africa Rand	1,402	48,273	38,114	-	39	-	-	-	-	87,828
Sweden Krona	621	1,041,597	4,329	1,890	-	-	(324,837)	-	-	723,600
Switzerland Franc	424	1,394,924	-	-	-	-	(342,307)	-	-	1,053,041
Taiwan New Dollar	275	514,142	-	-	6	-	-	-	-	514,423
Thailand Baht	-	36,586	-	-	-	-	-	-	-	36,586
Turkey Lira	-	3,663	-	-	-	-	-	-	-	3,663
United Kingdom Pound	31,909	2,972,486	34,389	428,991	-	857	(510,441)	-	-	2,958,191
Total	$ 168,996	$ 22,954,097	$ 600,499	$ 2,172,317	$ 240,881	$ 9,605	$ (4,018,300)	$ (140)	$ 1,705	$ 22,129,660

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

[2]Short 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.

[3]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.

[4]Values may not add due to rounding.

The table entitled **Currency Exposures by Investment Type** presents the Retirement Fund investments which were exposed to foreign currency risk at Dec. 31, 2021.

5. 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.

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).

A. Fair Value Measurements

The fair value measurements of investments as of Dec. 31, 2021 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. US Treasury Bills and only the most recently issued US 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. OTC 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. 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 comparable public companies, 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

Investments by Fair Value Level
As of December 31, 2021
(In Thousands)

Asset Type	Fair Value Level 1	Fair Value Level 2	Fair Value Level 3	Total
Cash Equivalents				
Certificates of Deposit	$ -	$ 9,008	$ 15,005	$ 24,013
Commercial Paper	-	-	180,510	180,510
Money Market Funds	250,005	-	-	250,005
Total Cash Equivalents	250,005	9,008	195,515	454,528
Equities				
Domestic	50,086,973	57	93,048	50,180,078
International	22,942,766	165	11,166	22,954,097
Total Equities	73,029,739	222	104,214	73,134,175
Fixed Income				
Asset Backed Securities	-	811,356	21,508	832,864
Corporates Bonds & Private Placements	-	14,405,143	65,277	14,470,420
Exchange Traded Funds	465,891	-	-	465,891
Foreign Government/Agency Bonds	-	2,268,939	-	2,268,939
Municipal Bonds	-	188,657	-	188,657
U.S. Government Agencies	-	2,312,676	-	2,312,676
U.S. Treasury Inflation Protected Securities	-	21,183,186	-	21,183,186
U.S. Treasury Securities	38,476	5,538,222	-	5,576,698
Total Fixed Income	504,367	46,708,179	86,785	47,299,331
Preferred Securities				
Domestic	1	229,440	232,989	462,430
International	240,882	-	-	240,882
Total Preferred Securities	240,883	229,440	232,989	703,312
Convertibles	-	63	2,090	2,153
Derivatives				
Foreign Exchange Contracts	-	3,793	-	3,793
Futures	76,789	-	-	76,789
Options	(1,946)	-	-	(1,946)
Swaps	-	25,689	-	25,689
To Be Announced Securities	-	2,899,255	-	2,899,255
Total Derivatives	74,843	2,928,737	-	3,003,580
Short Sales	(8,047,473)	-	(3,193)	(8,050,666)
Total	$ 66,052,364	$ 49,875,649	$ 618,400	$ 116,546,412

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, equities, private equity limited partnerships, stock funds, real estate limited

Investments Measured at NAV
As of December 31, 2021
(In Thousands)

Investments Measured at NAV	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period[7]
Cash and Cash Equivalents[1]	$ 5,404,746	$ -	Daily	Same Day
Fixed Income[2]	1,221,762	-	Daily	5 days
Private Fund Investments[3]	26,573,553	14,112,896	N/A	N/A
Equities[4]	9,710,717	-	Daily, Monthly	2-30 days
Equity Limited Partnerships[5]	933,917	-	Monthly	15 days
Hedge Funds[6]	6,227,923	746,672	Various (Note 5D)	Various (Note 5D)
Total	$50,072,618	$ 14,859,568		

[1]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.

[2]This category includes a long-only fixed income manager 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.

[3]Private Fund Investments include direct, co-investments, LLCs 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 or over the life of the investment. The table entitled Limited Partnerships - Estimated Remaining Life provides an estimate of the period over which the underlying assets are expected to be liquidated. As of December 31, 2021, there is one partial sale planned in 2022 on the secondary market. The anticipated sale price of this fund is not expected to be materially different than the NAV as of December 31, 2021.

