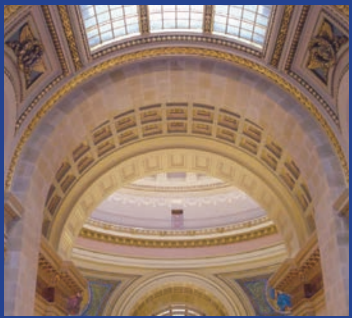
Report 16-15
December 2016

State of Wisconsin Investment Board

State of Wisconsin



Legislative Audit Bureau

Report 16-15
December 2016

State of Wisconsin Investment Board

Joint Legislative Audit Committee Members

Report 16-15
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STATE OF WISCONSIN
Legislative Audit Bureau
Celebrating 50 Years of Service 1966-2016
22 East Mifflin Street, Suite 500 ▪ Madison, WI 53703 ▪ (608) 266-2818 ▪ Hotline: 1-877-FRAUD-17 ▪ www.legis.wisconsin.gov/lab
Joe Chrisman
State Auditor

December 21, 2016

Senator Robert Cowles and
Representative Samantha Kerkman, Co-chairpersons
Joint Legislative Audit Committee
State Capitol
Madison, Wisconsin 53702

Dear Senator Cowles and Representative Kerkman:

We have completed an evaluation of the State of Wisconsin Investment Board (SWIB), under s. 25.17 (51m), Wis. Stats. Assets under management by SWIB totaled $99.1 billion as of December 2015 and included investments of the Wisconsin Retirement System (WRS) and the State Investment Fund. As of December 2015, the two funds of the WRS—the Core Fund and the Variable Fund—had exceeded five-year benchmarks with average annual investment returns of 6.7 percent and 9.2 percent respectively. However, one-year investment returns for both the Core Fund and Variable Fund were negative for 2015.

The Core Fund's five-year investment return ranked ninth among ten large pension plans. The lower ranking was attributable in part to several new strategies that did not perform well in 2015. Although these strategies were part of a new asset allocation plan for the Core Fund approved by SWIB in 2010, several additional years of experience are needed to fully evaluate the plan.

2011 Wisconsin Act 32 granted SWIB the authority to establish its own operating budget and to create or eliminate staff positions. From 2011 through 2015, SWIB's total expenses increased 25.2 percent, largely because of increases in assets under management. Increases in expenses also occurred due to an information systems implementation, complex investment strategies, and increases in the internal operating budget. We reviewed SWIB's governance structure and compared it to that of other public pension plans, which generally have a structure with more board committees than SWIB. Given the increased authority granted by Act 32, we recommend that SWIB work with the Board of Trustees to increase reporting on actual investment expenses and assess whether the current committee structure or committee charters could be changed to improve its oversight of expenses.

We also include recommendations for SWIB to consider the total costs of management for certain externally managed investments and to develop guidance for an employee bonus deferral policy to assist future Board decisions in waiving a deferral when the investment returns of the Core Fund are negative.

We appreciate the courtesy and cooperation extended to us by SWIB staff. A response from SWIB's executive director follows the appendices.

Respectfully submitted,

Joe Chrisman
State Auditor

JC/SH/ss

Report Highlights ▪

SWIB is governed by a nine-member Board of Trustees and managed $99.1 billion in assets as of December 2015.

The Core Fund's five-year investment return ranked ninth among ten large public pension plans.

The 20-year investment return for the Core Fund now equals the long-term rate of return assumption.

From 2011 through 2015, SWIB's expenses increased 25.2 percent, largely due to increases in assets managed.

The authority of the Board of Trustees over investment types and internal operating expenses has expanded in recent years.

The State of Wisconsin Investment Board (SWIB) invests assets for the Wisconsin Retirement System (WRS), the State Investment Fund, and five other state insurance and trust funds. Assets under management by SWIB totaled $99.1 billion as of December 2015. Two funds of the WRS—the Core Fund and the Variable Fund—accounted for 92.8 percent of assets under management. The WRS provides retirement benefits to more than 600,000 state public employees and employees of participating local governments. The Department of Employee Trust Funds (ETF) is responsible for managing the operations of the WRS, and SWIB is responsible for managing WRS investments. SWIB had 173.35 full-time equivalent (FTE) positions as of December 2015.

We have completed an evaluation of SWIB, under s. 25.17 (51m), Wis. Stats. In completing this evaluation of SWIB, we:

- analyzed investment returns by comparing them to performance benchmarks established by SWIB, the long-term expected rate of return assumption, investment returns of other large public pension plans, and SWIB's objectives of the 2010 Core Fund asset allocation plan;

- reviewed investment expenses, including changes SWIB has made that have increased its internal operating budget, overall investment costs, and compensation;

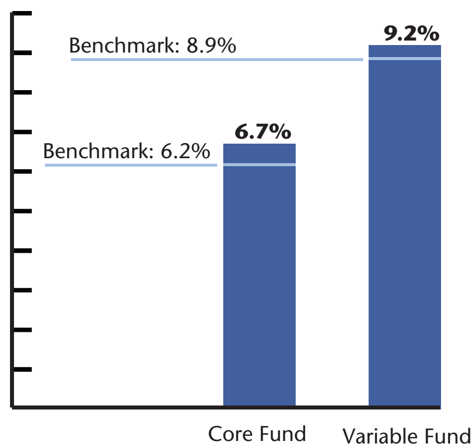
- examined SWIB's approach to investing assets in Wisconsin venture capital companies; and
- assessed the Board of Trustees' governance structure and compared it to other public pension plans.

Investment Performance

As shown in Figure 1, the five-year annual investment return of 6.7 percent and 9.2 percent for the Core Fund and Variable Fund, respectively, exceeded established benchmarks of 6.2 percent and 8.9 percent, respectively. Both the Core Fund and Variable Fund had negative one-year investment returns for 2015, and the Core Fund's investment return did not meet its established benchmark.

Figure 1

Five-Year Average Annual Investment Returns
As of December 2015



We also analyzed trends in the Core Fund's 20-year investment returns compared to the long-term expected rate of return assumption (return assumption) used by the WRS actuary. We found that this trend, if continued, may affect WRS contribution rates.

The Core Fund's five-year investment return ranked ninth among ten large public pension plans. The lower rank was attributable to asset allocation differences among pension plans and, in part, to new investment strategies that did not perform well in 2015. These strategies were implemented following a new asset allocation plan for the Core Fund, which SWIB approved in 2010.

One of the investment objectives of the new Core Fund plan was to minimize fluctuations in investment returns to stabilize both WRS contributions and annuity adjustments. We note that investment returns of some of these strategies have consistently underperformed established benchmarks or have exhibited fluctuations. For example, SWIB has held hedge fund investments since 2011, although it is unclear whether the hedge fund strategy has yet met SWIB's expectations. SWIB staff indicated that hedge funds continue to provide important diversification to the Core Fund.

SWIB will continue to implement the 2010 asset allocation plan at a measured pace because of market conditions. Therefore, it remains too soon to evaluate the overall effectiveness of the asset allocation plan.

Investment Expenses

No general purpose revenue (GPR) directly supports SWIB's operations. SWIB charges certain investment expenses directly against investment earnings and operating expenses to the funds it manages. 2011 Wisconsin Act 32, the 2011-13 Biennial Budget Act, authorized SWIB to establish its own operating budget and to create and eliminate staff positions.

SWIB's expenses increased from $258.7 million in 2011 to $323.9 million in 2015, or by 25.2 percent. The increase in expenses can be attributed to several factors, including an 18.9 percent increase in assets under management over this time period, information systems implementation expenses, and external investment fees for more complex investment strategies. In addition, compensation costs have increased due to compensation plan changes and an additional 48.1 full-time equivalent positions, which were authorized to increase internal management of assets and to support SWIB's implementation of new information systems.

A cost benchmark study continues to identify that SWIB's costs are lower than other large public plans with a similar mix of assets. We found the performance fees paid to hedge fund managers have declined since 2013. In contrast to hedge funds, for which SWIB pays performance fees annually, agreements with private equity and real estate fund managers include provisions for "carried interest," which, if earned, is a type of performance fee or profit sharing. We found that SWIB does not consistently track carried interest amounts nor are they considered in SWIB's overall investment expenses.

SWIB establishes compensation based on a peer group. SWIB authorized $9.6 million in bonuses for its employees for 2015 investment performance. The Core Fund had a one-year absolute return of -0.4 percent in 2015 that triggered a bonus deferral policy, which was subsequently waived by the Board.

Wisconsin Venture Capital Investments

SWIB regularly makes investments in Wisconsin through public stocks and bonds, private debt, and private equity. As of June 2015, it invested $809.4 million in companies headquartered or with a significant presence in Wisconsin. SWIB's Wisconsin private equity portfolio invests primarily in venture capital funds with a focus on Wisconsin and the midwest. However, nearly three-fourths of the $151.3 million invested in the Wisconsin private equity portfolio, was not invested in Wisconsin companies.

SWIB focuses its venture capital investments in start-up companies to meet its fiduciary responsibility to provide prudent and cost-effective investment returns. Other Wisconsin programs, such as the Badger Fund of Funds, authorized by 2013 Wisconsin Act 41, and the Wisconsin Economic Development Corporation, have different investment objectives than SWIB.

Board Oversight

The Board of Trustees is made up of nine members, including two participants of the WRS, the Secretary of the Department of Administration, and six individuals appointed by the Governor and confirmed by the Senate. Although the Board's fiduciary responsibilities have remained largely unchanged, its authority over investment types and internal operating expenses, including budget and position authority, has expanded in recent years and increased the importance of the Board's oversight.

The Board relies on periodic updates from staff and consultants to fulfill its fiduciary responsibilities, and the Board met 10 times during 2015. In reviewing other large public plans' governance structures, we found that other boards have more committees on average than SWIB.

The Board's Strategic Planning and Corporate Governance Committee has a wide range of responsibilities and met most frequently in 2015. This committee currently approves SWIB's internal operating budget, although this reflected only 13.4 percent of the 2015 estimated total cost of management. No board committee charter includes an explicit oversight responsibility to monitor actual investment expenses.

Recommendations

We recommend that the State of Wisconsin Investment Board work with the Board of Trustees to:

☑ develop policies and procedures to ensure that carried interest amounts are tracked for all portfolios in a consistent manner and reported annually to the Board of Trustees *(p. 36)*;

☑ develop guidance language for the bonus deferral policy to consider when evaluating whether to waive a deferral *(p. 45)*;

☑ present internal operating budget-to-actual reporting to the Board quarterly *(p. 60)*;

☑ increase the content and frequency of information to the Board on the total cost of management, including those expenses charged directly to earnings *(p. 60)*; and

☑ include in the Board's next self-evaluation an assessment of whether its existing committee structure or committee charters should be revised *(p. 60)*.

▪ ▪ ▪ ▪

Introduction ■

As specified by statute, SWIB is to provide prudent and cost-effective management of the assets it holds in trust by investing them in a manner that is consistent with their intended purpose.

SWIB is governed by a nine-member Board of Trustees.

SWIB's Board of Trustees is made up of nine members, including two participants in the WRS, the Secretary of the Department of Administration or a designee, and six individuals who are appointed by the Governor and confirmed by the Senate to serve staggered, six-year terms. Four of the appointed trustees are required to have at least ten years of experience making investments, and one must have at least ten years of local government financial experience.

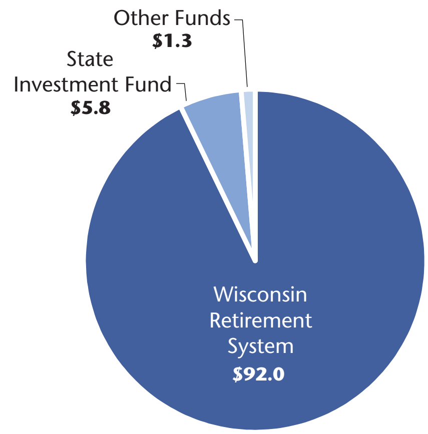
The Board of Trustees appoints the executive director and the internal audit director, and it delegates day-to-day investment management decisions to SWIB's staff. SWIB's senior management team, which includes the chief legal counsel, chief investment officer, chief financial officer, and others, works with the executive director to invest assets and make organizational decisions to ensure that staff are operating within the policies, objectives, and guidelines established by the Board of Trustees.

As of December 2015, 92.8 percent of the $99.1 billion in assets under SWIB's management were intended to fund WRS benefits.

As shown in Figure 2, as of December 2015, $92.0 billion of the $99.1 billion in assets under its management, or 92.8 percent, was intended to fund retirement benefits for more than 600,000 current and former state and local government employees who participate in the WRS. ETF is responsible for managing the operations of the WRS, and SWIB is responsible for managing WRS investments.

Figure 2

Assets Under Management
December 31, 2015
(in billions)



The WRS is largely a defined-benefit plan that provides participants with lifelong monthly retirement benefits that are determined by a formula based on each participant's years of service and highest three years' salary. In contrast, a defined-contribution plan, such as a 401(k) plan, provides benefits that are primarily based on the amounts contributed to the participants' accounts and investment gains or losses on those funds. The WRS is funded primarily by employer contributions, contributions from participants who are currently working, and investment income. The funded status of a public pension plan represents the amount of assets the system has accumulated relative to the estimated liabilities for the retirement benefits earned by participants. One of the ways the WRS measures its funded status is based on the actuarial value of assets. This funding value ratio was 99.9 percent from 2011 through 2013 and 100.0 percent for 2014 and 2015.

SWIB manages the investments of the WRS in two funds:

- The Core Retirement Investment Trust Fund (Core Fund) is a fully diversified fund, or balanced fund, which provides less volatile investment returns and is invested for the long term in several types of investments. The investments in the Core Fund totaled $85.3 billion as of December 2015 and included the investments of several other employee benefit programs, which together totaled approximately $3.4 billion. The largest of these other programs is the Accumulated Sick Leave Conversion Credit program.

- The Variable Retirement Investment Trust Fund (Variable Fund) is a public equity fund, or stock fund, which provides returns that are typically more volatile than the Core Fund. WRS participants have the option to have 50 percent of their retirement contributions deposited into the Variable Fund. Investments in the Variable Fund totaled nearly $6.7 billion as of December 2015 when 40,152 retired participants and 60,207 active or inactive participants had invested in the Variable Fund.

