

**MINNESOTA
STATE
BOARD OF
INVESTMENT**



Board Members:

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Tim Walz**

**State Auditor
Julie Blaha**

**Secretary of State
Steve Simon**

**Attorney General
Keith Ellison**

**Executive Director &
Chief Investment
Officer:**

Mansco Perry

**60 Empire Drive
Suite 355
St. Paul, MN 55103
(651) 296-3328**

Fax: (651) 296-9572

**E-mail:
minn.sbi@state.mn.us**

**Website:
<http://mn.gov/sbi>**

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DATE: January 17, 2020

TO: The Honorable Tim Walz
Minnesota Legislative Reference Library

FROM: Mansco Perry III *MP3*
Executive Director and Chief Investment Officer

**SUBJECT: External Money Manager Report Pursuant to Minnesota
Statutes Section 11A.04, clause (12)**

Minnesota Statutes, Section 11A.04, clause (12) requires the State Board of Investment (SBI) to report annually to the Governor and Legislative Reference Library the cost and investment performance of external investment managers employed by the Board.

As of June 30, 2019, the Defined Benefit Plan assets were invested with 16 domestic equity managers, 15 international equity managers, seven fixed income managers, and three Treasury Portfolio managers. The Non-Retirement Program utilized one fixed income manager, one equity manager, and a cash manager. The Assigned Risk Plan utilized a different fixed income manager as its mandate is different than the Non-Retirement Program bond manager. Finally, the capital preservation option for eligible participants in the Defined Contribution Plan was invested with one stable value manager.

The investment performances of each manager, as well as the fees paid to each, are reported in the charts on the following pages. This information is also included in the Board's Fiscal Year 2019 Annual Report. (See **pages 5-6.**)

It is important to note that all performance data reported by the SBI is net of fees and transactions costs associated with the various portfolios. The SBI's Fiscal Year 2019 Annual Report contains additional detail on manager performance and may be accessed online at <http://mn.gov/sbi>. Relevant pages from the SBI's Fiscal Year 2019 Annual Report are included within this report.

Retirement Program - Defined Benefit Plan

Domestic Stock Program Managers

The SBI evaluates domestic equity manager returns against the performance of Russell style indices which reflect the managers' specific investment approaches. The benchmark portfolios take into account the market forces that, at times, favorably or unfavorably impact certain investment styles. The aggregate

domestic equity program is designed to outperform its asset class target. As of 1/1/2019 the Domestic Equity Program benchmark changed to 90% Russell 1000 Index and 10% Russell 2000 Index. Assets are allocated to managers within each of the Russell style indices.

As a group, the Domestic Equity Program managers trailed its asset class target by 0.4 percentage point for the fiscal year. For fiscal year 2019, nine of the 14 active managers outperformed their assigned benchmarks while five managers underperformed. One semi-passive manager outperformed and the other semi-passive manager underperformed the Russell 1000 Index. The passive manager (Russell 1000) and the passive manager (Russell 3000) matched the performance of their respective benchmarks during the fiscal year. In October 2018, a passive Russell 2000 mandate managed by BlackRock Institutional Trust Company, N.A. was added to the domestic equity program. (See **page 7**.)

Fixed Income Program Managers

The SBI evaluates the performance of its fixed income managers against the Bloomberg Barclays U.S. Aggregate Bond Index. As a group, the Fixed Income Program managers outperformed the asset class target by 0.3 percentage point for the fiscal year. For fiscal year 2019, three active managers outperformed and one manager underperformed the benchmark. Two of the semi-passive managers outperformed, and one manager matched the benchmark return. (See **page 9**.)

Treasury Portfolio Managers

The Treasury Portfolio, launched in early 2018, is used exclusively by the Combined Funds. Three Treasury Portfolio managers were hired with a blend of investment styles to outperform the Bloomberg Barclays Treasury 5+ years Total Return overtime. As a group, the Treasury Program underperformed by 0.1 percentage point for the fiscal year. For fiscal year 2019, all three managers underperformed their benchmark. (See **page 11**.)

International Stock Program Managers

The SBI evaluates individual international equity managers against two market indices published by Morgan Stanley Capital International MSCI: the MSCI World ex USA Index (net) and the MSCI Emerging Markets Index (net). As of 1/1/2019, the International Stock Program benchmark changed to 75% MSCI World ex USA Index (net) and 25% MSCI Emerging Markets Index (net). As a group, the International Equity Program managers trailed the asset class target by 0.2 percentage point for the fiscal year. Three of the six active developed market managers outperformed their benchmark over the year. Three of the seven active emerging markets managers outperformed their benchmark. The semi-passive developed market manager underperformed the benchmark over the year. The passive developed markets portfolio outperformed the return of the MSCI World ex USA Index (net) while the emerging markets passively managed portion of the program slightly trailed the return of the MSCI Emerging Markets Index (net). (See **page 13**.)