[4]This category includes long-only equity managers (71%) with various fundamental, quantitative and other approaches spanning various styles, geographies and market cap weights. These long-only manager investments can be redeemed either daily or monthly with between 10 and 30 business days' notice. The remaining 29% 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.

[5]Equity Limited Partnership fund invests in global equity. The long-only manager requires a redemption notice period of 15 days and can be redeemed monthly. The table entitled Limited Partnerships - Estimated Remaining Life indicates that the investments represent open-ended funds that are readily redeemable.

[6]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 four funds structured as limited partnerships is >10 Years and three funds between 5-10 Years. Additional information relating to Hedge Funds can be found in Note 5(D).

[7]Redemption terms described for NAV investments reflect contractual agreements and assume withdrawals are made without adverse market impact and under normal market conditions.

partnerships, equity limited partnerships, and hedge funds are based on the investments' net asset value (NAV) per share (or its equivalent), provided by the investee. The Dec. 31, 2021 investments valued using NAV are shown in the table entitled **Investments Measured at NAV**.

C. Private Fund Investments

Private Fund Investments include private equity, and real estate.

Private equity limited partnerships participated in the following investment strategies at Dec. 31, 2021:

Leveraged Buyout – This strategy acquires the controlling interest of a private company using a significant amount of borrowed capital (leverage).

Distressed Debt – 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.

Growth Equity – This strategy is an investment opportunity in relatively mature companies that are going through a transformational event in their lifecycle with potential for significant growth.

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

Private Debt – This strategy includes any debt held by or extended to privately-held companies. The debt securities can be senior debt, mezzanine debt, and structured capital but commonly involve non-bank institutions making loans to private companies or buying those loans on the secondary market.

Secondaries – This strategy provides a market for investors to sell or purchase positions in private markets funds.

Real Estate limited partnerships generally consisted of the following investment strategies at Dec. 31, 2021:

Core – Core investments are expected to deliver a significant percentage of their return from income and should experience 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.

Private equity and real estate 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 limited partnership holdings as of Dec. 31, 2021.

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 Dec. 31, 2021:

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.

Limited Partnerships - Estimated Remaining Life
As of December 31, 2021
(In Thousands)

	Estimated Remaining Life				
Limited Partnership Type	**<5 Years**	**5-10 Years**	**>10 Years**	**N/A[2]**	**Total**
Private Fund Investments[1]	$ 6,222,836	$14,799,090	$ 1,709,477	$ 3,842,150	$ 26,573,553
Equity Limited Partnerships	-	-	-	933,917	933,917
Total	$ 6,222,836	$14,799,090	$ 1,709,477	$ 4,776,067	$ 27,507,470

[1]Estimated remaining life represents subjective estimates, assuming normal market conditions.
[2]N/A investments represent open-ended funds that are readily redeemable.

Tactical Trading – This strategy invests in indices, 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. 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 Dec. 31, 2021.

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 Dec. 31, 2021.

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

Hedge Fund Redemption Timing
As of December 31, 2021
(In Thousands)

Redemption Frequency	Redemption Notice Period (Days)	Fair Value
Monthly	3 - 90	$ 1,745,198
Quarterly[1,3]	30 - 180	3,522,547
Semi-Annual	60	277,559
Other[1,2]	0 - 90, N/A	682,619
Total		$ 6,227,923

[1]These categories include funds that are in the process of being fully redeemed, with final distribution expected in 2022.

[2]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.

[3]This category includes funds that are subject to rolling locks, whereby the fund automatically re-locks unless a withdrawal request is submitted.

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 Dec. 31, 2021.

Hedge Fund Lock-ups
As of December 31, 2021
(In Thousands)

Hedge Fund Lock Type	Duration of Lock (Years)	Year of Lock Expiration	Fair Value
Hard Lock	1 - 3	2024	$ 660,205
Rolling Lock	2	2022 - 2023	357,527
None[1]	N/A	N/A	4,756,338
Other[2]	N/A	N/A	453,853
Total			$6,227,923

[1]This category includes funds that are in the process of being fully redeemed, with final distribution expected in 2022.

[2]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, 2021
(In Thousands)

Hedge Fund Gate Type	Gate Range	Fair Value
Investor Level	12.5% - 50.0%	$ 2,057,613
Fund Level	8.3% - 25.0%	1,009,162
None	N/A	2,481,499
Other[1,2]	N/A	679,649
Total		$ 6,227,923

[1]This category include funds that are in the process of being fully redeemed, with final distribution expected in 2022.