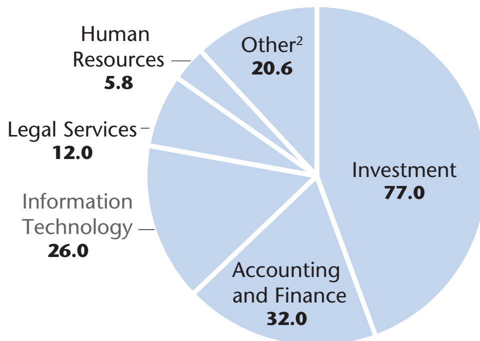
SWIB also manages assets of the State Investment Fund, which provides short-term investment and cash management for state funds, the WRS, and more than 1,000 local units of government that choose to participate in the Local Government Investment Pool. In addition, SWIB manages the investments of five other state funds: the Injured Patients and Families Compensation Fund, the State Life Insurance Fund, the Local Government Property Insurance Fund, the Historical Society Trust Fund, and the EdVest Tuition Trust Fund.

In December 2015, SWIB had 173.35 FTE positions, including 77.0 FTE investment positions.

As of December 2015, SWIB had an authorized staffing level of 173.35 full-time equivalent (FTE) positions, which includes 8.25 project FTE positions. As shown in Figure 3, 77.0 FTE positions are for investment staff who are responsible for researching, selecting, buying, and selling investments according to policies established by the Board of Trustees. The remaining positions provide administrative support, including 32.0 FTE positions for accounting and finance, 26.0 FTE positions for information technology, 12.0 FTE positions for legal services, 5.8 FTE positions for human resources, and 20.6 FTE positions for other functions, such as strategic planning and communications. SWIB's organization chart as of December 2015 is Appendix 1.

Figure 3

Full-Time Positions[1]
December 31, 2015



[1] Includes 8.25 project full-time positions.

[2] Includes strategic planning, internal audit, enterprise risk, administrative services, facilities, communications, performance, and investment management support.

SWIB also hires external managers to invest and manage certain assets in order to supplement staff resources or to provide expertise that would otherwise not be available. As of December 2015, SWIB had contracted with 35 external managers, some of whom manage multiple portfolios. In addition, SWIB contracts with multiple consultants to assist with certain functions such as asset allocation and benchmarking decisions, implementing investment strategies, oversight of external managers, and compensation.

WRS assets internally managed by SWIB staff increased from 20.5 percent as of December 2006 to 65.1 percent as of December 2015.

Since 2006, SWIB has taken steps to increase its internal management of WRS assets and decrease its reliance on external managers. The amount of WRS assets managed by SWIB staff increased from 20.5 percent as of December 2006 to 65.1 percent as of December 2015.

■ ■ ■ ■

Investment Performance of the Wisconsin Retirement System ▪

The basic objective of SWIB's investment of WRS assets is to invest contributions paid by employers and participants so that the investment income will be sufficient to pay projected future benefits and so that large fluctuations in WRS investment returns will be minimized to the extent practicable. We analyzed SWIB's performance and we found that investment returns are largely consistent with long-term benchmarks established by the Board of Trustees. However, the Core Fund has not performed as well as other large public pension plans as of December 2015. We also assessed the trend in the 20-year investment return for the Core Fund relative to the long-term expected rate of return assumption. We found that this trend, if continued, may affect WRS contribution rates. We also reviewed the asset allocation of the Core Fund, including new investment strategies SWIB has implemented in recent years. However, it remains too soon to evaluate the overall effectiveness of this allocation plan.

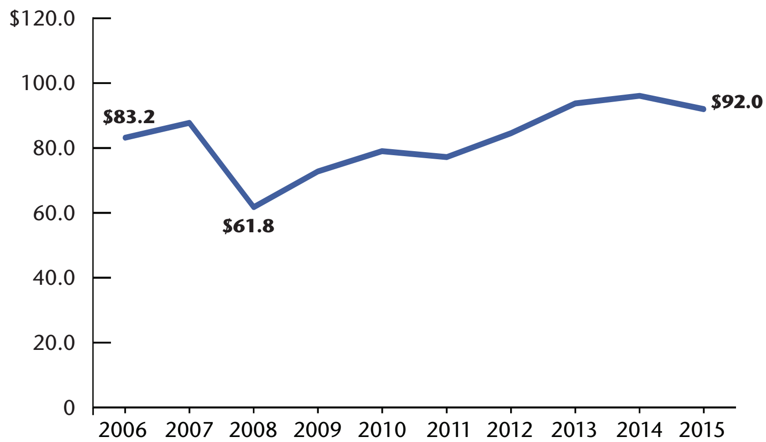
Asset Allocation of WRS Investments

As of December 2015, WRS investments were $92.0 billion.

WRS investments increased from $83.2 billion as of December 2006 to $92.0 billion as of December 2015, or by 10.6 percent. However, overall growth does not necessarily indicate that investments are managed well or that an effective investment strategy has been developed and implemented. Market volatility and external events can affect investment income and the rate at which assets grow, as well as pension-related inflows and outflows. As shown in Figure 4, WRS investments exceeded pre-recession levels beginning in 2013 and 2014, although assets declined in 2015.

Figure 4

WRS Investments
As of December
(in billions)



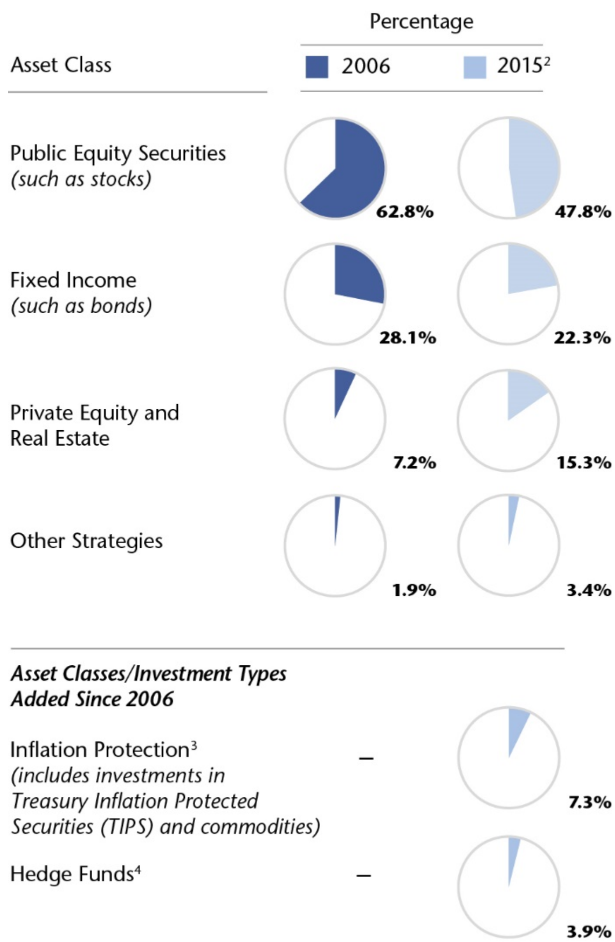
In report 14-9, we reviewed a new Core Fund asset allocation plan SWIB approved in 2010 following a significant economic recession between December 2007 and June 2009. The objective of the plan was to reduce large swings (volatility) in the Core Fund investment returns while generating sufficient investment income to meet the long-term expected rate of return assumption established for the WRS.

The assets of the Core Fund were allocated and diversified among a number of types of investments, and the Variable Fund is invested primarily in public equity securities.

As of December 2015, the assets of the Core Fund were allocated and diversified among a number of types of investments. As shown in Figure 5, just under one-half of investments in the Core Fund were in public equity securities, which are stocks that provide an ownership interest. Public equity securities include investment in both domestic and international companies, including those in emerging markets. To diversify the Core Fund, the remaining assets were invested among other types of investments, including private equity; real estate; and fixed income, such as bonds. SWIB has made several significant changes to the Core Fund asset allocation since 2006 to further diversify the fund, including reducing public equity investments and increasing investments in other asset classes in the Core Fund. As statutorily required, the Variable Fund was invested primarily in public equity securities.

Figure 5

Core Fund Investments[1]



[1] Based on market value as of December 31.

[2] Excludes overall leverage of the Core Fund.

[3] SWIB had investments in TIPS in 2006, however, they were not considered a separate asset class.

[4] Although not a separate asset class in 2015, SWIB did not invest in hedge funds in 2006.

SWIB has not yet fully implemented the 2010 asset allocation plan due to unfavorable market conditions for selected aspects of the plan. Table 1 shows changes in the allocation of Core Fund assets over time and the target allocations under its asset allocation plan. In 2015, four asset classes had a higher amount of assets than the target allocation, while three asset classes had fewer assets than the target allocation.

Table 1

Asset Allocation of the Core Fund
As of December

Asset Class	Actual						2010 Target
	2010[1]	2011	2012	2013	2014	2015	
Public Equity Securities	55.1%	50.0%	49.3%	50.5%	49.2%	50.9%	45.0%
Fixed Income	26.5	26.3	25.6	26.3	26.7	28.0	37.0
Inflation Protection[2]	3.1	4.6	7.0	7.1	8.4	9.7	20.0
Private Equity and Debt	7.5	8.3	7.6	7.3	7.9	8.1	7.0
Real Estate	4.5	6.2	6.8	6.6	6.8	7.2	7.0
Multi-Asset[3]	2.6	3.9	4.5	5.1	6.6	2.5	4.0
Cash	0.7	0.7	1.0	1.0	0.8	0.2	0.0
Total[4]	**100.0%**	**100.0%**	**101.8%**	**103.9%**	**106.4%**	**106.6%**	**120.0%**

[1] Year in which asset allocation was first approved.

[2] Includes Treasury Inflation Protected Securities (TIPS) and commodities.

[3] This asset class includes investments that span one or more traditional asset classes within the same investment strategy and was revised in 2015 to remove hedge funds and other investments from this asset allocation. Instead, hedge funds and other investments are combined within an overall strategy that is reflected within other asset classes in the asset allocation.

[4] Beginning in 2012, totals exceed 100 percent due to SWIB's overall leverage of Core Fund assets. SWIB's overall leverage is not presented in Figure 5.

As of December 2015, SWIB used leverage of 6.6 percent within the Core Fund and no leverage for the Variable Fund.

The 2010 Core Fund asset allocation plan included the use of leverage to further increase diversification to reduce the sensitivity of the Core Fund to changes in public equity market returns. The leverage component of the asset allocation involves using certain financial securities to essentially borrow funds in order to purchase more investments. Beginning in 2012, the asset allocation totals have exceeded 100 percent because the asset allocation plan includes a leverage component for overall Core Fund assets. Although SWIB used leverage of 6.6 percent as of December 2015, its ultimate target is leverage of 20 percent or a leverage ratio of 1.2 to 1. Leverage is considered risky, when used primarily to magnify returns, because it can increase the magnitude of investment losses. However, SWIB indicates its use of leverage is modest and is intended to reduce overall risk. For purposes of comparison, a typical home mortgage with a 20 percent cash payment at the time of purchase is leveraged at a ratio of 5 to 1. Leverage is not used for the Variable Fund.

To fully adopt the asset allocation plan, SWIB would need to further increase leverage and the Core Fund's allocation to investments in fixed income and inflation protection securities.

To fully adopt the asset allocation plan, SWIB would need to further increase leverage. It would also need to increase the Core Fund's allocation to investments in fixed income and inflation protection securities. The inflation protection asset class was comprised of treasury inflation protected securities (TIPS) and commodity securities as of December 2015. TIPS are indexed to inflation to protect investors from the negative effects of inflation and considered low-risk because they are backed by the federal government. Commodities offer diversification while providing additional protection against inflation. During 2015, the Core Fund held a small allocation to commodities in the areas of gold, oil, cattle, and corn.

In 2015, SWIB made a change to its asset allocation for its multi-asset strategy. This asset class includes investments that span one or more traditional asset classes within the same investment strategy. In prior years, this included the Core Fund's hedge fund investments. However, with the change in strategy, SWIB reduced the multi-asset allocation, and hedge funds are now part of a new strategy. According to SWIB, the strategy incorporates both hedge fund investments and an increased use of derivatives as a cost-effective way to obtain exposure to public equity and treasury markets. Although the strategy is complex and can involve risk, SWIB anticipates that the use of derivatives when combined with hedge funds will increase returns for the Core Fund without increased investment risk.

A derivative is a security with a price that is dependent upon one or more underlying assets, such as stocks, bonds, commodities, currencies, or market indices. SWIB has used a variety of derivatives in the past. However, SWIB has increased the use of derivatives to take public equity and treasury market positions with a relatively small capital outlay.

We note that other public pension plans have used a similar strategy in the past. For example, in the mid-2000s the Pennsylvania Public School Employees' Retirement System implemented such a strategy. However, it was eliminated in 2009 as a result of the market conditions during the last recession, which led to significant losses for this strategy. SWIB recognizes the risks of derivatives, including the potential for greater losses when underlying assets underperform and the investor has inadequate cash or other securities available to quickly respond to market changes. These risks are not unlike the risks associated with the leverage strategy. However, SWIB staff indicate that this risk is low because of the diversification it employs within the strategy and its practice to set aside sufficient cash or other securities.

Performance Relative to Benchmarks

SWIB uses benchmarks to measure the performance of WRS investments. It reviews benchmarks each year for the Core Fund and the Variable Fund, as well as for each asset class and investment portfolio. Whenever possible, SWIB's benchmarks are based on industry-recognized indices, and SWIB attempts to exceed these benchmarks. For example, one such benchmark is the Russell 1000, which tracks the performance of the 1,000 largest U.S. public equity securities and represents approximately 90 percent of the U.S. public equity market. Each benchmark change is reviewed by the Board of Trustees' Benchmarking Committee with the guidance of its benchmarking consultant and is approved by the Board of Trustees.

The Core Fund and Variable Fund investment returns exceeded five-year benchmarks for 2014 and 2015.

To assess the success of its management strategies for the Core Fund and to determine staff bonuses, SWIB focuses primarily on the five-year investment return. As shown in Table 2, the average annual investment return for the five-year period ended in December 2015 was 6.7 percent for the Core Fund and 9.2 percent for the Variable Fund. Both funds exceeded the five-year benchmark for both 2014 and 2015.