Non-Retirement Program

Equity Fund Manager

This fund is passively managed and is measured against the S&P 500 Index. For fiscal year 2019 and all other time periods, the Non-Retirement Equity Fund matched its benchmark. (See **page 15.**)

Bond Fund Manager

This fund is measured against its benchmark, the Bloomberg Barclays U.S. Aggregate Bond Index, which is a broad-based index of investment grade, U.S. dollar denominated, fixed rate taxable bonds. For fiscal year 2019 and all other periods, the Non-Retirement Bond Fund outperformed its benchmark. (See **page 16.**)

Money Market Fund Manager

This fund is measured against the iMoneyNet All Taxable Money Fund Average. For fiscal year 2019, the Non-Retirement Money Market Fund outperformed its benchmark. (See **page 17.**)

Assigned Risk Plan

Fixed Income Manager

The SBI evaluates the performance of the Assigned Risk Plan fixed income manager (RBC Global Asset Management (U.S.) Inc.) against the Bloomberg Barclays Intermediate Government Index. During fiscal year 2019, the bond manager underperformed its benchmark by 0.1 percentage point. (See **pages 19-20.**)

Equity Manager

The SBI evaluates the performance of the Assigned Risk Plan equity manager (Mellon Investments Corporation) against the S&P 500. During fiscal year 2019, the equity manager matched its benchmark. (See **pages 19-20.**)

Defined Contribution Plan Capital Preservation Option

Stable Value Fund

The SBI evaluates the performance of the stable value manager against the 3-Year Constant Maturity Treasury plus 45 basis points, overtime. During fiscal year 2019, the stable value manager underperformed its benchmark by 0.4 percentage point. (See **page 21.**)

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Manager Fees

Total Payments for Fiscal Year 2019

Domestic Equity Active Managers

ArrowMark Colorado Holdings, LLC	\$	1,937,852
Barrow, Hanley, Mewhinney & Strauss, LLC		728,004
Earnest Partners, LLC		516,565
Goldman Sachs Asset Management, L.P.		2,234,292
Hood River Capital Management, LLC		1,892,381
Hotchkis and Wiley Capital Management, LLC		1,960,847
LSV Asset Management		1,008,287
Martingale Asset Management, L.P.		1,639,851
Peregrine Capital Management		1,990,194
Rice Hall James & Associates, LLC		1,597,900
Sands Capital Management, LLC		1,292,899
Wellington Management Company LLP		1,502,683
Winslow Capital Management, LLC		811,050
Zevenbergen Capital Investments LLC		1,451,172

Domestic Equity Semi-Passive Managers

BlackRock Institutional Trust Company, N.A.	1,073,367
J.P. Morgan Investment Management Inc.	1,490,933

Domestic Equity Passive Managers

BlackRock Institutional Trust Company, N.A. (Passive R3000)	170,558
BlackRock Institutional Trust Company, N.A. (Passive R2000)	18,516
BlackRock Institutional Trust Company, N.A. (Passive R1000)	897,982

Fixed Income Active Managers

Columbia Threadneedle Investments	1,112,962
Dodge & Cox	1,494,303
Pacific Investment Management Company LLC (PIMCO)	2,340,224
Western Asset Management Company	1,365,872

Fixed Income Semi-Passive Managers

BlackRock Financial Management, Inc.	854,637
Goldman Sachs Asset Management	1,121,516
Neuberger Berman Investment Advisers LLC	522,960

Treasury Managers

BlackRock Financial Management, Inc.	961,728
Goldman Sachs Asset Management	1,006,498
Neuberger Berman Investment Advisers LLC	910,479

Manager Fees

Total Payments for Fiscal Year 2019

International Active Developed Markets Managers		
Acadian Asset Management LLC	\$	1,552,576
Columbia Threadneedle Investments		1,091,481
Fidelity Institutional Asset Management LLC		1,298,959
J.P. Morgan Investment Management Inc.		1,000,930
Marathon Asset Management LLP		1,761,527
McKinley Capital Management, LLC		1,078,761
International Semi Passive Developed Markets Manager		
AQR Capital Management, LLC		1,615,219
International Passive Developed Markets Manager		
State Street Global Advisors		696,794
International Active Emerging Markets Managers		
Earnest Partners LLC		1,895,688
Macquarie Investment Management Advisers		1,673,683
Martin Currie Inc.		1,738,531
Morgan Stanley Investment Management Inc.		4,017,555
Neuberger Berman Investment Advisers LLC		2,287,292
Pzena Investment Management, LLC		2,195,091
The Rock Creek Group, LP		2,036,343
International Passive Emerging Markets Manager		
State Street Global Advisors		495,696
Stable Value Manager		
Galliard Capital Management, Inc. ⁽¹⁾		3,564,753
Assigned Risk Plan Manager		
RBC Global Asset Management (U.S.) Inc.		224,206
Non-Retirement Managers		
BNY Mellon Asset Management North America Corporation		94,075
Prudential Global Investment Management, Inc. (PGIM)		1,176,049
State Street Global Advisors		25,100

⁽¹⁾ Includes Investment Contract fees of \$2,720,065 charged by wrap providers.