[2]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.

6. Derivative Instruments

A derivative instrument, as defined by GASB Statement No. 53, is a financial instrument or other contract that has 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 and 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 OTC contracts. OTC contracts can be structured as either uncleared or cleared.

Uncleared OTC contracts are non-standardized, bilateral contracts that 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 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 $423.5 million in cash and $370.9 million in securities as collateral for derivative positions as of Dec. 31, 2021. 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

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

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 Dec. 31, 2021, without respect to any collateral or netting agreement.

The aggregate fair value of receivables relating to uncleared OTC derivative contracts was $7.7 billion at Dec. 31, 2021. This amount represents the maximum loss that would be recognized at the reporting date if all counterparties failed to perform as contracted. This maximum exposure is reduced to $7.1 million at Dec. 31, 2021 when counterparty collateral and master netting arrangements are considered. SWIB had credit exposure to 21 uncleared OTC counterparties as of Dec. 31, 2021.

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 and to ensure performance and 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 US dollars.

OTC Derivatives Subject to Counterparty Credit Risk
As of December 31, 2021
(In Thousands)

Counterparty Credit Rating	FX Receivables	Swap Receivables	TBA Receivables[1]	Warrant Receivables[1,2]	Total[3]
AA	$ 772,619	$ -	$ -	$ -	$ 772,619
A	3,444,485	3,497,233	1,174	-	6,942,892
Not Rated	-	-	-	1,527	1,527
Total	$ 4,217,104	$ 3,497,233	$ 1,174	$ 1,527	$ 7,717,038

[1]Exposure to counterparty credit risk for To Be Announced Securities and Warrants is limited to unrealized gains on open positions.

[2]Warrants issued by privately held company that is not rated by statistical credit rating organization.

[3]Aggregate amount of liabilities included in master netting arrangements was $7.6 billion at December 31, 2021.

Currency exposure management is permitted through the use of currency derivative instruments. Direct hedging of currency exposure back to the US 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 also permitted. SWIB may employ discretionary currency overlay strategies when currency market conditions suggest such strategies are warranted.

Losses may arise from future changes in the value of the underlying currency, or if the counterparties do not perform under the terms of the contract. Spot and forward contracts are valued daily with the changes in fair value included in Net 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 tables entitled **Foreign Currency Spot and Forward Contracts** present the fair value of foreign currency spot and forward contract assets and liabilities held by the Retirement Funds as of Dec. 31, 2021.

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 Dec. 31, 2021.

The table entitled **Futures Contracts with Interest Rate Sensitivity** presents the interest rate sensitivity of fixed income futures contracts as of Dec. 31, 2021. 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.

E. Options

An options 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

Foreign Currency Spot and Forward Contracts As of December 31, 2021 (In Thousands)			
Currency	**Notional (Local Currency)**	**Fair Value ($US)**	**Unrealized Gain/(Loss) ($US)**
Foreign Currency Contract Receivables			
Australia Dollar	285,883	$ 207,852	$ 3,250
Brazil Real	332,710	58,989	996
Canada Dollar	216,105	171,084	1,954
Chile Peso	31,725,130	37,081	(1,126)
China Yuan Renminbi	21,982	3,447	24
Colombia Peso	6,749,977	1,645	(39)
Czech Republic Koruna	1,314,912	59,837	1,393
Denmark Krone	111,173	16,999	77
Euro Member Countries	49,708	56,534	135
Hong Kong Dollar	132,781	17,031	(1)
Hungary Forint	25,913,046	79,625	(798)
India Rupee	6,722,639	89,743	736
Indonesia Rupiah	752,892,727	52,721	659
Israel Shekel	53,671	17,244	149
Japan Yen	42,612,540	370,070	(6,940)
Mexico Peso	347,464	16,754	548
New Zealand Dollar	37,250	25,503	65
Norway Krone	1,745,355	197,745	2,442
Philippines Peso	147,326	2,849	(60)
Poland Zloty	239,503	59,305	363
Russia Ruble	4,076,488	53,895	(928)
Singapore Dollar	106,330	78,863	744
South African Rand	235,006	14,580	54
Sweden Krona	2,152,372	237,819	(495)
Switzerland Franc	344,039	377,613	1,922
Thailand Baht	337,726	10,107	(4)
Turkey Lira	217,840	15,830	(3,803)
United Kingdom Pound	137,749	186,574	2,763
United States Dollar	1,699,764	1,699,765	-
Total Receivables		$ 4,217,104	$ 4,080