Table 2

Investment Performance Relative to Benchmarks[1]
For Periods Ending in December

	Core Fund		Variable Fund	
Period	Investment Benchmark	Average Annual Investment Return[2]	Investment Benchmark	Average Annual Investment Return[2]
One-Year				
2014	5.6%	5.7%	7.5%	**7.3%**
2015	(0.3)	**(0.4)**	(1.3)	(1.2)
Three-Year				
2014	10.4%	10.9%	17.1%	17.4%
2015	5.9	6.2	10.8	11.0
Five-Year				
2014	8.8%	9.3%	12.3%	12.7%
2015	6.2	6.7	8.9	9.2
Ten-Year				
2014	6.4%	6.7%	7.0%	7.1%
2015	5.6	5.8	6.0	6.1

[1] Investment returns that did not meet benchmarks are in **bold.**

[2] Returns are gross of management fees with the exception of a few portfolios.

The Core Fund did not meet its one-year benchmark as of December 2015, and the Variable Fund did not meet its one-year benchmark as of December 2014.

One-year investment returns of the Core Fund and Variable Fund since 1982 are shown in Appendix 2. The one-year investment return of the Core Fund lagged the benchmark as of December 2015, and the one-year investment return of the Variable Fund lagged the benchmark as of December 2014. The investment performance of the Core Fund has exceeded the one-year benchmark for seven of the last ten years, and investment performance of the Variable Fund has met or exceeded the one-year benchmark for eight of the last ten years. The underperformance of the Variable Fund relative to the benchmark as of December 2014 was attributed to SWIB's global public equity holdings. However, underperformance of the Core Fund relative to the benchmark as of December 2015 did not have a singular explanation.

Both the Core Fund and the Variable Fund had a negative one-year investment return as of December 2015, largely due to lower performance in global markets.

Both the Core Fund and the Variable Fund had an overall negative one-year investment return as of December 2015, including a -0.4 percent investment return for the Core Fund and -1.2 percent investment return for the Variable Fund. The negative one-year investment returns were consistent with underlying market performance for public equities and, more significantly, with global public equity securities. The Core Fund's negative investment return was also affected by market losses within the inflation protection asset class, specifically commodity investments. For example, the negative one-year investment return for the public equity and inflation protection asset classes was -2.2 percent and -6.6 percent, respectively. However, the Core Fund investment return benefited from strong private equity and real estate investment returns that minimized the losses from the public equity and fixed income markets.

The majority of asset classes met their respective benchmarks during 2014. However, the one-year investment return for the public equity asset class, which is the largest, did not meet its benchmark due to specific securities selected by SWIB's portfolio managers that did not perform well. Appendix 3 compares the investment performance of each Core Fund asset class, or group of similar investments, to benchmarks for each one-, three-, five-, and ten-year period for 2014 and 2015.

In 2015, investment returns of several asset classes or investment types did not meet their one-year benchmark, including fixed income, multi-asset, and hedge funds. The underperformance of the fixed income asset class relative to the benchmark was attributed, in part, to lower performance of global fixed income securities.

Risk Parity Strategy

Underperformance compared to the benchmark for the multi-asset class is largely attributable to the performance of a risk parity strategy not meeting its benchmark. The risk parity strategy is externally managed with the expectation it will provide a fund-like return with less volatility from year to year by using leverage to balance risk across different asset classes. As of December 2015, SWIB had invested $834 million in the risk parity strategy, or 1.0 percent of Core Fund assets.

Investment performance for the risk parity strategy has fluctuated since inception in 2011.

The investment performance of the risk parity strategy has fluctuated since its inception in 2011, reporting overall losses in 2015 and an investment gain through September 2016. In report 14-9, we first reported on SWIB's use of a risk parity strategy within its multi-asset strategy. At that time, we noted the strategy had investment losses in 2013. Although the performance of the risk parity strategy was positive in 2014, the strategy again had investment losses in 2015 because of the inflation protection securities held. For example, the risk parity strategy investment return for the one- and three-year periods ended December 2015 were -7.3 percent and -0.7 percent, relative to benchmarks of -5.0 percent and 3.7 percent, respectively. The strategy lost more than its benchmark because of the use of inflation protection securities.

The five-year investment return of 4.9 percent exceeded the benchmark of 4.4 percent as of December 2015. According to SWIB's investment performance information through September 2016, the calendar year-to-date investment return for the risk parity strategy is positive, underscoring the fluctuations from year to year in this strategy. Although the performance improved for this strategy in 2016, the five-year investment return was lower than the established benchmark.

Hedge Fund Investments

The one-year investment return attributable to hedge funds also did not meet its investment benchmark for 2015. A hedge fund is an investment managed by an external fund manager who seeks to maximize investment returns through a variety of specialized active management strategies. Hedge fund investments are intended to be uncorrelated to broad markets, such as public equity and fixed income securities, and therefore can provide further diversification.

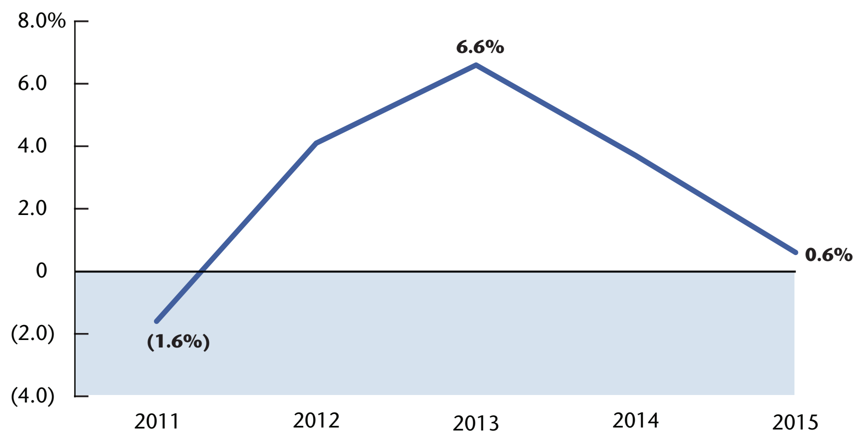
As of December 2015, hedge fund investments totaled $3.3 billion, or 3.9 percent of Core Fund assets.

SWIB began investing in hedge funds in 2011 and, as of December 2015, had invested in 22 hedge funds, totaling $3.3 billion, or 3.9 percent of Core Fund assets. SWIB anticipates continuing to increase the assets invested in hedge funds to $4.0 billion during 2016. As noted, SWIB does not consider hedge funds a stand-alone asset class, but instead as part of a broader active management strategy.

As shown in Figure 6, the aggregate annual investment returns for hedge funds have fluctuated since inception in 2011. Although the aggregate one-year investment returns for hedge funds exceeded the benchmark in 2011, 2013, and 2014, hedge fund investment returns lagged the benchmark in 2012 and 2015. The 2015 hedge fund aggregate one-year investment return was 0.6 percent relative to a benchmark return of 2.6 percent.

Figure 6

Aggregate One-Year Hedge Fund Investment Returns[1]
As of December



[1] Investment returns are reported net-of-expenses. Returns of individual hedge funds may represent less than one year depending on when investments were made.

It will be important for SWIB to continue to monitor specific hedge funds and the benefits of hedge fund investments.

The average aggregate annual investment return for hedge funds since inception through December 2015 was 2.7 percent relative to a benchmark of 2.2 percent. Although SWIB has held hedge funds for a short period of time, it is unclear whether the strategy has met SWIB's expectations. We also note that several large public pension plans have eliminated hedge fund investments, some using different investment methods or strategies than SWIB. SWIB staff indicated that hedge funds continue to provide important diversification to the Core Fund and hedge fund investment returns in periods of market uncertainty will benefit the overall investment returns in the long term. During 2015, SWIB's individual hedge fund investment returns varied considerably, ranging from -24.9 percent to 10.6 percent. It will be important for SWIB to continue to monitor specific hedge funds and the benefits of hedge fund investments.

Investment Performance of Leverage

Although meeting its benchmarks, SWIB's use of leverage had negative returns for all periods as of December 2015 and contributed to the Core Fund's investment loss during 2015. SWIB's use of leverage began in 2012 as part of the asset allocation plan of the Core Fund in an effort to reduce public equities and stabilize investment returns. SWIB contracts with an external manager to help manage the Core Fund leverage strategy. SWIB's use of leverage includes borrowing funds to increase the allocation to more stable investments.

According to SWIB, inflation protection securities are used as part of the leverage strategy because they are a cost-effective way to borrow funds to create leverage. However, in 2015, these securities underperformed, which led to an investment return of -30.0 percent for this component of the strategy. Overall, the use of leverage resulted in an investment loss that was 6.3 percent of the Core Fund's overall investment loss for 2015.

A consultant reported as of October 2015 that Core Fund investment returns would have been slightly higher and more stable had SWIB not implemented the leverage strategy.

Although SWIB's consultant continues to recommend implementing the leverage strategy, it analyzed the Core Fund returns as if the leverage strategy had not been implemented and reported that investment returns would have been slightly higher and more stable without the leverage strategy as of October 2015. In addition, the performance of the strategy can fluctuate significantly in the short term. For example, SWIB reports a 29.9 percent calendar year-to-date investment return through September 2016 for the leverage strategy. Because of the large fluctuations and SWIB's focus on the long-term potential benefits of this strategy in a variety of market conditions, additional time will be needed to fully assess the benefit of this strategy.

Performance Compared to the Long-Term Expected Rate of Return Assumption

Because WRS pension benefits are funded by contributions received from active employees and investment earnings, SWIB focuses on meeting the long-term expected rate of return assumption (return assumption) used by the WRS actuary. The retirement contribution rate recommendations are based on SWIB's investment returns and the return assumption. The Core Fund investment returns also affect the accumulation of resources for active employees and annuity adjustments for retired participants.

The Core Fund's 10-year investment return as of December 2015 was lower than the return assumption used by the WRS actuary.

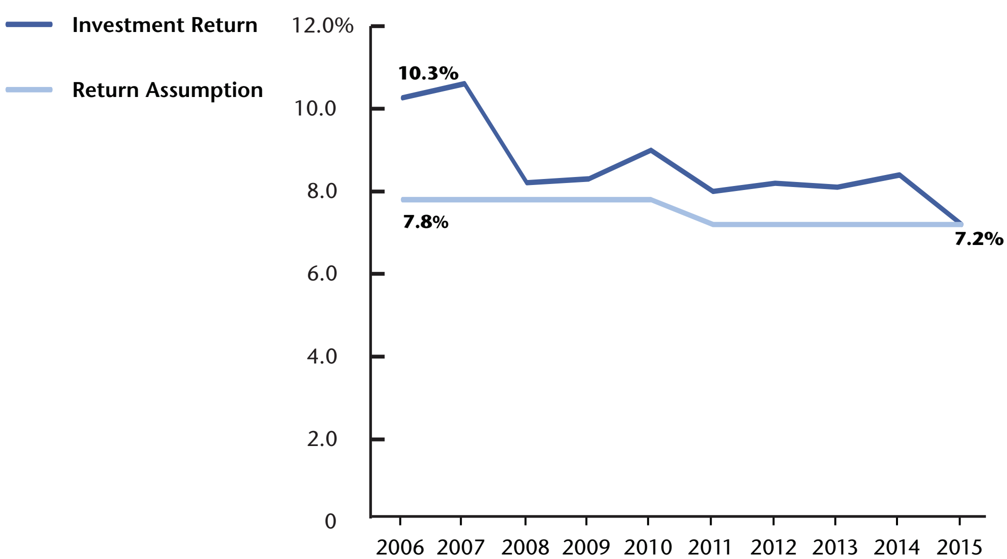
The return assumption as of December 2015 was 7.2 percent. The return assumption was last reduced in 2011 from 7.8 percent. Because of the long-term nature of a pension plan, it is unlikely that the actual investment returns will match the return assumption every year. In addition, the Core Fund's investment returns are smoothed over a five-year period to reduce volatility in contributions and annuity adjustments. As was shown in Table 2, the Core Fund's average annual investment return for the one-, three-, five-, and ten-year periods ended December 2015 were all below the return assumption of 7.2 percent. For example, the Core Fund's average annual investment return was 5.8 percent for the ten-year period ended in December 2015.

As of December 2015, the Core Fund's 20-year investment return was equal to the return assumption used by the WRS actuary.

Although SWIB typically focuses on the five-year investment return to evaluate investment performance, we also reviewed 20-year investment returns, net-of-expenses, of the Core Fund, as this period is more consistent with the long-term focus of the WRS. As shown in Figure 7, the difference between the average annual investment return of the Core Fund for the 20-year period as of December 2006 through December 2015 and the return assumption has narrowed over time, and the 20-year average annual investment return was equal to the return assumption as of December 2015.

Figure 7

Core Fund 20-Year Investment Returns Compared to Return Assumption[1]
As of December



[1] Represents average annual investment returns on a net-of-expenses basis, which are considered by the WRS actuary in determining employer and employee contribution rates.

The 30-year investment return, net-of-expenses, of the Core Fund as of December 2015 was 8.6 percent. Because SWIB anticipates a low return and volatile investment market in the coming years, the long-term investment return of the Core Fund may fall below the return assumption over the next five to ten years.

Long-term investment returns that lag the return assumption may result in higher contribution rates or affect the funded status of the pension plan. The total WRS contribution rate for general participants has steadily increased over the past ten years, from 10.4 percent of wages during 2006 to 13.6 percent during 2015, or by 30.8 percent. The majority of the increase in contribution rates can be attributed to investment losses experienced during the previous recession. Contribution rates declined in 2016 but will increase in 2017.

Over the past ten years, Core Fund annuity adjustments were positive in five years and negative in the remaining five years.

Appendix 4 shows the annual benefit payment adjustments for retired participants for the Core Fund and the Variable Fund. Although Core Fund retired participants received increases in five of the past ten years that ranged from 0.5 percent to 6.6 percent, benefits were also reduced in five of the past ten years with annual reductions, ranging from 1.2 percent to 9.6 percent. Not all retired participants received maximum reductions, as benefit payments from the Core Fund cannot be reduced below the base benefit payment they received at retirement. However, if this provision was not applicable to a retiree, the retiree's annuity would have had an average annual reduction of 0.5 percent since 2006.