Combined Funds

Domestic Stock Program

Figure 10. Domestic Stock Program Manager Performance for Periods Ending June 30, 2019

	1 Year		3 Years		5 Years		Market Value
	Actual	Bmk ⁽¹⁾	Actual	Bmk	Actual	Bmk	(\$ in millions)
	%	%	%	%	%	%	
Active Managers							
Large Cap Growth (Russell 1000 Growth)							
Sands Capital Mgmt.	12.2	11.6	23.9	18.1	13.6	13.4	495.1
Winslow Capital Mgmt.	12.4	11.6	20.6	18.1	14.0	13.4	269.9
Zevenbergen Capital	15.0	11.6	28.3	18.1	14.4	13.4	462.5
Large Cap Value (Russell 1000 Value)							
Barrow, Hanley	8.8	8.5	10.9	10.2	7.7	7.5	416.0
Earnest Partners	8.8	8.5	14.2	10.2	9.6	7.5	296.9
LSV Asset Mgmt.	2.2	8.5	11.3	10.2	7.5	7.5	386.4
Small Cap Growth (Russell 2000 Growth)							
ArrowMark	-1.2	-0.5					232.7
Hood River	4.8	-0.5					265.8
Rice Hall James	-7.8	-0.5					226.9
Wellington	0.4	-0.5					259.1
Small Cap Value (Russell 2000 Value)							
Goldman Sachs	-1.2	-6.2	10.3	9.8	6.3	5.4	366.6
Hotchkis & Wiley	-8.7	-6.2	9.9	9.8	3.4	5.4	298.0
Martingale Asset Mgmt.	-8.3	-6.2	8.4	9.8	5.8	5.4	283.7
Peregrine Capital Mgmt.	-8.8	-6.2	10.1	9.8	5.0	5.4	359.4
Semi-Passive Managers (Russell 1000)							
BlackRock Institutional	10.4	10.0	15.8	14.1	11.4	10.5	1,126.7
J.P. Morgan Investment Mgmt.	9.8	10.0	14.2	14.1	10.5	10.5	1,357.8
Passive Manager (Russell 1000)							
BlackRock Institutional	10.0	10.0					21,368.3
Passive Manager (Russell 2000)							
BlackRock Institutional							594.1
Passive Manager (Russell 3000)							
BlackRock Institutional	9.0	9.0	14.0	14.0	10.2	10.2	1,618.8
Aggregate Domestic Stock Program⁽²⁾	8.5	8.9	14.3	14.0	10.0	10.2	30,684.79

(1) As of 1/1/2019, the benchmark is 90% Russell 1000 and 10% Russell 2000. From 10/1/2003 to 12/31/2018 it was the Russell 3000.

(2) Aggregate includes the performance of terminated managers and includes assets of SIF Funds.

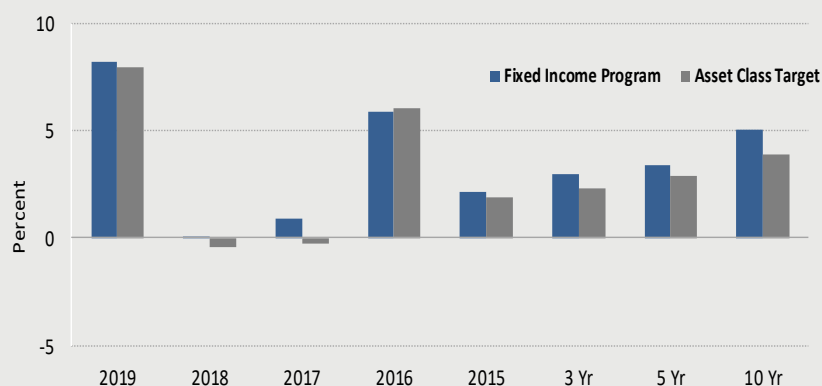
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Combined Funds

Fixed Income Program

Relative to the benchmark, the program benefited from overweight positions in credit related sectors such as CMBS, ABS and Corporates. Managers also outperformed the benchmark over the long-term. The program outperformed the asset class target by 1.1 percentage points over the ten year period ending June 30, 2019. Three of four active managers outperformed the benchmark. All semi-passive managers outperformed for the fiscal year. Figure 15 shows historical performance for the entire program. Individual manager performance is shown in Figure 16. Aggregate portfolio sector and portfolio characteristics are shown in Figure 17.

Figure 15. Fixed Income Program Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized		
	2019	2018	2017	2016	2015	3 Yr.	5 Yr.	10 Yr.
Fixed Income Program	8.2%	0.1%	0.9%	5.9%	2.1%	3.0%	3.4%	5.0%
Asset Class Target*	7.9	-0.4	-0.3	6.0	1.9	2.3	2.9	3.9

* The Fixed Income Program asset class target has been the Bloomberg Barclays U.S. Aggregate Bond Index since July 1994.

Figure 16. Fixed Income Program Manager Performance for Periods Ending June 30, 2019

	1 Year		3 Years		5 Years		Market Value
	Actual	Bmk ⁽¹⁾	Actual	Bmk	Actual	Bmk	(\$ in millions)
	%	%	%	%	%	%	
Active Managers							
Columbia Mgmt.	8.9	7.9	3.8	2.3	3.9	2.9	1,061.6
Dodge & Cox	7.6	7.9	3.6	2.3	3.4	2.9	1,152.7
PIMCO	8.1	7.9	3.0	2.3	3.4	2.9	953.8
Western Asset Mgmt.	8.7	7.9	3.8	2.3	4.0	2.9	1,098.7
Semi-Passive Managers							
BlackRock Financial Mgmt.	8.1	7.9	2.5	2.3	3.1	2.9	1,062.4
Goldman Sachs Asset Mgmt.	7.9	7.9	2.6	2.3	3.2	2.9	1,167.7
Neuberger Investment Mgmt.	8.0	7.9	2.4	2.3	3.1	2.9	1,103.5
Aggregate Fixed Income Program⁽²⁾	8.2	7.9	3.0	2.3	3.4	2.9	7,600.3

(1) The Fixed Income Program asset class target has been the Bloomberg Barclays U.S. Aggregate Bond Index since July 1994.