Foreign Currency Spot and Forward Contracts As of December 31, 2021 (In Thousands)			
Currency	**Notional (Local currency)**	**Fair Value ($US)**	**Unrealized Gain/(Loss) ($US)**
Foreign Currency Contract Payables			
Australia Dollar	(137,497)	$ (99,971)	$ 465
Brazil Real	(12,183)	(2,178)	(12)
Canada Dollar	(142,127)	(112,518)	(294)
Chile Peso	(590,743)	(686)	8
China Yuan Renminbi	(132,907)	(20,838)	(105)
Colombia Peso	(25,636,532)	(6,249)	179
Czech Republic Koruna	(275,830)	(12,605)	(296)
Denmark Krone	(269,330)	(41,182)	16
Euro Member Countries	(1,085,567)	(1,235,355)	3,372
Hong Kong Dollar	(37,074)	(4,755)	(2)
Hungary Forint	(5,598,136)	(17,248)	594
India Rupee	(913,581)	(12,162)	(190)
Israel Shekel	(24,207)	(7,782)	(95)
Japan Yen	(6,629,934)	(57,576)	409
Korea (South) Won	(15,550,600)	(13,038)	59
Mexico Peso	(129,100)	(6,269)	(13)
New Zealand Dollar	(90,658)	(62,021)	911
Norway Krone	(467,605)	(53,025)	(1,357)
Philippines Peso	(914,284)	(17,679)	335
Poland Zloty	(21,678)	(5,374)	(2)
Russia Ruble	(400,161)	(5,267)	13
Singapore Dollar	(49,683)	(36,840)	(495)
South Africa Rand	(443,031)	(27,543)	277
Sweden Krona	(1,048,484)	(115,809)	396
Switzerland Franc	(75,830)	(83,339)	(832)
Taiwan New Dollar	(1,848,535)	(66,892)	81
Thailand Baht	(843,472)	(25,243)	(402)
Turkey Lira	(217,840)	(15,830)	(3,180)
United Kingdom Pound	(32,751)	(44,358)	(126)
United States Dollar	(2,003,679)	(2,003,678)	-
Total Payables		$ (4,213,310)	$ (286)
Net		$ 3,794	$ 3,794

securities that would be transferred to the contract purchaser in the event the options contract was 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 Changes in Net Investment Position. The table entitled **Options Contracts** presents the fair value of option contracts as of Dec. 31, 2021.

Futures Contracts
As of December 31, 2021
(In Thousands)

Futures Contract Description	Position	Expiration	Notional Amount	Fair Value[1]
Commodity	Long	Jan 22 - Dec 22	$ 481,066	$ 9,540
	Short	Feb 22 - Sep 22	(301,319)	(2,073)
Currency	Long	Mar 22	(187,712)	(932)
Equity Index	Long	Jan 22 - Mar 22	3,288,773	44,774
	Short	Jan 22 - Apr 22	(247,991)	(745)
Fixed Income	Long	Mar 22	11,160,685	28,893
	Short	Mar 22	(4,985,764)	(2,668)
Total			$ 9,207,738	$ 76,789

[1]Fair Value includes foreign currency gains/(losses).

Futures Contracts with Interest Rate Sensitivity
As of December 31, 2021
(In Thousands)

Contract Type	Position	Notional Amount	Fair Value	Weighted Average Duration (Years)
U.S. Treasury Notes	Long	$ 8,726,225	$ 6,070	4.0
U.S. Treasury Notes	Short	(4,527,766)	(6,820)	6.2
U.S. Treasury Bonds	Long	2,434,460	22,823	17.5
U.S. Treasury Bonds	Short	(109,194)	477	15.4
Foreign Government Bonds	Short	(348,804)	3,675	8.4
Total		$ 6,174,921	$ 26,225	

F. Swaps

Swaps are negotiated contractual agreements between two parties which can be either 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), Interest Rate Swaps (IRS), and Credit Default Swaps (CDS). The table entitled **Open Swap Positions** lists the open swap contracts held at Dec. 31, 2021.

Open CDS contracts represent cleared OTC positions where SWIB gains exposure to credit protection. Under the terms of the contract,

SWIB receives or pays periodic payments and, in exchange, agrees to pay or receive a formula-driven 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 a CDS is determined using the closing price as reported by the applicable clearinghouse.