Comparison to Other Public Pension Plans

To assess the relative performance of SWIB's investment strategies and asset allocation decisions, we routinely compare the investment performance of the Core Fund to other large public pension plans. We note that comparisons among these other large public pension plans are affected by differences in funding levels, return assumptions, cash flow needs, asset mixes, investment styles, risk tolerance levels, and statutory or other restrictions on allowable investments. For example, SWIB has one of the lowest return assumptions among the other large public pension plans included in the comparison. Comparisons are also affected by the option offered to WRS participants through the Variable Fund, which is unique among public pension plans.

The five-year investment return for the Core Fund as of December 2015 ranked ninth among the ten public pension plans we compared.

Table 3 shows average annual investment returns for the Core Fund and nine other public pension plans for the one-, three-, five-, and ten-year periods ended in December 2015. The five-year investment return for the Core Fund, which is SWIB's primary performance measure used to assess the success of its management strategies, ranked ninth among the ten public pension plans in terms of absolute returns. With an average annual investment return of 5.5 percent, the Core Fund ranked eighth in the ten-year investment returns, which ranged from 5.0 percent to 6.7 percent among the ten public pension plans we compared.

Table 3

Comparison of Average Annual Investment Returns Among Selected Public Pension Plans[1]
For Periods Ending in December 2015

	One-Year		Three-Year		Five-Year		Ten-Year	
Public Pension Plan	Return	Rank	Return	Rank	Return	Rank	Return	Rank
Wisconsin Retirement System—Core Fund	**(0.7)%**	**9**	**5.8%**	**9**	**6.3%**	**9**	**5.5%**	**8**
Minnesota State Board	0.0	7	9.3	1	8.5	1	6.7	1
Florida State Board	1.5	3	8.0	3	7.4	3	6.0	3
Ohio Public Employees Retirement System	0.3	4	7.1	6	7.1	7	5.7	6
Teachers Retirement System of Texas	0.3	4	6.8	8	7.2	5	5.9	4
Virginia Retirement System	2.0	2	7.8	4	7.3	4	5.8	5
New Jersey Division of Investments[2]	0.2	6	7.0	7	7.0	8	5.7	6
California Public Employees Retirement System	(0.1)	8	7.3	5	7.2	5	5.1	9
Pennsylvania Public School Employees' Retirement System	(1.8)	10	5.1	10	6.2	10	5.0	10
Washington State Investment Board	2.6	1	8.5	2	8.2	2	6.5	2

[1] Returns are net-of-expenses.

[2] Returns originally provided are gross because net-of-expenses were not available. To better compare these gross returns with the net returns provided by the other pension plans, the gross returns have been decreased by 0.4 percent for each period to account for an approximation of the annual expenses paid by this fund.

The relative performance of the Core Fund for the one- and three-year returns ranked ninth in 2015. The Core Fund's lower relative one-year investment return can be attributed in part to a lower allocation to real estate investments, which performed well in 2014 and 2015. For example, the Washington State Investment Board had the highest allocation to real estate investments and the highest one-year investment return among the plans we compared.

We further compared the 2015 ranking for the Core Fund to a similar comparison of large public pension funds that we completed in 2013. As shown in Table 4, the rankings of Core Fund investment returns for all periods in 2015 were lower than the rankings of the Core Fund investment returns in 2013.

Table 4

Investment Return Rankings of the Core Fund[1]
2013 and 2015

Period	2013 Comparison	2015 Comparison
One-Year	7	9
Three-Year	7	9
Five-Year	4	9
Ten-Year	5	8

[1] Rank among ten large public pension plans.

In addition to comparing absolute investment returns, we also compared the stability or volatility of Core Fund returns relative to the other large public pension plans. Volatility refers to the "risk" or uncertainty about the change in a security's market value. More volatile investments are those in which the price of a security can change significantly in the short term, while less volatile investments generate more stable investment returns over time.

Other large public pension plan investment returns were more stable and higher than the Core Fund investment returns as of December 2015.

Reducing volatility is one of the goals of the Core Fund's asset allocation plan. SWIB staff acknowledge that the focus on reducing volatility over the long term may result in lower returns in the short term when markets are performing well. Because other public pension plans may focus on short-term investment returns rather than reducing volatility, we also compared the volatility of the Core Fund's investment return with the other plans through a measure of the fluctuations in the five-year investment return over time. We obtained annualized volatility measures from each of the ten public pension plans. Each plan may use slightly different methods to calculate volatility over time, yet these measures provide additional information about the characteristics of the plan's consistency of investment returns over time. Public pension plans with more stable investment returns will have lower measures of fluctuation while those with greater changes between years will have higher measures of fluctuation. Of the ten public pension funds in our comparison, the Core Fund's volatility of the five-year investment return as of December 2015 ranked third highest among the plans. Many of the plans were more successful than SWIB in generating higher, less volatile investment returns over this period. SWIB's higher volatility was similarly attributed to its investment in more global public equity securities than the other plans.

A consultant similarly found the five-year investment return of the Core Fund ranked below the median with higher volatility than a custom peer group of public pension plans.

In addition to the comparison to nine other large public pension plans that we performed, SWIB contracts with a consultant that compares the Core Fund's investment performance to other public pension plans. The consultant uses a custom peer group comprised of 41 public pension funds, including some that are also presented within Table 3. The consultant's review found for the one-, three-, five-, and ten-year periods ended December 2015, the Core Fund's investment return ranked below the custom peer group median. The Core Fund's investment performance below the custom peer group median was attributed to a higher allocation to global securities and a lower allocation to real estate investments compared to the custom peer group. SWIB's consultant also found the Core Fund's five-year volatility ranked slightly above the median compared to the custom peer group, indicating that the Core Fund had a higher volatility than the custom peer group median.

To provide a more direct comparison of investment returns, SWIB's consultant performed an analysis that eliminated the effect of different asset allocations among the 41 public pension plans in the custom peer group. Asset allocation decisions have a significant impact on a pension plan's investment performance. For example, if a public pension plan had a higher allocation to real estate investments in a year when the asset class performed well, the plan may perform better than public pension plans with a lower real estate allocation. The consultant found that the Core Fund's investment return rankings for the one-, three-, five- and ten-year periods as of December 2015, when adjusted for asset allocation decisions, were still below the median investment returns for the custom peer group.

Assessing the 2010 Core Fund Asset Allocation Plan

One of the objectives of the 2010 Core Fund asset allocation plan was to reduce volatility of the Core Fund investment returns, specifically by reducing exposure to public equity risk and further diversifying the investments. According to SWIB, it is anticipated that this strategy will provide more consistent returns across various market conditions, and minimize investment losses during extreme economic events or "market shocks." The plan is also focused on generating long-term investment returns that meet the return assumption.

Although investment markets in 2015 were difficult for many investment managers, particularly regarding inflation protected securities held in several Core Fund strategies, the overall losses during 2015 did not reflect a significant downturn. As such, SWIB indicated that its long-term asset allocation plan has not yet been tested in an extreme market recession to assess the effect of its diversification strategies.

We note that SWIB is focused on generating long-term investment returns rather than being reactive to short-term market conditions. As such, SWIB is gradually implementing its asset allocation plan for the Core Fund because it recognized that market conditions, such as a continued low-interest-rate environment, were not conducive to new strategies performing well. However, we also note that several new strategies have continued to underperform SWIB's expectations as of December 2015 and the Core Fund investment return ranking fell compared to other large public pension plans, even among the longer-range investment return periods.

By reducing the allocation to public equity risk and leveraging less volatile investments, including fixed income, SWIB anticipates the asset allocation plan will reduce the volatility of the Core Fund investment returns over the long term compared to a more traditional pension plan invested only in stocks and bonds. However, as noted, SWIB's asset allocation consultant found the Core Fund's current use of leverage resulted in a lower return and slightly higher volatility compared to a traditional asset allocation. Although the use of leverage resulted in a slightly higher volatility and the Core Fund had higher volatility than its peers, SWIB indicated that it has benefited from overall market conditions of low volatility.

A variety of market conditions will be needed to assess whether the Core Fund asset allocation plan has improved investment return stability.

As reported in report 14-9, a variety of market conditions will be needed to assess whether the Core Fund asset allocation plan has improved investment return stability. As noted, SWIB will continue to implement the 2010 asset allocation plan at a measured pace because of market conditions. Significant shifts of assets still need to be completed to fully implement the plan, including increasing assets invested in fixed income securities from 28.0 percent to 37.0 percent, investments in the inflation protection asset class from 9.7 percent to 20.0 percent, and overall leverage from 6.6 percent to 20.0 percent. Therefore, it remains too soon to evaluate the overall effectiveness of the asset allocation plan.

However, SWIB plans to carefully monitor the results of Core Fund performance under various market conditions in future years. SWIB will need to determine whether investment returns are sufficient to meet the return assumption and whether the consistency of those investment returns have the desired effect of stabilizing contribution rates and benefit payment adjustments for retired participants.

■ ■ ■ ■

Investment and Operating Expenses ■

As part of its fiduciary responsibility, the Board of Trustees is responsible for investing assets in a prudent and cost-effective manner. Overall, SWIB expenses have fluctuated in the past five years because of changes in assets managed, an increase in assets managed internally, and fees based on the performance of externally managed investments. We identified specific areas in which expenses increased, including information systems implementation, complex investment strategies, and the internal operating budget, which SWIB has the authority to establish on its own. We also analyzed compensation, which is SWIB's largest operating expense and includes bonuses paid for investment performance. We include recommendations that SWIB provide information to the Board of Trustees on all investment fees or charges against investment earnings and that the Board of Trustees add guidance to its bonus deferral policy.

Trends in Total Expenses

No GPR directly supports SWIB's operations. SWIB charges its operating expenses, including salaries and fringe benefits, to the funds it manages, as authorized by s. 20.536 (1) (k), Wis. Stats. However, certain expenses that relate to SWIB's investing activities, such as the fees for external investment managers, are charged directly against investment earnings, as authorized by s. 25.18 (2) (e), Wis. Stats. Therefore, when SWIB pays more in fees, less investment income is available to distribute to WRS participants.

As shown in Table 5, SWIB's expenses increased from $258.7 million in 2011 to $323.9 million in 2015, or by 25.2 percent. Investment expenses charged directly against investment earnings fluctuated during this period. For example, these expenses increased $84.5 million between 2011 and 2013 and decreased $35.6 million between 2013 and 2015. Internal operating expenses increased each year for a total increase of $16.3 million, or 60.6 percent over the period.

Table 5

SWIB Expenses
2011 through 2015
(in millions)

	2011	2012	2013	2014	2015
Investment Expenses *(charged directly to investment earnings)*					
Public Market Management Fees[1]	$ 86.2	$ 96.4	$156.0	$ 138.4	$114.0
Private Equity Management Fees	92.3	103.2	98.3	94.8	92.0
Real Estate Advisory Fees	42.3	47.1	49.2	51.4	47.7
External Support Services[2]	11.0	11.7	12.8	17.5	27.0
Subtotal	231.8	258.4	316.3	302.1	280.7
Internal Operating Expenses *(included in operating budget)*					
Salaries and Fringe Benefits	19.7	20.5	22.4	24.7	26.3
Bonuses[3]	3.5	4.3	8.0	13.3	12.2
Supplies and Permanent Property[4]	3.7	4.1	4.5	4.0	4.7
Subtotal	26.9	28.9	34.9	42.0	43.2
Total	**$258.7**	**$287.3**	**$351.2**	**$344.1**	**$323.9**

[1] Includes fees for external management of publicly traded securities and base and performance fees for externally managed active strategies, including hedge funds.

[2] Includes fees for external investment research, consulting, and implementation of investment systems.

[3] Bonus payments made within the calendar year are shown prior to any withholding on these amounts. Typically bonus payments on performance are paid in the following calendar year.

[4] Includes expenses for internal technology, research, supplies, and travel.

SWIB's expenses increased 25.2 percent from 2011 to 2015, in part because assets SWIB managed increased 18.9 percent over this period.

Because there is a direct correlation between certain expenses and the amount of assets under management, the increase in expenses is attributable, in part, to an 18.9 percent increase in assets under management over the past five years. However, the average cost to manage assets also increased during this period. For example, SWIB reported that the average cost of investment for each $100 of assets was $0.30 in December 2011, and increased to $0.32 for each $100 of assets in December 2015.

The average cost of investment for each $100 of assets managed increased from $0.30 in December 2011 to $0.32 in December 2015.

SWIB annually benchmarks its investment expenses to other large public pension plans. According to the most recent study, which is based on 2015 information, investment expenses of the Core Fund were less than those of peers of similar size and asset mix by $0.09 per $100 of assets managed. However, the study also noted that certain expenses, such as those for internal investment management, were higher than its peers.

After considering increases in assets under management over time, we found that increases in expenses were attributable to three primary factors, including:

- information systems implementation;
- complex investment strategies; and
- internal operating expenses.

Information Systems Implementation

In 2014 and 2015, SWIB planned for and implemented various components of the Agile Reliable Investment Enterprise System (ARIES), which is an integrated information system including investment management, trade operation, finance, and data management functions. SWIB budgeted $48.0 million for ARIES planning and implementation. SWIB indicated that it had spent $16.7 million on ARIES-related software and consultants, which is 87.3 percent of the implementation expenses as of December 31, 2015. These expenses were included as external support services in Table 5.

Complex Investment Strategies

The largest component of investment expenses charged directly to investment earnings is payments to external managers. SWIB contracts with external managers in several areas, largely to supplement its internal investment staff and to obtain expertise that would otherwise not be available. Although external investment of WRS assets declined by 10.5 percent from 2011 through 2015, investment expenses have continued to increase due to the complexity of the strategies that SWIB contracts with external managers to implement. Over the past five years, expenses for public markets, private equity, and real estate investments have totaled $1.3 billion, and the annual expenses have increased by 14.9 percent.

The largest increases in expenses have been within the public markets category, which includes fees for external management of publicly traded securities, such as stocks and bonds, hedge fund managers, and other externally managed active strategies. More than one-half of the increase in expenses in this category since 2011 can be attributed to SWIB's hedge funds investments.