(2) Aggregate includes the performance of terminated managers and includes assets of SIF Funds.

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Combined Funds Treasury Portfolio

Treasury Portfolio

The Treasury Portfolio, launched in early 2018, is used exclusively by the Combined Funds.

As of June 30, 2019, the program had a market value of \$7.2 billion.

The SBI's objectives included offsetting credit risk inherent in the bond program, and providing downside protection for the overall retirement program during periods of significant equity drawdowns.

Investment Management

A group of three bond managers were retained for their blend of investment styles. Each manager has been given a modest risk budget with the goal of outperforming the Bloomberg Barclays Treasury 5+ Years Total Return over time, while largely retaining the primary characteristics of the benchmark.

The manager is required to remain within +/- 0.5 years of the overall benchmark duration (currently 11 years), but may employ interest rates strategies that result in overweight or underweight positions in certain maturities along the curve. In addition, managers finding relative value in the short end may choose to hold out-of-benchmark Treasury securities of less than five years duration, either through direct purchases or through those becoming shorter than five years due to the passage of time/roll down the curve.

The managers are also permitted to purchase limited amounts of out-of-benchmark U.S.

Agencies, U.S. Supranationals, and Treasury Inflation Protected Securities (TIPS). A description of each bond manager's investment approach is included in the **Investment Manager Summaries** section beginning on page 47.

Investment Performance

The SBI constrains the risk of the Treasury Portfolio managers to ensure that their accounts continue to be comparable to the benchmark and fulfill their total fund diversification roles. Since inception in February 2018, the Treasury Portfolio returned 7.4% through June 30, 2019 slightly underperforming benchmark performance of 7.5%.

Individual manager performance is shown below.

Treasury Portfolio Characteristics

	Total Portfolio	Benchmark
Effective Duration (yrs)	11.0	11.0
Convexity	2.0	1.9
Coupon Rate (%)	2.7	2.8
Yield to Maturity (%)	2.2	2.1
Option Adjusted Spread (bps)	5.0	0.0

	1 Year Actual %	Bmk ⁽¹⁾ %	Market Value (\$ in millions)
Treasury Managers			
BlackRock Financial Mgmt.	10.3	10.4	2,390.4
Goldman Sachs Asset Mgmt.	10.3	10.4	2,378.1
Neuberger Investment Mgmt.	10.2	10.4	2,400.0
Aggregate Treasury Program	7.4	7.5	7,168.5

(1) The Treasury benchmark is the Bloomberg Barclay Treasury +5 years.

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Combined Funds International Stock Program

Figure 13. International Stock Program Manager Performance for Periods Ending June 30, 2019

	1 Year		3 Years		5 Years		Market Value
	Actual %	Bmk ⁽¹⁾ %	Actual %	Bmk %	Actual %	Bmk %	(\$ in millions)
Active Managers							
Developed Mkts (MSCI World ex USA net)							
Acadian Asset Mgmt.	-3.1	1.3	12.5	9.0	5.9	2.0	387.1
Columbia Mgmt. Investment Advisers	3.0	1.3	11.4	9.0	5.0	2.0	357.8
Fidelity Institutional Asset Management	2.6	1.3	10.0	9.0	3.6	2.0	387.8
J.P. Morgan Investment Management	3.3	1.3	11.7	9.0	3.0	2.0	268.2
Marathon Asset Management	-0.6	1.3	8.4	9.0	3.2	2.0	458.4
McKinley Capital Management	-0.5	1.3	9.5	9.0	2.7	2.0	265.2
Semi-Passive Managers							
Developed Mkts (MSCI World ex USA net)							
AQR Capital Management	-1.9	1.3	7.4	9.0	1.6	2.0	344.2
Active Managers							
Emerging Mkts (MSCI Emerging Markets net)							
Earnest Partners	5.8	1.2					311.1
Macquarie Investment Management Advisers	0.9	1.2					317.5
Martin Currie	-0.2	1.2					336.6
Morgan Stanley Investment Management	1.6	1.2	8.5	10.7	2.4	2.5	607.1
Neuberger Berman Investment Advisers	-0.1	1.2					318.2
Pzena Investment Management	2.4	1.2					296.4
Rock Creek	-0.9	1.2					294.7
Passive Managers							
Developed Mkts (MSCI World ex USA net)							
State Street Global Advisors	1.6	1.3	9.3	9.0	2.4	2.0	8,591.0
Passive Managers							
Emerging Mkts (MSCI Emerging Markets net)							
State Street Global Advisors	1.1	1.2	10.5	10.7	2.6	2.5	1,192.0
Aggregate International Stock Program⁽²⁾	1.1	1.3	9.3	9.4	2.6	2.2	14,734.8

(1) Since 1/1/2019 the benchmark is 75% MSCI World ex USA Index (net) and 25% MSCI Emerging Markets Index (net). From 6/1/08 to 12/31/2018 the target was the MSCI ACWI ex U.S. (net).

(2) Aggregate includes the performance of terminated managers includes assets of SIF Funds.

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Non-Retirement Program Equity Fund Manager Summary

Mellon Investments Corporation manages the Non-Retirement Equity Fund that is used by various state trust funds such as the Permanent School Fund, Environmental Trust Fund, Assigned Risk Plan, and Closed Landfill Investment Fund. On June 30, 2019, the total market value of the Non-Retirement Equity Fund was \$2.4 billion.