IRS positions represent cleared OTC contracts where fair value is determined using the closing price as reported by the applicable clearinghouse. IRS positions are sensitive to changes in interest rates. One stream of future interest payments is exchanged for another between counterparties. In most cases, interest rate swaps include the exchange of a fixed interest rate for a floating rate.

The open TRS contracts represent uncleared OTC positions where SWIB gains exposure to the return of the underlying equity index and, in exchange, agrees to pay or receive the stipulated rate benchmark, plus or minus a spread. The rate benchmark is based on the 3-month London Interbank Offering Rate (LIBOR) rate or the 1-day Fed Funds Rate set by the Federal Open Market Committee (FOMC) and is sensitive to interest rate changes. The fair value of a TRS is 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, IRS, 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 Investment Position. Interest expense relating to swap contracts is reported as Investment Operating 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

Option Contracts
As of December 31, 2021
(In Thousands)

Description	Contract Type	Position	Exchange-Traded (EXCH) vs. OTC	Expiration	Notional	Fair Value	Unrealized Gain/(Loss)
Equity	CALL	Long	EXCH	Jan 22 - Mar 22	$ 14,437	$ 252	$ (2,872)
Equity	CALL	Short	EXCH	Jan 22 - Mar 22	(48,872)	(456)	502
Equity	PUT	Long	EXCH	Jan 22	9,429	63	(446)
Equity	PUT	Short	EXCH	Jan 22	(24,579)	(1,665)	43
Equity Index	PUT	Short	EXCH	Jan 22	(28)	-	1
OTC Index	PUT	Short	OTC	Jan 22 - Feb 22	(416,946)	(140)	895
Total					$ (466,559)	$ (1,946)	$ (1,877)

Open Swap Positions
As of December 31, 2021
(In Thousands)

Type	Maturity Date	Reference Rate	Notional Amount	Fair Value	Unrealized Gain/(Loss)
Credit Default	Dec-25	NA[1]	$ 12,000	$ 13	$ 1,210
Credit Default	Jun-26	NA[1]	20,000	(825)	2,100
Credit Default	Dec-26	NA[1]	204,720	5,423	120
Credit Default	Dec-26	NA[2]	(400,000)	(36,561)	337
Interest Rate[3]	May-25	Pay CNY-7D Fixing Repo Rates, Receive Fixed 2.02	20,397	(187)	50
Interest Rate[3]	Jul-25	Pay CNY-7D Fixing Repo Rates, Receive Fixed 2.53	4,754	34	34
Interest Rate[3]	Jul-26	Pay CNY-7D Fixing Repo Rates, Receive Fixed 2.57	2,510	23	23
Interest Rate[3]	Jun-27	Pay MXN-TIIE-Banxico 28D, Receive Fixed 5.42	12,178	(1,114)	(1,114)
Total Return	Jan-22	Pay 1-Day FED FUNDS plus spread, Receive Equity Index Return	(97,758)	2,840	2,840
Total Return	Feb-22	Pay 1-Day FED FUNDS plus spread, Receive Equity Index Return	(687,525)	22,953	22,952
Total Return	Mar-22	Pay 1-Day FED FUNDS plus spread, Receive Equity Index Return	(171,370)	6,773	6,773
Total Return	Apr-22	Pay 1-Day FED FUNDS plus spread, Receive Equity Index Return	(83,227)	605	605
Total Return	May-22	Pay 1-Day FED FUNDS plus spread, Receive Equity Index Return	(153,428)	2,709	2,709
Total Return	Jun-22	Pay 1-Day FED FUNDS plus spread, Receive Equity Index Return	(99,414)	1,185	1,185
Total Return	Jul-22	Pay 1-Day FED FUNDS plus spread, Receive Equity Index Return	(140,527)	4,083	4,083
Total Return	Aug-22	Pay 1-Day FED FUNDS plus spread, Receive Equity Index Return	(90,725)	3,586	3,586
Total Return	Sep-22	Pay 1-Day FED FUNDS plus spread, Receive Equity Index Return	(524,845)	15,071	15,071
Total Return	Sep-22	Pay 1-Day FED FUNDS plus spread, Receive Equity Index Return	(220,717)	(658)	(658)
Total Return	Sep-22	Receive 1-Day FED FUNDS plus spread, Pay Equity Index Return	532,639	(11,636)	(11,636)
Total Return	Oct-22	Pay 1-Day FED FUNDS plus spread, Receive Equity Index Return	(50,000)	124	124
Total Return	Oct-22	Pay 3-Month LIBOR plus spread, Receive Equity Index Return	(89,714)	2,607	2,607
Total Return	Nov-22	Pay 1-Day FED FUNDS plus spread, Receive Equity Index Return	(155,942)	5,412	5,412
Total Return	Nov-22	Pay 1-Day FED FUNDS plus spread, Receive Equity Index Return	(175,302)	6,928	6,928
Total Return	Nov-22	Receive 1-Day FED FUNDS plus spread, Pay Equity Index Return	147,101	(3,698)	(3,698)
Total			$(2,184,195)	$ 25,690	$ 61,643