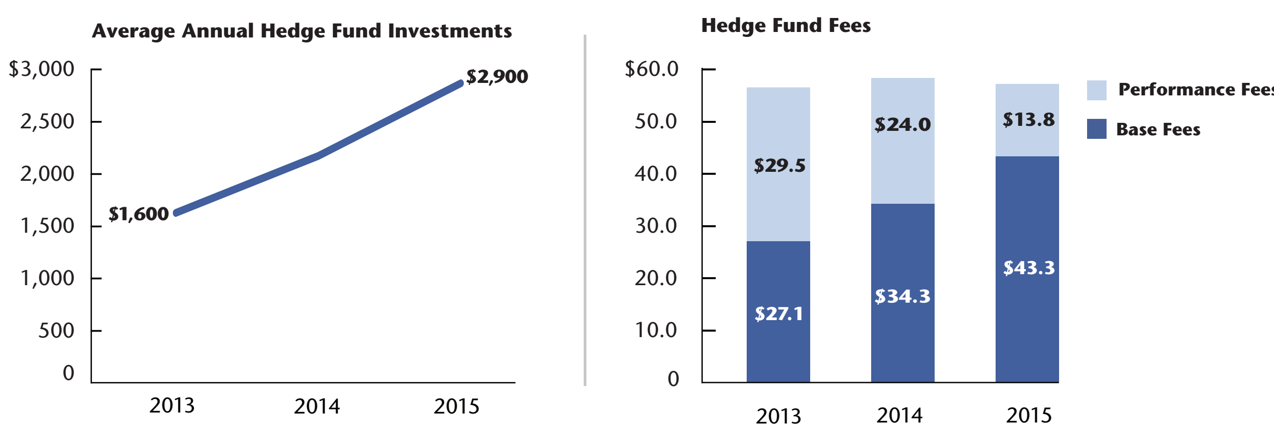
Performance-based fees for real estate and private equity are not shown in Table 5. SWIB has increased its efforts in recent years to track such expenses, which have also increased.

Hedge Funds

SWIB invested in its first hedge fund in early 2011 and has since continued to increase the amount of assets invested in external hedge fund managers. As shown in Figure 8, SWIB's average investment in hedge funds increased from $1.6 billion in 2013 to $2.9 billion in 2015. The hedge fund fee structure consists of a base fee, which is calculated as a percentage of the assets under management and is not dependent on performance, and a performance fee of up to 20.0 percent. Therefore, hedge fund fees increase as additional assets are allocated to the strategy and when the hedge fund managers perform well. During 2015, SWIB paid a total of $57.1 million in hedge fund fees.

Figure 8

Hedge Fund Fees
(in millions)



As noted in report 14-9, hedge fund fees increased from $5.8 million in 2011 to $56.6 million in 2013 as SWIB allocated additional funds to hedge fund investments. As was shown in Figure 8, SWIB continued to allocate additional assets to hedge fund managers in 2014 and 2015, which increased base fees to $43.3 million in 2015. However, due to lower investment returns, performance fees decreased from $29.5 million in 2013 to $13.8 million in 2015. Although total hedge fund fees have remained largely consistent, the average cost to manage each $100 of assets decreased from $3.47 in 2013 to $1.99 in 2015.

SWIB staff indicated that its goal when negotiating hedge fund fee structures is to pay lower base fees in favor of higher performance fees when the funds have strong performance. This could lead to higher overall fees than peers when the hedge funds have strong performance. For example, in 2014 SWIB's hedge funds performed well, and a study of 2014 benchmarked costs indicated that SWIB paid more than its peers for hedge fund fees. In 2015, hedge funds did not perform well, and a study of 2015 benchmarked costs indicated that SWIB paid less than its peers for hedge fund fees.

Private Equity and Real Estate

In contrast to hedge funds, for which SWIB pays performance fees annually, agreements with private equity and real estate fund managers include provisions for "carried interest," which, if earned, is a type of performance fee or profit sharing. Carried interest is paid when a private equity fund manager liquidates an investment and the rate of return exceeds an agreed-upon minimum rate, such as 8.0 percent. Carried interest amounts are not included in Table 5, the quarterly direct charge reports provided to the Legislature under s. 25.17 (13m), Wis. Stats., the total cost of management information presented to the Board of Trustees on an annual basis, or benchmarked cost studies because industry practice is to net the amounts against holdings and income. However, these amounts are considered in performance calculations for employee bonus purposes, which are based on investment returns that are net-of-expenses.

In 2013, SWIB began tracking paid carried interest amounts for the private equity funds, with the exception of the Wisconsin Private Equity portfolio. As shown in Table 6, carried interest for private equity portfolios totaled $124.3 million in 2015, and the carried interest was higher than management and other fees. The total of management and other fees and carried interest was $216.3 million in 2015, or $3.59 for every $100 of assets managed.

Table 6

Private Equity Fees and Carried Interest
(in millions)

	2013	2014	2015
Management and Other Fees	$ 98.3	$ 94.8	$ 92.0
Carried Interest Paid[1]	97.5	118.7	124.3
Total	**$195.8**	**$213.5**	**$216.3**

[1] Includes carried interest amounts for the Wisconsin Private Equity portfolio, which SWIB first obtained after we requested this information.

As shown in Table 7, carried interest amounts for real estate totaled $66.9 million in 2015. For the real estate portfolio, SWIB requests that fund managers provide accrued carried interest information on a quarterly basis. Accrued carried interest is the amount SWIB would pay if the fund liquidated the investment based on current valuations of fund investments. However, since the investments have not been liquidated, the carried interest is not yet due and the carried interest amount may fluctuate. The total of management and other fees and carried interest was $114.6 million in 2015, or $1.88 for every $100 of assets managed.

Table 7

Real Estate Fees and Carried Interest
(in millions)

	2013	2014	2015
Management and Other Fees	$49.2	$ 51.4	$ 47.7
Accrued Carried Interest	47.4	56.8	66.9
Total	**$96.6**	**$108.2**	**$114.6**

As noted, SWIB did not track carried interest amounts for all private equity portfolios. In addition, the method used to track carried interest differs by investment strategy. SWIB tracks carried interest paid for private equity portfolios while it tracks accrued carried interest amounts for the real estate portfolio. It may be helpful for SWIB to develop policies and procedures to ensure that carried interest information is tracked consistently for all portfolios so that the Board of Trustees may engage in a periodic review of carried interest amounts to assess the total cost of management for these strategies.

☑ Recommendation

We recommend the State of Wisconsin Investment Board work with the Board of Trustees to develop policies and procedures to ensure that carried interest amounts are tracked for all portfolios in a consistent manner and reported annually to the Board of Trustees.

Internal Operating Expenses

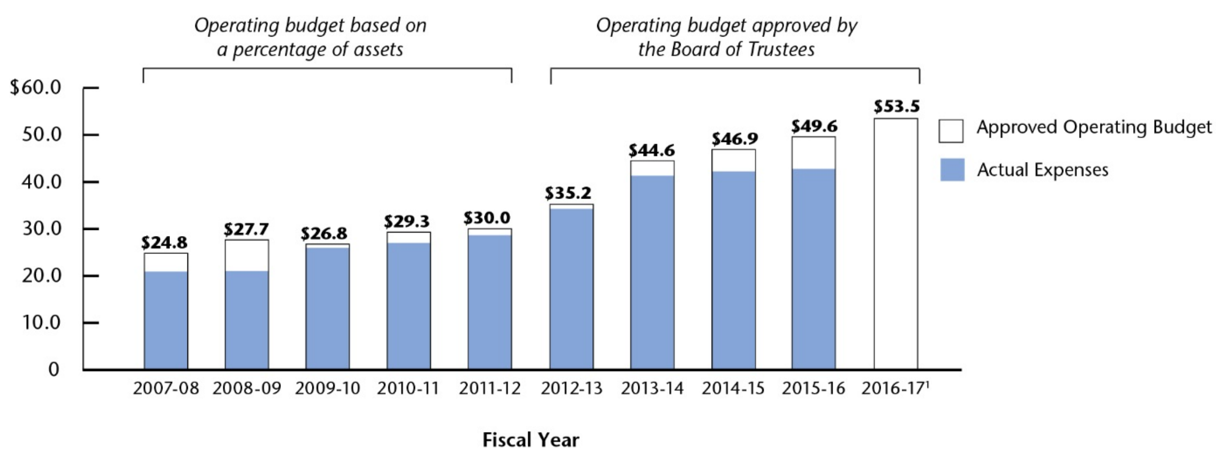
2011 Wisconsin Act 32 gave SWIB the authority to establish and monitor its own operating budget and to create and eliminate staff positions. Since it received this authority, SWIB's operating budgets, beginning in fiscal year (FY) 2012-13, have increased both due to increases in the number of staff positions SWIB has created and changes SWIB has made to its compensation plan.

SWIB's operating budget has increased by $23.5 million since FY 2011-12, the year before SWIB obtained additional budget authority.

The first year in which the Board of Trustees approved an operating budget under the new authority was FY 2012-13. As shown in Figure 9, since FY 2011-12, which was the year prior to SWIB receiving additional budget authority, SWIB's operating budget and actual expenses have increased each year. From FY 2011-12 through FY 2016-17, SWIB's operating budget has increased $23.5 million, or 78.3 percent. Actual expenses from FY 2011-12 through FY 2015-16 have increased by $14.1 million, or 49.1 percent and have been largely consistent since FY 2013-14. These increases were primarily used to fund increases in staff compensation because of additional staff positions.

Figure 9

SWIB Operating Budgets and Actual Expenses, by Fiscal Year
(in millions)

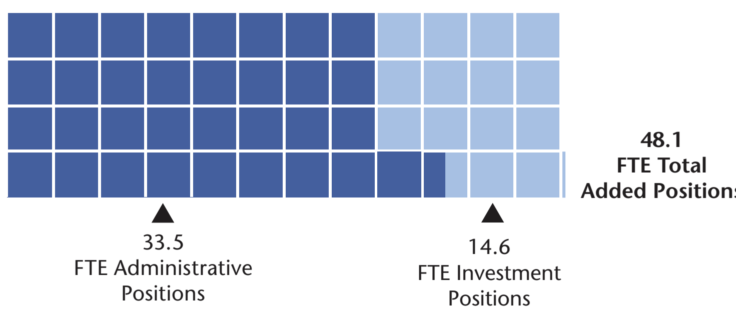


[1] Actual expenses information is unavailable because the fiscal year has not yet ended.

The number of FTE positions authorized by the Board of Trustees increased from 125.25 FTE positions in July 2011 to 173.35 FTE positions as of December 2015, or by 38.4 percent. According to SWIB, the majority of these 48.1 FTE positions were created to manage the additional workload associated with an increase in WRS assets managed internally, manage its new investment strategies, and support the ARIES implementation. As shown in Figure 10, of the 48.1 FTE positions added, 33.5 FTE positions were in administrative areas, and 14.6 FTE positions were directly related to investment activities.

Figure 10

Additional Authorized Positions[1]
2011–2015[2]



[1] Includes 8.25 project FTE positions.

[2] Additional authorized positions for 2011 only include those beginning in July 2011, which is after SWIB received additional authority to create positions.

SWIB authorized additional staff positions to increase internal investment of assets by 38.0 percent from 2011 to 2015.

Since 2006, SWIB has taken steps to increase its internal management of WRS assets. In July 2011, 52.7 percent of assets, or $43.4 billion, were managed internally. By December 2015, 65.1 percent of assets, or $59.9 billion, were managed internally. This is a 38.0 percent increase in internal investment management of assets. The additional 14.6 FTE investment positions authorized by the Board of Trustees since 2011 primarily supported the increase in volume and complexity of the internally managed assets. The majority of the additional 17.25 FTE administrative positions authorized by the Board of Trustees in 2011 and 2012 also supported the increase in volume and complexity of internally managed assets. These positions also include support in the areas of daily accounting tasks for investing activities, information technology, and legal review of new contracts and strategies. SWIB indicated that the additional 16.25 full-time and project administrative positions the Board authorized in 2014 and 2015 were primarily to support the ARIES project implementation.

Although SWIB's total investment expenses for the Core Fund were less than its peers' costs, SWIB's cost of internal management was found to be higher than its peer group by the most recent study of cost data benchmarked to its peers. For example, the study identified that SWIB paid more for internally managed active strategies than its peers. However, the cost to manage active strategies internally continues to be significantly lower than the cost to have similar active strategies managed externally. For example, in 2015, the cost of an active small cap public equity portfolio managed internally was $0.21 per $100 of assets managed while the cost of a similar externally managed portfolio was $0.72 per $100 of assets managed.

Compensation

SWIB is authorized by s. 25.16 (7), Wis. Stats., to compensate employees through salary and bonuses. With the exception of the internal audit director and internal audit staff, SWIB's executive director is authorized to set SWIB staff salaries. Bonuses are based on both quantitative and qualitative measures of performance and are intended to help attract and retain qualified staff.

In establishing its compensation amounts for staff, SWIB uses a compensation consultant to make comparisons to a peer group. The peer group includes banks, insurance companies, and in-house managed pension plans, excluding East and West Coast financial centers. In 2015, 42 of the 79 companies in the peer group were headquartered in the midwest, which includes Chicago and Minneapolis. The peer group does not include other public pension plans, and it is not limited to organizations of a similar size in terms of assets under management. Instead, SWIB views the peer group as reflective of the labor market in which it competes for staff.

The Board of Trustees' Compensation Committee annually reviews the peer group to ensure its continued appropriateness. The peer group was approved in August 2004 by the Board of Trustees and affirmed in November 2008 following a review of alternative peer group options. In addition, the peer group was reviewed by multiple compensation consultants in 2013 and 2014 and deemed to be the best overall fit for compensation purposes. However, based on a compensation consultant recommendation and beginning in 2015, the peer group for the executive director was expanded to include other public pension funds of similar size.

SWIB relies on prior-year peer group compensation data during its compensation budgeting and approval process. This is due to a time lag in how the compensation survey data is gathered and reported by SWIB's compensation consultant. However, the comparative peer group data is also considered when it becomes available.