The Non-Retirement Equity Fund is an investment vehicle that provides domestic equity exposure to entities that have received authority to use this vehicle. The types of entities that invest in the Non-Retirement Equity Fund include State and other Trust funds, OPEB funds, and Qualifying Governmental Entities.

Investment Objectives

The investment objective of the Non-Retirement Equity Fund is to track the S&P 500 index. The portfolio is expected to have a realized active risk level relative to the benchmark of 0.2 or less, where active risk is the annualized standard deviation of the Manager's excess returns relative to the benchmark. Over time, the annual return shortfall relative to the benchmark, due to fees and trading expenses, should be no more than 0.1%.

Asset Allocation

This fund provides 100% domestic equity exposure.

Investment Management

In 2017, Mellon Investments Corporation was hired to manage the fund. Prior to Mellon, the fund was managed internally by SBI staff. The strategy replicates the S&P 500 by owning all of the names in the index at the weightings assigned by the index. To maintain appropriate liquidity for daily cash flows, some cash is held in the

portfolio and is equitized by using S&P 500 futures contracts.

Investment Performance

The SBI measures the Non-Retirement Equity Fund against the S&P 500 Index.

For fiscal year 2019, the Non-Retirement Equity Fund matched its benchmark, the S&P 500 Index. Performance results are shown in Figure 41.

Figure 41. Non-Retirement Equity Fund Performance for Periods Ending June 30, 2019

	1 Yr.	3 Yr.	Annualized 5 Yr.	10 Yr.
Non-Retirement Equity Fund*	10.4%	14.2%	10.7%	14.7%
S&P 500 Index	10.4	14.2	10.7	14.7

* Actual returns are calculated net of fees.

Non-Retirement Program Bond Fund Manager Summary

Prudential Global Investment Management manages the Non-Retirement Bond Fund that is used by various state trust funds such as the Permanent School Fund, Environmental Trust Fund, and Closed Landfill Investment Fund. On June 30, 2019, the total market value of the Non-Retirement Bond Fund was \$1.3 billion.

Investment Objectives

The investment objectives for the Non-Retirement Bond Fund are to deliver cumulative returns in excess of the Bloomberg Barclays U.S. Aggregate Bond Index, and to manage the level and composition of active risk in the portfolio relative to this benchmark.

Asset Allocation

The composition of the Fund as of June 30, 2019 is shown in Figure 42. At the end of fiscal year 2019, the Non-Retirement Bond Fund had an effective duration of 5.6 years vs. the benchmark duration of 5.7 years and a yield to maturity of 2.7% vs. the benchmark yield to maturity of 2.5%.

Investment Management

In 2017, Prudential Global Investment Management (PGIM) was hired to manage the fund. Prior to PGIM, the fund was managed internally by SBI staff. PGIM is required to adhere to investment guidelines in managing the account. These guidelines give PGIM the flexibility to actively manage the portfolio through duration, yield curve, sector and security selection decisions, while maintaining a maximum five year active risk level of 1.5. PGIM is required to maintain the duration of the portfolio within +/- one year of the index duration. The Fund primarily invests in U.S. government,

corporate, mortgage and structured securities.

Current Positioning

Characteristics of the portfolio as of June 30, 2019 are shown in Figure 43. PGIM has the portfolio duration positioned slightly shorter to the benchmark, and has modestly increased exposure to ABS/CMBS as the relative value outlook in the asset classes improves.

Investment Performance

The benchmark for the Non-Retirement Bond Fund is the Bloomberg Barclays U.S. Aggregate Bond Index, a broad-based index of investment grade, U.S. dollar denominated, fixed rate taxable bonds. For fiscal year 2019 and all other periods, the Non-Retirement Bond Fund outperformed its benchmark. Historical performance results are presented in Figure 44.

Figure 42. Non-Retirement Bond Fund Distribution as of June 30, 2019

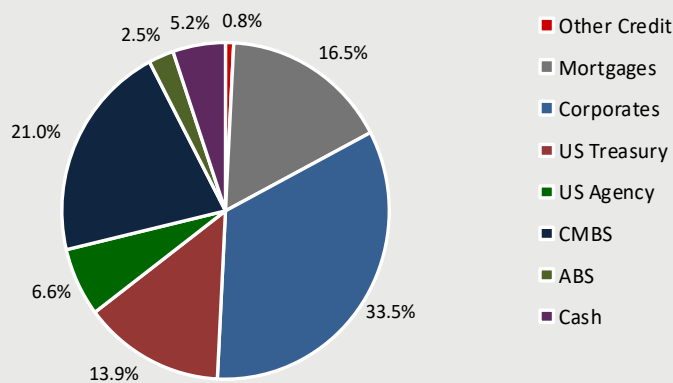


Figure 43. Fixed Income Characteristics for Period Ending June 30, 2019

	Bond Fund	Benchmark
Effective Duration (yrs)	5.6	5.7
Convexity	0.8	0.8
Coupon Rate (%)	3.5	3.3
Yield to Maturity (%)	2.7	2.5
Option Adjusted Spread (bps)	71	46
Rating – Moody's	A1	Aa2

Figure 44. Non-Retirement Bond Fund Performance for Periods Ending June 30, 2019

	1 Yr.	3 Yr.	5 Yr.	10 Yr.
Non-Retirement Bond Fund	8.4%	2.9%	3.4%	4.3%
Bloomberg Barclays U.S. Agg.	7.9%	2.3%	2.9%	3.9%

Non-Retirement Program

Money Market Fund Manager Summary

State Street Global Advisors manages the Non-Retirement Money Market Fund that is used by various state trust funds such as the Permanent School Fund and Environmental Trust Fund. On June 30, 2019, the total market value of the Non-Retirement Money Market Fund was \$136 million.