[1]SWIB sold credit protection in exchange for periodic payments.
[2]SWIB bought credit protection in exchange for periodic payments.
[3]Denotes instrument is highly sensitive to interest rate changes.

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, 2021
(In Thousands)

Position	Contract Maturity	Fair Value	Unrealized Gain/(Loss)	Weighted Average Duration (Years)
Long	Feb - Mar 22	$4,646,235	$ 175	4.7
Short	Feb 22	(1,746,980)	(2,475)	6.7
Total		$2,899,255	$ (2,300)	

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 Dec. 31, 2021. 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.

As of Dec. 31, 2021, SWIB held warrant contracts valued at $2.3 million. Warrants are included in the Equities section on the Statement of Net Investment Position. The associated unrealized gain of $1.2 million is included in the Net Increase (Decrease) in the Fair Value of Investments on the Statement of Change in Net Investment Position.

7. 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, as 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 Dec. 31, 2021, the fair value of the securities on loan to counterparties was approximately $11.4 billion.

Cash collateral is reinvested by the lending agent in two separate pools, a US 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 US government, US 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 US 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 8 for additional information relating to short sales. As of Dec. 31, 2021, SWIB's securities lending agent released $761 million in cash from the Invested Securities Lending Collateral pool to SWIB. The cash released is included in Cash and Cash Equivalents on the Statement of Net Investment Position and is used to provide liquidity for other investment strategies. The Securities Lending Collateral Liability is fully collaterized when the cash released is combined with the Invested Securities Lending Collateral.

At Dec. 31, 2021, 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 and cash held by SWIB. The average maturities of the loans and the average maturities of the assets held in the collateral reinvestment pools were similar at Dec. 31, 2021.

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.

8. 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

Operating 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 $129.2 million in cash and $5.3 billion in securities as collateral to security lenders representing $48.2 million in excess of the fair market value of the securities borrowed as of Dec. 31, 2021. 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.

9. 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 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; and
    - 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 and derivative instruments. 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 policy 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 Head 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 lower-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 15% policy leverage for the Core Fund subject to an allowable range of up to 20%.

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 Dec. 31, 2021. In determining asset allocation targets, investments may be categorized differently than they are within the financial statements. For example, SWIB management considers inflation-sensitive assets separately from other fixed income investments for asset allocation purposes.

10. Related-Party Disclosure

During 2021, the Core Fund entered into reverse repurchase agreements 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 credit exposure is also managed through the transfer of margin between the Core Fund and SIF. As of Dec. 31, 2021, the Core Fund held $3.1 billion in a bilateral reverse repurchase agreement with the SIF. The repurchase agreement was an overnight agreement collateralized with US Treasury securities in the amount of 102%. The

Asset Allocation Targets and Expected Returns[2]
As of December 31, 2021

Core Fund Asset Class	Asset Allocation %	Long-Term Expected Nominal Rate of Return %	Long-Term Expected Real Rate of Return %[1]
Global Equities	52	6.8	4.2
Fixed Income	25	4.3	1.8
Inflation Sensitive Assets	19	2.7	0.2
Real Estate	7	5.6	3.0
Private Equity/Debt	12	9.7	7.0
Total Core Fund	**115**	**6.6**	**4.0**
Variable Fund Asset Class			
U.S. Equities	70	6.3	3.7
International Equities	30	7.2	4.6
Total Variable Fund	**100**	**6.8**	**4.2**

[1]New England Pension Consultants Long Term US CPI (Inflation) Forecast: 2.5%

[2]Asset Allocations are managed within established ranges; target percentages may differ from actual monthly allocations

Core Fund enters into similar reverse repurchase agreements with other counterparties. The Core and Variable Funds are also participants in the SIF, with investments totaling $3.7 billion and $499 million, respectively, at Dec. 31, 2021. 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.

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