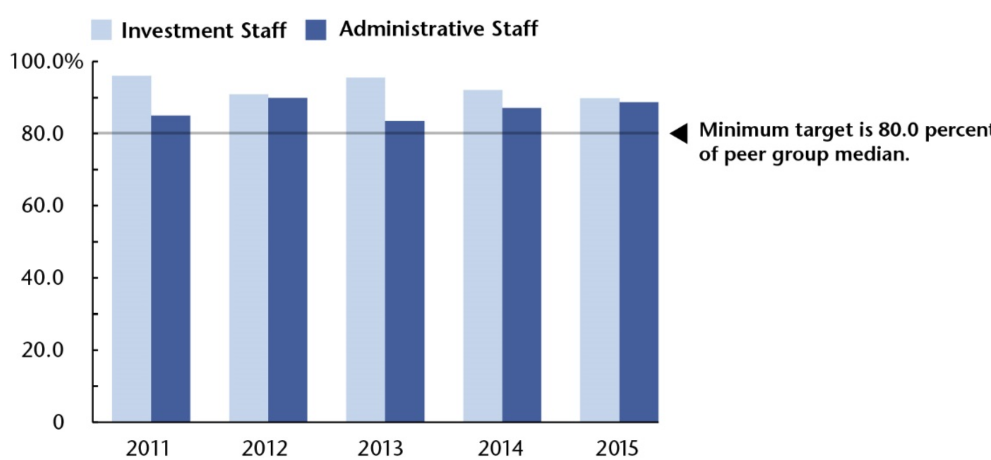
The Board of Trustees formally eliminated across-the-board salary increases in 2015.

SWIB staff currently receive salary increases through promotion, merit increases, or market adjustments. The Board of Trustees annually considers salary expenses through the annual budget approval, including whether to approve across-the-board salary increases, although no such increases have been awarded since 2009 for investment staff and since 2012 for administrative staff. In 2015, SWIB formally eliminated across-the-board adjustments and began providing individual market adjustments to ensure its pay is competitive. As a result, SWIB has increased salaries with the goal that each staff member's salary is at least 80 percent of SWIB's peer group's median salary established for the position. According to SWIB, the long-term goal is for staff salaries to approximate the median salaries of the peer group.

As shown in Figure 11, salaries for both investment and administrative staff exceeded 80 percent of the peer group median for 2014 and 2015. SWIB provided 74 merit increases in FY 2014-15 and 79 merit increases in FY 2015-16, totaling $177,300 and $134,500, respectively. Although investment staff salaries relative to salaries paid to its peers have declined since 2013, administrative staff salaries have improved steadily relative to the peer group.

Figure 11

SWIB Salaries Compared to Peer Group Median



The turnover rate of staff, after adjusting for retirements and other performance related departures, increased from 3.7 percent in 2011 to 4.2 percent in 2015. This increase in turnover was largely due to growth in the administrative staff turnover rate, which increased from 4.3 percent to 6.7 percent.

Bonuses

Statutes permit the Board to provide "bonus compensation" for SWIB employees. In 2011, the Board made significant changes to its bonus program, which SWIB refers to as incentive compensation. These changes were phased in over two years and were fully implemented when bonuses were paid in 2014 for 2013 performance. Under the current policy, to earn a bonus, investment staff are assigned a "maximum incentive opportunity," which varies by position and is based on both quantitative and qualitative measures of performance. Quantitative measures are based on the five-year and one-year net-of-expenses investment returns for those portfolios directly managed by individual staff, asset classes, and the Core Fund compared with benchmarks. Qualitative measures are not based on investment results, but rather on an individual staff member's contributions. The maximum incentive opportunity is calculated by averaging the peer group's top quartile total cash compensation from the previous three years and subtracting the current year peer group median for base pay.

Table 8 shows bonus amounts paid to investment and administrative staff from 2011 through 2015. Although the number of staff increased in 2014 and 2015, the total amount of bonuses have decreased since 2013 due to investment performance. Individual bonuses, which were awarded and paid, for investment staff who were employed at SWIB during the entire year ranged from $11,300 to $538,200 for 2014 performance and $12,000 to $468,300 for 2015 performance. Individual bonuses, which were awarded and paid, for administrative staff who were employed at SWIB during the entire year ranged from $1,500 to $153,700 for 2014 performance and from $1,100 to $117,900 for 2015 performance.

Table 8

Staff Bonuses, by Performance Year

		Staff Receiving Bonuses			
Performance Year[1]	Total Bonuses (in millions)	Investment Staff	Administrative Staff	Total	Percentage of Eligible Staff
2011	$ 4.3	64	63	127	99.2%
2012	8.0	64	75	139	98.6
2013	13.3	67	76	143	99.3
2014	12.2	70	72	142	98.6
2015	11.1	75	75	150	97.4

[1] Bonuses are paid to staff in the following calendar year.

Administrative staff are eligible to receive bonuses from a pool of up to 10.0 percent of their salaries based on qualitative measures and of up to 25.0 percent of their salaries based on the five-year and one-year performance of the Core Fund. However, if the Core Fund investment return on a net-of-expenses basis does not meet its benchmarks, no bonuses will be awarded to administrative staff based on that quantitative measure, although bonuses for the qualitative measure may still be available.

All investment staff may earn bonuses based on qualitative measures and the five-year and one-year investment returns of the Core Fund compared with its benchmarks.

All investment staff may earn bonuses based on qualitative measures and the five-year and one-year investment returns of the Core Fund compared with its benchmarks. As we discussed in report 14-9, the composition of the quantitative portion of an employee's bonus calculation varies by position and not all quantitative measures are used in the bonus calculation. Investment staff receive bonuses related to quantitative measures only if they meet or exceed the corresponding benchmarks on a net-of-expenses basis. As a result, bonuses related to quantitative measures can range from $0 up to the maximum incentive opportunity for each position. The maximum incentive opportunity for investment staff is established to approximate the peer group top-quartile performance rather than the peer median. As a result, if SWIB investment staff significantly exceed their investment benchmark, the associated maximum bonus will exceed the peer group median. The amount by which investment managers must exceed the investment benchmark to obtain higher bonuses varies by asset class and is established by a consultant and approved by the Board of Trustees' Compensation Committee.

As shown in Table 9, the available pool of bonuses, which is the sum of the maximum incentive opportunities for investment staff, has increased every year since 2011, yet bonuses earned have decreased each year since 2013. Of the available bonus pool of $16.2 million for 2015 performance, investment staff earned bonuses totaling $9.6 million, or 59.4 percent.

Table 9

Bonuses Earned for Investment Staff, by Performance Year

Performance Year[1]	Bonuses Available (in millions)	Bonuses Earned (in millions)	Percentage
2011	$ 7.0	$ 4.2	60.2%
2012	9.4	6.8	72.3
2013	14.6	11.6	79.5
2014	15.9	10.6	66.9
2015	16.2	9.6	59.4

[1] Bonuses are paid to staff in the following calendar year.

The $9.6 million in bonuses awarded in 2015 was lower than previous years due to the Core Fund and the major asset classes not exceeding their benchmarks as much as in previous years.

The amount of bonuses earned in 2015 was lower than in 2013 and 2014 for two primary reasons. First, the Core Fund did not meet its one-year benchmark. The second reason related to the five-year investment performance. For most investment staff, at least 85 percent of the bonuses are based on five-year investment performance on a net-of-expenses basis compared with benchmarks. Therefore, larger bonuses result from higher five-year investment returns for portfolios, asset classes, and the Core Fund compared to their benchmarks. As shown in Appendix 3, all asset classes exceeded their respective five-year benchmarks during 2015. However, the difference between the five-year investment returns and their benchmarks in 2015 was less than previous years for the Core Fund and for portfolios within larger asset classes, such as public equities and fixed income. For example, SWIB public equity managers exceeded their five-year benchmark by 0.9 percent in 2013 but only by 0.3 percent in 2015. Since these asset classes are managed by the majority of investment staff, the amount of bonuses earned decreased.

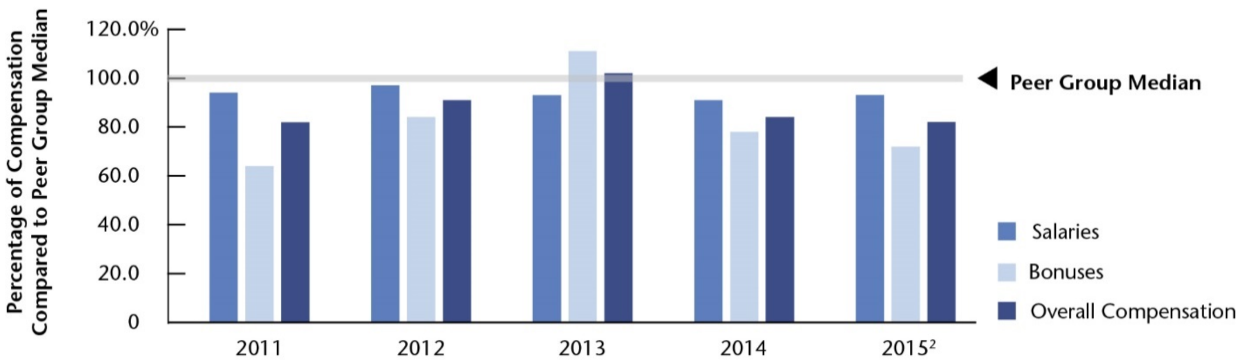
As we recommended in report 14-9, the Board of Trustees clarified its compensation objective in September 2014 by establishing a target for overall compensation for investment staff. The objective is to approximate 100 percent of the median compensation of its peer group, but actual total compensation levels can be above or below the median market levels based on performance. As noted, investment staff may earn up to 150 percent of the peer group median, and the target for administrative staff is the peer group median with the potential to earn up to 125 percent of the median for exceptional performance. In addition, staff salaries are to be within a competitive range of the median, which is defined in the compensation policy as 20 percent above or below the peer group median.

Due to lower investment performance, overall compensation was reduced to 84.0 percent of the peer group median in 2014 and 82.1 percent in 2015.

As shown in Figure 12, investment staff salaries approximated the peer group's median salary levels from 2011 through 2012, but bonuses paid to investment staff were less than the peer group median. Due to strong investment performance, investment staff received bonuses above the peer group median in 2013, which also resulted in overall compensation above the peer group median. In 2014 and 2015, overall compensation approximated 84.0 percent and 82.1 percent, respectively, of the peer group median.

Figure 12

SWIB Investment Staff Compensation Compared with Peer Group Median[1]



[1] Determined by SWIB's compensation consultant. Data includes only staff eligible for incentive compensation.

[2] 2014 peer group median compensation used for comparison to SWIB's 2015 compensation levels. The percentages relative to the peer group may be revised when 2015 compensation data become available.

Bonus Deferral Policy

When the Core Fund has a negative one-year investment return, a Board policy requires that bonuses be deferred two years or until the Core Fund generates a positive absolute one-year return, whichever is longer. Staff who leave SWIB employment before the end of the deferment period forfeit their bonus, unless their departure is due to retirement, disability, or death.

When the policy was created, SWIB staff indicated that similar policies within the industry do not defer each time there is a negative return but instead set a threshold on the extent to which a return is negative. As a result, SWIB established a process that permits the Board to waive the deferral, although no specific criteria were established for the deferral provision.

In 2015, the Core Fund had a one-year absolute return of -0.4 percent that triggered the deferral policy, which was subsequently waived by the Board.

Since 2009, the deferral provision has been invoked twice. First, in 2009, the Board deferred the 2008 bonuses due to a -26.2 percent absolute one-year return of the Core Fund. The 2008 bonuses were paid in 2011 after the two-year vesting period of the deferral and the Core Fund had a positive one-year return. Second, in 2015, the Core Fund had a one-year absolute return of -0.4 percent. In April 2016, the Board waived the deferral of the 2015 bonuses. According to SWIB staff, the Board's decision considered that the Core Fund's five-year return exceeded its benchmark and the one-year absolute return was not significantly negative.

Absent specific policy guidance, it is not clear what other factors may have been relevant for the Board of Trustees to consider when making the decision to waive the deferral of the 2015 bonuses. Further, the minutes of the Board meeting in which the decision to waive the deferral was made do not document the factors the Board of Trustees considered. SWIB staff indicated that the policy does not include guidance on when a waiver may be appropriate in order to provide the Board flexibility and discretion. However, the Board of Trustees could improve transparency and consistency in decisions over time by adding guidance language to the deferral policy. For example, it may be helpful to include factors such as the extent of the loss, performance relative to benchmarks, or economic considerations.

☑ Recommendation

We recommend the State of Wisconsin Investment Board work with the Board of Trustees to develop guidance language for the bonus deferral policy to consider when evaluating whether to waive a deferral, including factors such as specific investment returns relative to benchmarks, the effect of the past five years of investment returns on Wisconsin Retirement System contribution rates and annuity adjustments, and Wisconsin's economic condition.

■ ■ ■ ■

Wisconsin Venture Capital Investments ■

SWIB makes investments in Wisconsin companies as part of its overall investment activities. Although SWIB established a specific private equity portfolio in 2000 to focus on venture capital opportunities in Wisconsin, the majority of the portfolio's investments are not in Wisconsin. We analyzed performance of the Wisconsin private equity portfolio, reviewed SWIB's recent initiatives to increase investment in Wisconsin venture capital companies, and compared SWIB's venture capital investment strategy to other Wisconsin venture capital initiatives.

Investments in Wisconsin

SWIB invests in Wisconsin through investments in stock and bonds issued by publicly traded companies; private debt and private equity portfolios; the State Investment Fund, which purchases certificates of deposit (CDs) issued by Wisconsin banks and thrift institutions; and real estate investments. In its most recent report on its goals and strategies, SWIB reported that, as of June 2015, it had $809.4 million, or 0.8 percent of assets managed, invested in companies with headquarters or a significant presence in Wisconsin. Of this amount, 55.0 percent of such investments were within public equity and fixed income portfolios.

SWIB provides long-term, fixed-rate, and subordinated loans to companies headquartered, located, or intending to locate in Wisconsin through a dedicated private debt portfolio. SWIB also has a private equity portfolio that includes investments in early stage Wisconsin companies, which are referred to as venture capital investments. We focused our review on SWIB's venture capital investments in Wisconsin as part of this dedicated private equity portfolio and compared SWIB's investment strategy to other venture capital initiatives within the State. SWIB's venture capital investments accounted for approximately 5.0 percent of SWIB's investments in companies with headquarters or a significant presence in Wisconsin.