The Non-Retirement Money Market Fund is an investment vehicle that provides high quality short-term cash exposure to entities that have received authority to use this fund. The types of entities that invest in the Fund include State and other Trust funds and OPEB funds.

Investment Objectives

The objective of the Non-Retirement Money Market Fund is to provide safety of principal by investing in high quality, short-term securities. The return of the fund is based on the interest income generated by the fund's investments.

Asset Allocation

The fund invests in high quality short-term money market securities.

Investment Management

The Non-Retirement Money Market Fund is managed by State Street Global Advisors, the organization that provides short-term investment management for a substantial portion of the Board's cash reserves.

Investment Performance

The SBI measures the Non-Retirement Money Market Fund against the iMoneyNet All Taxable Money Fund Average.

For fiscal year 2019, the Non-Retirement Money Market outperformed its benchmark, the

iMoney Net All Taxable Money Fund Average. Performance is shown in Figure 45 below.

Figure 45. Non-Retirement Money Market Fund Performance for Periods Ending June 30, 2019

	Annualized			
	1 Yr.	3 Yr.	5 Yr.	10 Yr.
Non-Retirement Money Market Fund*	2.4%	1.5%	0.9%	0.6%
iMoney Net All Taxable Money Fund Average	1.9	1.0	0.6	0.3

* Actual returns are calculated net of fees.

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Non-Retirement Program Assigned Risk Plan

The Minnesota Workers Compensation Assigned Risk Plan was established in 1983 to provide workers' compensation coverage to Minnesota employers rejected by a private insurance carrier. On June 30, 2019, the market value of the Plan's portfolio was \$287 million.

The Assigned Risk Plan operates as a non-profit, tax-exempt entity and is administered by the Department of Commerce. The Plan provides disability income, medical expenses, retraining expenses and death benefits with payments being made either periodically or in lump sum.

Investment Objectives

The SBI recognizes that the Assigned Risk Plan has limited tolerance for risk due to erratic cash flows, no allowance for surplus, and generally short duration liabilities.

Therefore, the SBI has established two investment objectives for the Plan:

- To minimize mismatch between assets and liabilities.
- To provide sufficient liquidity (cash) for payment of on-going claims and operating expenses.

Performance relative to these objectives is measured against a composite index that reflects the asset allocation of the portfolio.

Asset Allocation

The SBI believes that due to the uncertainty of premium and liability cash flows, the Plan should be invested very conservatively.

The **bond** segment is invested to fund the shorter-term liabilities

(less than 10 years) and the common stock segment is invested to fund the longer-term liabilities. The result is a high fixed income allocation which minimizes the possibility of a future fund deficit. The smaller **stock** exposure provides higher expected returns and hedges some of the inflation risk associated with the future liability stream.

The current long-term asset allocation targets for the Plan are as follows:

Domestic Stocks	20%
Domestic Bonds	80%

The asset allocation may fluctuate in response to changes in the liability stream projected by the Plan's actuary and further analysis by the SBI staff. Figure 52 presents the actual asset mix of the Assigned Risk Plan at the end of fiscal year 2019.

Investment Management

RBC Global Asset Management (U.S.) Inc. (RBC GAM-US) manages the bond segment of the Assigned Risk Plan, and the stock portfolio is currently managed in the Non-Retirement Equity Fund.

Bond Segment

RBC GAM-US uses a fundamental approach in managing the portfolio, with a focus primarily on security selection and secondarily on sector analysis. RBC GAM-US has managed the bond portfolio since July 1991.

Stock Segment

The stock segment is structured to fund the longer-term liabilities of the Plan and is managed by BNY Mellon Asset Management North America Corporation in the Non-Retirement Equity Fund.

Investment Performance

Due to the focus on liability matching, the Assigned Risk Plan's investment portfolio is conservatively structured. While active management is utilized, return enhancement plays a secondary role.

The Assigned Risk Plan is measured against a composite index which is weighted to reflect the asset allocation of the Plan:

- The target for the fixed income component is a custom benchmark which reflects the duration target established for the bond segment (approximately three years).
- The target for the equity component is the S&P 500.

During fiscal year 2019, the **bond** segment underperformed its benchmark by 0.1%. The **stock** segment matched its benchmark.

Non-Retirement Program Assigned Risk Plan

Overall, the Assigned Risk Plan provided a return of 7.4% for fiscal year 2019, which was 0.1 percentage point above the composite index. For the ten year period, the portfolio outperformed by 0.6 percentage point.

Historical performance results are presented in Figure 53.

Fixed Income Manager

RBC Global Asset Management (U.S.) Inc.

RBC GAM-US manages the fixed income portfolio for the Assigned Risk Plan. The main objective for the portfolio is to provide cash for the payment of workers compensation claims on the required dates. Because of the uncertainty of premium and liability cash flows, the fund is invested conservatively and is benchmarked to the Bloomberg Barclays Intermediate Government Index.

Equity Manager

Mellon Investments Corporation.
See page 111 for more detail.

Figure 52. Assigned Risk Plan Asset Mix as of June 30, 2019

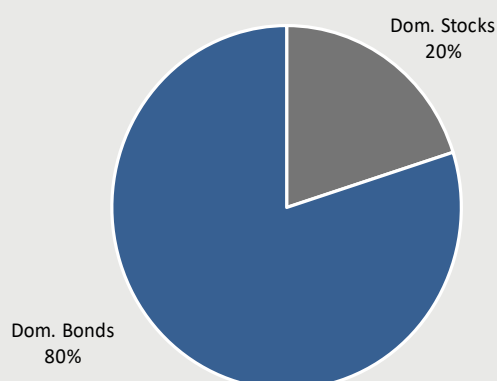
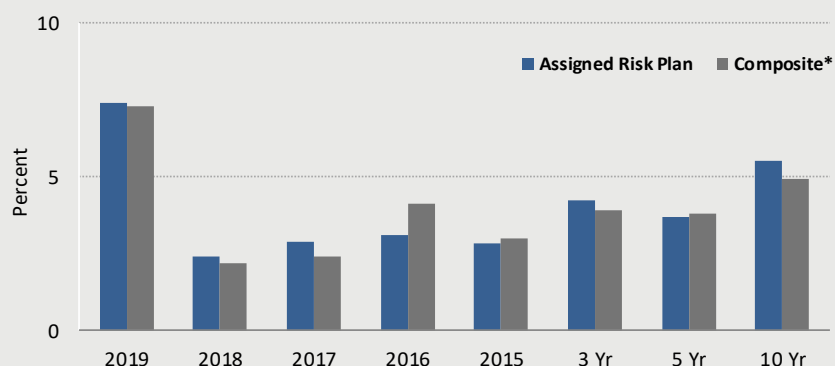


Figure 53. Assigned Risk Plan Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized		
	2019	2018	2017	2016	2015	3 Yr.	5 Yr.	10 Yr.
Total Fund	7.4%	2.4%	2.9%	3.1%	2.8%	4.2%	3.7%	5.5%
Composite Index*	7.3	2.2	2.4	4.1	3.0	3.9	3.8	4.9
Stock Segment	10.4	14.3	19.6	-1.1	6.7	14.7	9.8	13.3
S&P 500	10.4	14.4	17.9	4.0	7.4	14.2	10.7	14.7
Bond Segment	6.1	-0.5	-0.9	4.1	1.9	1.5	2.1	3.5
BB U.S. Gov't Intermediate	6.2	-0.7	-1.2	3.9	1.8	1.3	1.9	2.4

* Weighted 20% stocks, 80% bonds.

Participant Directed Investment Program

Mutual Fund Investment Platform

The Mutual Fund Investment platform allows public employees the option to invest in mutual funds, commingled investment trusts, a target date fund, a Stable Value Fund and a Money Market Fund.

Participating Plans

The Mutual Fund Investment platform is offered to participants in the Minnesota Deferred Compensation Plan, a tax sheltered retirement savings program, which is a supplemental plan to the participant's primary retirement plan.

As of June 30, 2019 there was just under \$7.5 billion invested in the Mutual Fund Investment Platform by participants in the Minnesota Deferred Compensation Plan.

Program Structure

Actively Managed Options

The platform offers a range of actively managed options that allows participants the flexibility to create an investment program to meet their needs.

Performance results for the options in the mutual fund platform for periods ending June 30, 2019 are shown in Figure 23.

- **Large-Cap Equity**

This option is a concentrated portfolio of high quality stocks that generally offer current dividends. The fund is expected to outperform the NASDAQ U.S. Dividend Achievers Select Index. The fund currently offered is the Vanguard Dividend Growth Fund.

- **Small-Cap Equity**

This option invests primarily in companies with small market capitalizations. The fund is expected to outperform the Russell 2000 over time. T. Rowe Price Small-Cap Stock Fund is the fund currently offered.

- **Bond Fund**

This option invests primarily in investment grade securities in the U.S. bond market. The fund is expected to outperform the Bloomberg Barclays U.S. Aggregate Bond Index over time. The fund currently offered is the Dodge & Cox Income Fund.

- **International Equity**

This option invests primarily in stocks of companies in developed countries located outside the United States. The fund is expected to outperform the Morgan Stanley Capital International (MSCI) Index of Europe, Australasia and the Far East (EAFE) over time. The fund currently offered is the Fidelity Diversified International Fund.

- **Money Market Fund**

This option invests in high quality short-term debt instruments and is expected to outperform the return on 3 month U.S. Treasury Bills. This option is the SIF Money Market Fund invested by State Street Global Advisors (see page 99).

- **Stable Value Fund**

The fund is invested in a well-diversified portfolio of high quality fixed income securities. The fund also holds insurance contracts issued by highly rated insurance companies and banks which are structured to provide principal protection for the fund's diversified bond portfolios, regardless of daily market changes, and maintain a relatively stable return profile for the portfolio.

The option is expected to outperform the return of the three year Constant Maturity Treasury plus 45 basis points (0.45%), over time. Currently, Galliard Capital Management, Inc. manages the option (see page 100).