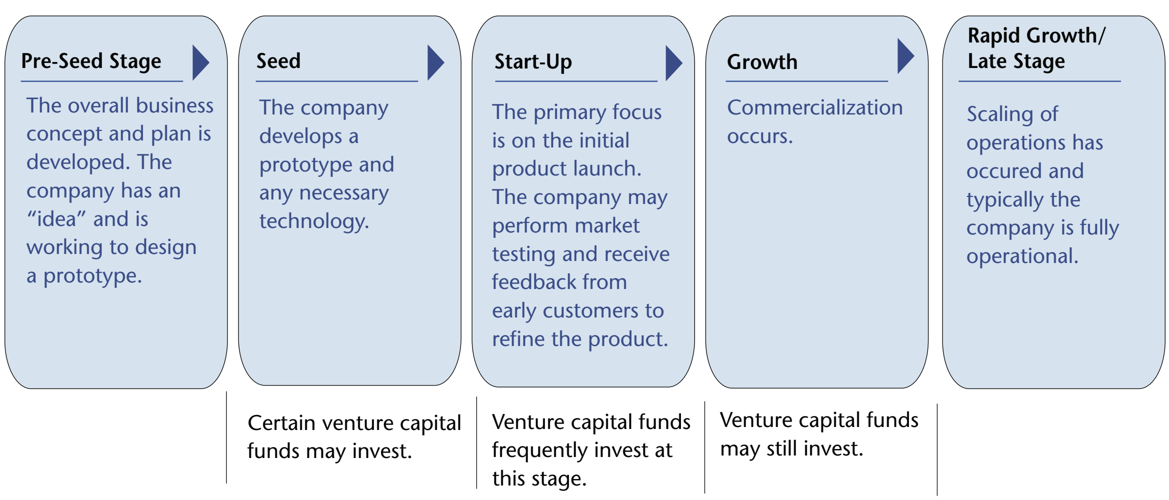
During the past five years, the Board of Trustees has increased funding for Wisconsin venture capital investments to take advantage of opportunities that exist within Wisconsin or the midwest. SWIB has also attempted to attract interest by national venture capital firms in new Wisconsin companies with the long-term goal of attracting entrepreneurs to establish more businesses in Wisconsin based on available capital.

Investing in Venture Capital

As shown in Figure 13, a company life cycle can generally be broken down into five stages. Venture capital investments are typically made in the middle stages of the company life cycle when the mix of investment risk and reward is appropriate for the fund's investment strategy. Many investors prefer to make venture capital investments through a fund structure that invests in a series of new companies because of the need for time-intensive research and monitoring of each company and to limit the risk that any single investment fails.

Figure 13

Company Life Cycle



During the pre-seed stage, a company is developing an overall business concept and plan. Such a company has an idea and is working to design a prototype. Companies in the seed stage develop prototypes and any necessary technology. Companies may spend time at this stage refining prototypes to ensure that the product appropriately meets the needs of consumers in the desired market. Certain venture capital funds that target seed stage companies may provide capital at this stage.

Companies in the start-up stage are focused on initial product launches. The company may perform market testing and receive feedback from early customers to refine its product. Companies in the start-up stage may begin to generate revenue, however they may not yet be profitable. Venture capital funds frequently provide capital to companies at this stage.

Companies in the last two stages of the life cycle are generally generating revenues, have positive cash flows, and are starting to realize profits through commercialization of products and scaling of operations. Beginning in the growth stage, the company's product is more widely available in the marketplace. Venture capital funds may still provide capital to companies in the growth stage. Finally, at the rapid growth or late stage, a company is typically fully operational. Companies at this stage have other financing options available, such as bank loans or initial sales of public stock.

SWIB's Wisconsin Private Equity Portfolio

SWIB's Wisconsin private equity portfolio focuses on venture capital investments in companies that are in the start-up stage and those located in Wisconsin or the midwest. In general, SWIB invests in existing venture capital funds that, in turn, invest in companies. The portfolio also works with venture capital fund managers to make direct investments in start-up companies.

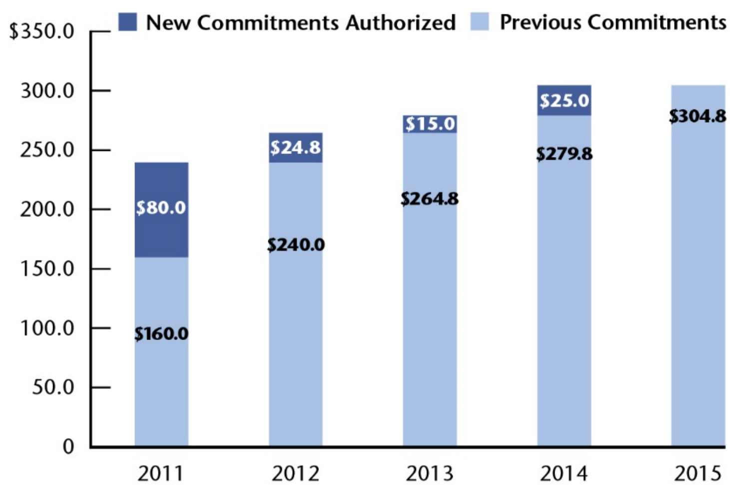
The portfolio was established in 2000 largely as an initiative of the Board of Trustees. SWIB staff indicated that the significant presence of research and development occurring in Wisconsin, combined with comparatively low levels of venture capital funding, present increasing opportunities for potentially profitable investments in underfunded market sectors within Wisconsin. However, SWIB staff indicated that a limited number of venture capital funds have a Wisconsin or midwest focus. This is one of the factors that limits Wisconsin investment opportunities for this portfolio.

The Wisconsin private equity portfolio exceeded all its benchmarks with the exception of the one-year investment benchmark, which was 18.3 percent, relative to the portfolio's investment return of 17.4 percent, as of December 2015. The portfolio's ten-year return as of December 2015 was 9.3 percent relative to a benchmark of 8.4 percent. SWIB attributed the strong performance to the maturing of several long-term investments.

As shown in Figure 14, SWIB increased its commitments to venture capital funds within the Wisconsin private equity portfolio from 2011 through 2014. SWIB's total commitments to venture capital funds in this portfolio increased from $240.0 million as of December 2011 to $304.8 million as of December 2015.

Figure 14

Venture Capital Fund Commitments in SWIB's Wisconsin Private Equity Portfolio
(in millions)



Nearly three-fourths of the $151.3 million invested in the Wisconsin private equity portfolio was not invested in Wisconsin companies.

As of December 2015, $132.7 million of SWIB's $304.8 million in venture capital fund commitments was invested. In addition, SWIB had $18.6 million in direct investments. Of the total portfolio investments of $151.3 million, including both fund and direct investments, $39.7 million was invested in Wisconsin companies. Nearly three-fourths of the Wisconsin private equity portfolio was not invested in Wisconsin companies. Although additional funding has been committed to the Wisconsin private equity portfolio in recent years, the relative percentage invested in Wisconsin companies has declined compared to our review of Wisconsin investments in report 14-9, when 30.7 percent of the portfolio's invested funds were invested in Wisconsin companies. SWIB attributed the lower percentage to the recent liquidation of Wisconsin companies within the portfolio.

As shown in Table 10, SWIB has made commitments to 10 venture capital funds as of December 2015. These funds focused largely on start-up or early-stage companies. Two of the funds established more recently were directly related to SWIB's goal of furthering venture capital investment opportunities in Wisconsin.

Table 10

Venture Capital Fund Commitments in the Wisconsin Private Equity Portfolio
December 2015
(in millions)

Venture Capital Fund (Year Established)	Commitment Amount
Mason Wells Biomedical Fund I (2000)	$ 20.0
Venture Investors Fund III (2000)	15.0
Baird Venture Partners Fund IB (2003)	25.0
Frazier Technology Venture Fund II (2004)	50.0
Venture Investors Fund IV (2006)	25.0
Baird Venture Partners Fund III (2008)	25.0
Northgate Capital Fund (2011)	80.0
Venture Investors Fund V (2012)	24.8
4490 Ventures Fund I (2014)	15.0
Baird Venture Partners Fund IV (2014)	25.0
Total Fund Commitments	**$304.8**

All of the investments made by 4490 Ventures Fund I are in companies headquartered in or with operations in Wisconsin as of December 2015.

In March 2013, SWIB established a partnership with the Wisconsin Alumni Research Foundation (WARF). As we described in report 14-9, the partnership established the 4490 Ventures Fund I, which focuses on investing in start-up software and information technology companies primarily located in Wisconsin, and the Board of Trustees made a commitment of $15.0 million, which represents half of the Fund's available funding. The Fund's goal is to invest a minimum of 85.0 percent of the available funds in Wisconsin companies. As of December 2015, the Fund had invested approximately 40.0 percent of the committed funds in five companies, all of which are headquartered in or have operations in Wisconsin. SWIB indicated that the partnership will develop an additional venture capital investment fund and this may include investors other than SWIB and WARF.

The largest commitment in the Wisconsin private equity portfolio has resulted in no investments in Wisconsin.

Although SWIB's partnership with WARF has successfully resulted in investment in Wisconsin companies, SWIB's largest fund commitment within the Wisconsin private equity portfolio has not yet resulted in any investments in Wisconsin. As we described in report 14-9, in 2011 SWIB committed $80.0 million to the California-based Northgate Capital, which is a venture capital "fund-of-funds." A fund-of-funds investment is structured so that an entity invests contributed capital in a series of other fund managers that make specific investments in venture capital. Northgate Capital was attractive to SWIB because it has access to quality venture capital fund managers on the East and West Coasts, and SWIB had anticipated that its investment would build relationships with these fund managers and also attract the interest of this entity or other funds in which it invests in available venture capital opportunities in Wisconsin. As of December 2015, SWIB had contributed $64.8 million, or 81.0 percent of its commitment, to the Northgate Capital Fund.

In addition to the commitments to venture capital funds described above, SWIB has provided additional funds to four venture capital funds for direct investments. Each venture capital fund may use these amounts at its discretion to increase an investment in a company that the fund already invests in. In addition, the Board of Trustees has authorized a $20.0 million pool of discretionary funding, to be used for direct investments in companies at staff's discretion that have been funded or will be funded by a current fund relationship.

Through December 2015, SWIB had direct investments in 16 companies, totaling $18.6 million. This includes $1.5 million in investments SWIB made during 2015. We found that 11 of these investments were focused on companies in the medical technology or biotechnology sectors and the remaining 5 investments were made in emerging technologies and service industries. Of the 16 companies, 11 are located in either the Madison or Milwaukee areas and 5 are located in Illinois or Massachusetts.

Comparison to Other State Venture Capital Initiatives

As noted, SWIB targets companies in the start-up phase in making venture capital investments. SWIB indicated that this typically increases the likelihood of higher returns and lower risk than investing in earlier stages. Other state initiatives, such as the Badger Fund of Funds (Badger) program and the Wisconsin Economic

Development Corporation (WEDC) initiatives, have adopted different strategies to promote investment in new Wisconsin companies. Table 11 illustrates the venture capital stages that SWIB, the Badger program, and WEDC target based on their different focuses.

Table 11

Other State Venture Capital Initiatives, by Company Life Cycle Stage

	SWIB Wisconsin Private Equity	Badger Program[1]	WEDC[2]
Pre-Seed			✓
Seed		✓	✓
Start-Up	✓		✓
Growth		✓	✓
Rapid Growth/Late Stage			✓

[1] Source: Badger Fund of Funds website.

[2] Source: Wisconsin Economic Development Corporation website.

2013 Wisconsin Act 41 created the Badger program to increase capital available to new Wisconsin companies. The State committed $25.0 million in funds to the Badger program, which is administered by the Department of Administration. According to information publicly available, the Badger program has also raised more than $5.0 million in private capital. SWIB has no funds committed to the Badger program, and its involvement has been limited to assisting with the general partner selection and providing recommendations as the program was established in 2014 and 2015.

The Badger program's investment strategy is to invest in Wisconsin venture capital funds. Typically regional, these funds will in turn invest in Wisconsin-based companies that are primarily in the seed stage, which is an earlier stage than SWIB targets for its Wisconsin private equity portfolio. Based on publicly available information, the Badger program plans to create six to ten venture capital funds. At the time of our fieldwork, two regional funds, one in the La Crosse area and a second in northeastern Wisconsin, have been established. Both funds must raise a minimum of $8.0 million in private capital. The Badger program has committed to make a matching investment of 40.0 percent of capital the funds raise.

WEDC's focus is to promote economic development through a variety of grant, loan, and tax credit programs. WEDC has several programs to provide assistance to new companies, including those at all stages of the venture capital life cycle. For example, WEDC provides grants to companies in the pre-seed and seed stage, tax credits for companies in the seed and start-up stages, and loans for companies in later stages.

Since SWIB is focused on providing prudent, cost-effective investment returns, and WEDC's focus is on economic development, SWIB and WEDC are not necessarily focused on the same companies. However, we note that WEDC has provided assistance to Wisconsin venture capital companies in which SWIB has also invested. Although detailed company information was not available for specific investments made by SWIB's fund managers, we did identify that WEDC provided assistance to 10 of the 11 Wisconsin companies in which SWIB has made a direct investment. In addition, if new Wisconsin companies receive support in early stages of development, SWIB staff indicated that this may increase opportunities for SWIB to invest in such companies as they stabilize and meet SWIB's investment criteria.

■ ■ ■ ■

Board Oversight ▪

SWIB's nine-member Board of Trustees has a fiduciary duty to administer the assets of each trust fund solely for the purpose of each fund at a reasonable cost and to manage investments with care, skill, and prudence. Given the increased budget and staffing authority granted to the Board in recent years, we assessed SWIB's committee structure and compared it to governance structures in place at other large public pension plans. Overall, we found that the Board has a similar structure as other large public pension plans, yet we noted that some public pension plans have dedicated finance and investment committees. We recommend that SWIB work with the Board of Trustees to increase reporting on investment expenses and assess the oversight provided through its existing committee structure or committee charters.