Passively Managed Options

The plan offers a range of passively managed options that allows participants the flexibility to create a lower cost investment program to meet their needs.

- **Large-Cap Equity**

This option is a passive domestic stock portfolio that tracks the S&P 500. The fund currently offered is the Vanguard Institutional Index Plus Fund.

- **Mid-Cap Equity**

This option invests in companies with medium market capitalizations that track the CRSP U.S. Mid-Cap Index. The fund currently

Participant Directed Investment Program

Mutual Fund Investment Platform

offered is the Vanguard Mid-Capitalization Index Institutional Fund.

- **Balanced Fund**

This option is a mix of stocks and bonds. The fund is expected to track a weighted benchmark of 60% CRSP U.S. Total Market Index and 40% Bloomberg Barclays U.S. Aggregate Bond Index. The fund currently offered is the Vanguard Balanced Index Fund.

- **Bond Fund**

This option invests in a broad range of U.S. fixed income securities. The fund is expected to track the performance of the Bloomberg Barclays U.S. Aggregate Bond Index. The fund currently offered is the Vanguard Total Bond Market Index Fund.

- **International Equity**

This option invests in international equities and is expected to track the FTSE Global All Cap ex U.S. Index, an index designed to measure equity market performance in developed and emerging markets, excluding the United States. The fund currently offered is the Vanguard Total International Stock Index Fund.

Minnesota Target Retirement Funds

The plan offers a range of target date funds which are diversified options with allocations that change over time to reduce risk and become more conservative as the target retirement date approaches. The funds are currently offered by State Street Global Advisors (SSgA).

Performance results for the target date fund option for periods ending June 30, 2019 are shown in Figure 24.

Figure 23. Mutual Fund Platform for Periods Ending June 30, 2019

Fund/Benchmark	RETURNS ⁽¹⁾						Market Value ⁽²⁾ (\$ in millions)
	1 Year Actual %	1 Year Bmk %	3 Years Actual %	3 Years Bmk %	5 Years Actual %	5 Years Bmk %	
Actively Managed							
Vanguard Dividend Growth ⁽³⁾	19.0	15.7					714.8
T. Rowe Price Small-Cap (Russell 2000)	10.9	-3.3	16.7	12.3	10.6	7.1	788.6
Fidelity Diversified Int'l. (MSCI EAFE)	2.4	1.1	8.8	9.1	3.5	2.2	295.5
Dodge & Cox Income Fund (BB Barclays U.S. Aggregate)	7.6	7.9	3.7	2.3	3.3	2.9	254.6
Money Market (3 Month T-Bills)	2.5	2.3	1.6	1.4	1.0	0.9	89.0
Stable Value (3 year Constant Maturity Treas. +45 basis points)	2.6	3.0	2.3	2.4	2.2	2.0	1,365.0
Passively Managed							
Vanguard Institutional Index (S&P 500)	10.4	10.4	14.2	14.2	10.7	10.7	1,329.3
Vanguard Mid-Cap Index (CRSP US Mid-Cap)	7.9	7.8	12.3	12.4	8.8	8.9	572.4
Vanguard Total Int'l Stock Index (FTSE Global All Cap ex US)	0.6	0.3	9.0	9.0	2.4	2.2	205.5
Vanguard Balanced Index Inst. (60% CRSP US Total Market, 40% BB Barclays U.S. Aggregate)	8.9	9.0	9.4	9.4	7.4	7.4	823.2
Vanguard Tot. Bond Market Index (BB Barclays U.S. Aggregate)	7.8	7.9	2.2	2.3	2.9	2.9	235.2
Ameritrade Self Directed Fund							76.9

(1) Returns are reported net of fund operating expenses, but do not include the MSRS and SBI administrative fees.

(2) Market value of SBI participation in fund.

(3) Fund retained September 2016.

Participant Directed Investment Program

Mutual Fund Investment Platform

Figure 24. State Deferred Compensation Plan (457b Plan) for Periods Ending June 30, 2019

	RETURNS ⁽¹⁾						Market Value ⁽³⁾ (\$ in millions)
	1 Year		3 Years		5 Years		
	Actual %	Bmk ⁽²⁾ %	Actual %	Bmk ⁽²⁾ %	Actual %	Bmk %	
MN Target Retirement Funds							
Income Fund	5.8	5.8	5.1	5.1	3.4	3.4	92.6
2020 Fund	5.9	5.8	5.8	5.8	3.8	3.8	128.5
2025 Fund	6.2	6.2	7.2	7.2	4.7	4.7	147.9
2030 Fund	6.3	6.2	8.4	8.5	5.5	5.5	109.0
2035 Fund	6.3	6.2	9.1	9.2	5.8	5.8	85.5
2040 Fund	6.0	6.0	9.7	9.8	6.0	6.0	65.8
2045 Fund	5.7	5.7	10.2	10.3	6.2	6.2	54.8
2050 Fund	5.4	5.4	10.5	10.6	6.3	6.3	41.1
2055 Fund	5.4	5.3	10.5	10.6	6.3	6.3	24.1
2060 Fund	5.4	5.3	10.5	10.6	6.3	6.3	19.3

(1) Returns are reported net of fund operating expenses, but do not include the MSRS administrative fee.

(2) Managed by SSgA, each Fund benchmark is the aggregate of the returns of the Fund's underlying index funds weighted by the Fund's asset allocation.

(3) Market value of SBI participation in fund.