Board Responsibilities and Authority

Although the Board's fiduciary responsibilities have remained largely unchanged, its authority has expanded in recent years, increasing the importance of the Board's oversight. First, the Board has the responsibility to establish risk parameters, asset allocation, permissible asset classes, investment guidelines, and performance benchmarks. SWIB's authority to invest the Core Fund in diverse investment types, as long as they meet the Board's fiduciary responsibilities, was expanded by 2007 Wisconsin Act 212. As noted, SWIB has made significant changes to the Core Fund asset allocation in recent years, and continued changes are anticipated as SWIB fully implements the plan first adopted in 2010.

Second, the Board is also responsible for providing operating resources. 2011 Wisconsin Act 32 granted SWIB the authority to establish its operating budget and manage positions. As noted, the Board has since approved increases in operating budgets and authorized additional positions. In addition, as investments have increased in complexity, overall costs of management have also increased.

Board Meetings and Committee Structure

The Board met on 10 occasions in 2015 to receive updates from staff and consultants to fulfill its fiduciary responsibilities.

To fulfill its fiduciary responsibilities of oversight and monitoring, the Board primarily relies on updates received during periodic meetings with staff and consultants. In 2015, the Board met on 10 occasions to receive investment and operations updates from SWIB staff and consultants. As a result of the Board's most recent annual self-evaluation, which is facilitated by its governance consultant, the number of Board meetings was reduced to eight in 2016, and the number of meetings is expected to be further reduced to six in 2017. Although the number of meetings is decreasing, SWIB anticipates the length of each meeting will increase to ensure sufficient time for agenda items.

The Board has four committees: Audit; Benchmark; Compensation; and Strategic Planning and Corporate Governance. Each committee is governed by a Board-approved charter and meets throughout the year to ensure that it is carrying out its function and responsibilities. Each committee annually reviews its committee charter. The Board has also contracted with various consultants to assist committees in fulfilling the Board's function. All committees report to the overall Board on committee activities and on any action items that need the Board's approval. For example, the Compensation Committee reviews recommendations from a compensation consultant to consider changes to compensation plans and approve overall compensation amounts. Following a committee vote on these items, recommendations are made to the full Board for its approval.

Timing of committee meetings corresponds with the timing of Board meetings. However, not every committee meets at every Board meeting. As shown in Table 12, the number of times each committee met in 2015 ranged from one to eight.

Table 12

Board Committees

Committee	Function[1]	2015 Meetings
Audit	Facilitate communication between the Board, the internal auditor, the independent external auditor, and management, as their duties relate to financial accounting, reporting, internal controls, and applicable compliance matters.	4
Benchmark	Review portfolio benchmarks and recommend benchmarks to the Board for adoption.	1
Compensation	Develop compensation goals and a compensation philosophy. Review and recommend changes to compensation. Review incentive compensation awards for senior staff and recommend adjustments as appropriate to the full Board.	4
Strategic Planning and Corporate Governance	Review current programs and conduct long-range planning in areas of asset allocation, liability trends, risk control, organizational structure, staffing levels, succession planning, budgeting, corporate governance and proxy voting. Conduct due diligence on external investment consultants.	8

[1] Based on SWIB's committee charters.

Comparison to Other Public Pension Plans

A recent study commissioned by the Pennsylvania State Employees' Retirement System reviewed 16 boards governing large public pension plans, and benchmarked committee structure and meeting schedules. The 16 boards may differ from SWIB's Board in their organization, such as overseeing both a pension plan's administrative and investment responsibilities. As such, some committees for these Boards may not be relevant to SWIB.

Other large public pension plans' oversight boards had, on average, six or seven committees.

Overall, the study found that, on average, the public pension plan boards had six or seven committees. The study also identified several committees that are typically part of a public pension plan committee structure that SWIB does not currently have a dedicated committee and that are relevant to SWIB's fiduciary responsibilities. For example, eight of the boards had a committee that focused on finance and budget issues. In addition, seven of the boards had a committee that focused on shareholder responsibility and corporate governance issues. Finally, 14 of the 16 public pension plan boards had an investment committee.

Unlike most of the public pension plans in the study, SWIB's Board does not have a dedicated investment committee where trustees serve as members. Instead, the Board has delegated certain investment oversight and policy decisions to a SWIB staff Investment Committee, which operates under a Board approved charter. SWIB's senior investment staff participate in the committee, and it is chaired by the chief investment officer. The committee provides oversight of SWIB's investments by analyzing risk and return and ensuring that SWIB's policies and procedures are consistent with industry and prudent investment standards. For certain policy items, the Investment Committee is responsible for presenting the Board with a proposal and recommendation for Board approval, such as proposed changes to investment guidelines for internal portfolios. In addition, annually, the Investment Committee, with the assistance of consultants, reviews the asset allocation plan and provides the plan to the Board for approval.

Board members generally do not attend Investment Committee meetings. However, to fulfill its fiduciary responsibilities of oversight and monitoring, the Board receives the committee agendas prior to each meeting and all committee minutes. In addition, the Board receives frequent and regular investment-related updates from staff and consultants and trustees attend an annual two-day workshop that focuses on investment topics. Frequently, topics covered by the Investment Committee are also discussed with the Board. Because of SWIB's steps to inform the Board of investment-related items and because the Board's approval is required for certain policy items, SWIB's current Investment Committee structure appears to meet the purpose that other public pension plans meet through a dedicated board committee.

Strategic Planning and Corporate Governance Committee

Because the Strategic Planning and Corporate Governance Committee has a wide range of responsibilities, it met the most frequently of SWIB's committees.

Although the Board does not have an investment committee for which trustees serve as members, its Strategic Planning and Corporate Governance Committee reviews and monitors SWIB's strategic plan, which includes investment and organizational items, and meets with external investment consultants to discuss the performance of certain asset classes. The committee also reviews operating budgets, requests for changes in position authority, the total cost of management plan, succession planning, and corporate governance issues. As a result of the wide range of issues covered by this committee, the Strategic Planning and Corporate Governance Committee met most frequently of all the committees in 2015 as was shown in Table 12. Since at least 2005, the committee's charter has included similar responsibilities. In 2014, the committee began receiving quarterly updates on the ARIES system implementation. More recently, the number of committee agenda items in addition to ARIES has also increased.

The Strategic Planning and Corporate Governance Committee approves the internal operating budget, which represented 13.4 percent of the estimated total cost of management for FY 2016-17.

The Strategic Planning and Corporate Governance committee reviews SWIB's plan for the total cost of management in June of each year for the upcoming fiscal year. The plan includes an internal operating budget, information on the projected use and anticipated costs of external managers, and projected changes in the number of authorized positions. In addition, it includes projected expense information for the current fiscal year. The committee reviews the proposed internal operating budget and changes in authorized positions, which is then presented to the Board of Trustees for approval at its June meeting. Although a projected total cost of management is presented, the committee is only responsible for taking action on the internal operating budget, which in June 2016 represented 13.4 percent of the estimated total cost of management for FY 2016-17.

No board committee charter includes an explicit oversight responsibility to monitor actual investment expenses.

To assess the general cost effectiveness of investment management, SWIB and its consultants report to the Board of Trustees on benchmarked internal and external cost information at the December board meeting. Other than updates on the ARIES project costs, neither the Board of Trustees nor its committees require or receive budget updates throughout the year or perform a final budget-to-actual review with total expense information. Quarterly cost reports required by s. 25.17 (13m), Wis. Stats., are also provided to the Board, yet the reports similarly do not compare the amounts to the total estimated cost of management. We note that none of the board committee charters include an explicit oversight responsibility to monitor actual investment expenses against the estimated total cost of management.

The Board of Trustees may wish to consider engaging in reviews of the budget and total cost of management more frequently. For example, a board committee could require quarterly internal operating budget updates, including a review of the final internal operating budget and actual expense amounts after year end. Because external investment expenses, which are charged directly to earnings, are not always within the control of SWIB, explicit board approval of a budget may not be needed. However, a periodic review of additional information on these expenses throughout the year may assist the Board in monitoring the total cost of management. Given the increased authority granted by the Legislature and Governor, SWIB should work with the Board to assess whether the current committee structure or committee charters could be changed to improve its oversight of expenses.

☑ Recommendation

We recommend that the State of Wisconsin Investment Board work with the Board of Trustees to:

- *present internal operating budget-to-actual reporting to the Board quarterly;*
- *increase the content and frequency of information provided to the Board on the total cost of management, including those expenses charged directly to earnings; and*
- *include in the Board's next self-evaluation an assessment of whether its existing committee structure or committee charters should be revised.*

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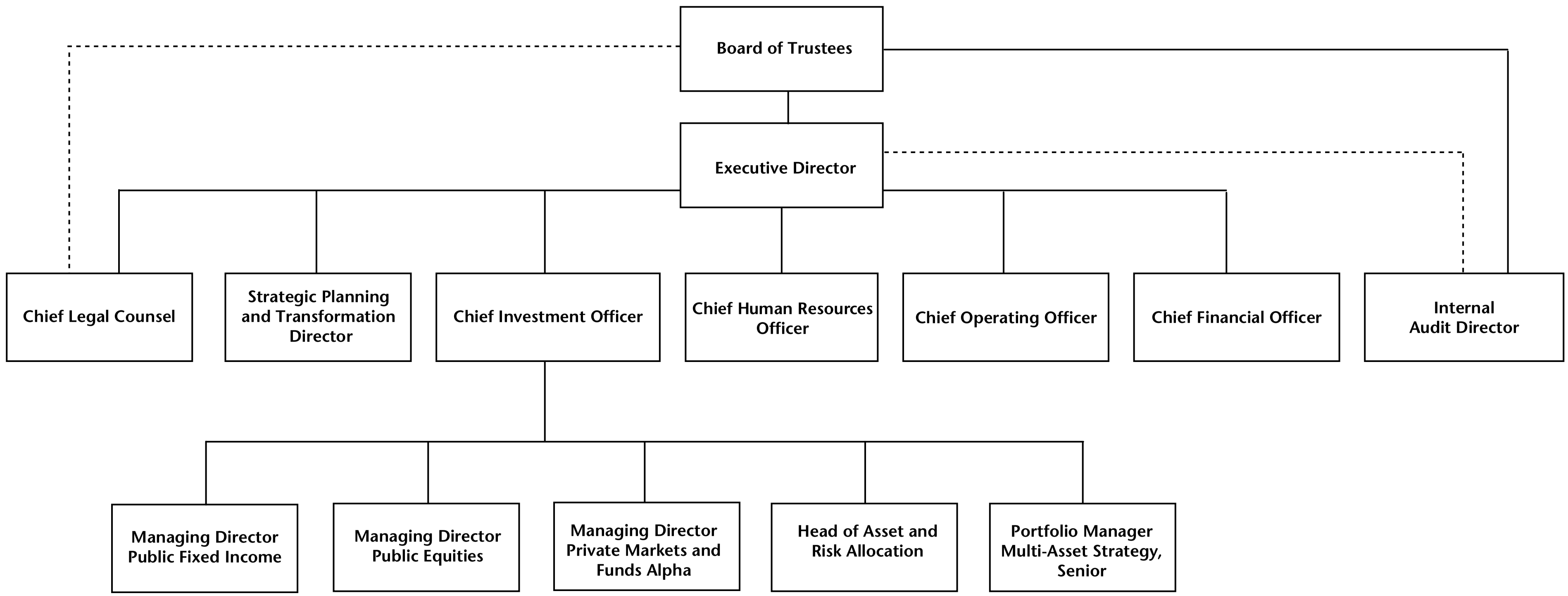
Appendices ■

Appendix 1

State of Wisconsin Investment Board Organization Chart

As of December 2015



Appendix 2

Wisconsin Retirement System Performance [1, 2]

Year	Core Fund Investment Benchmark	Core Fund Investment Return	Variable Fund Investment Benchmark	Variable Fund Investment Return
1982	27.7%	**27.3%**	n/a[3]	22.2%
1983	13.3	**12.5**	23.1%	24.7
1984	12.3	12.8	6.3	**5.8**
1985	23.8	27.5	30.9	32.7
1986	14.0	14.5	17.1	**11.5**
1987	3.0	**2.2**	3.0	**(1.1)**
1988	13.6	14.4	18.4	21.7
1989	19.9	**19.2**	27.0	**22.6**
1990	(1.7)	(1.5)	(8.6)	**(11.3)**
1991	22.8	**20.5**	31.9	**27.1**
1992	5.9	9.7	7.1	10.7
1993	12.2	15.0	14.7	16.5
1994	(0.1)	**(0.6)**	1.7	**0.8**
1995	24.4	**23.1**	29.2	**25.6**
1996	12.7	14.4	18.6	19.8
1997	17.4	**17.2**	22.8	**21.6**
1998	15.5	**14.6**	17.4	17.5
1999	13.9	15.7	23.2	27.8
2000	(1.4)	(0.8)	(8.8)	(7.2)
2001	(4.5)	(2.3)	(12.9)	(8.3)
2002	(8.2)	**(8.8)**	(19.9)	**(21.9)**
2003	24.0	24.2	32.1	32.7
2004	12.1	12.8	13.4	**12.7**
2005	8.0	8.6	8.0	8.3
2006	14.6	15.8	17.6	17.6
2007	9.6	**8.7**	7.3	**5.6**
2008	(24.8)	**(26.2)**	(39.0)	(39.0)
2009	19.9	22.4	32.0	33.7

Year	Core Fund		Variable Fund	
	Investment Benchmark	Investment Return	Investment Benchmark	Investment Return
2010	12.2%	12.4%	15.3%	15.6%
2011	0.9	1.4	(3.6)	(3.0)
2012	12.8	13.7	16.7	16.9
2013	12.9	13.6	28.0	29.0
2014	5.6	5.7	7.5	**7.3**
2015	(0.3)	**(0.4)**	(1.3)	(1.2)

[1] The Wisconsin Retirement System was established in its current form, effective January 1, 1982. Returns that did not meet benchmarks are in **bold.**

[2] Returns are gross of management fees with the exception of a few portfolios.

[3] Benchmark returns are unavailable for the first quarter of 1982.

Appendix 3

Performance of Individual Asset Classes[1, 2]

Period Ending in December 2015

Asset Class	Investment Benchmark	Average Annual Investment Return
Public Equities		
One-Year	(2.2)%	(2.2)%
Three-Year	8.6	8.7
Five-Year	7.1	7.4
Ten-Year	5.2	5.4
Fixed Income		
One-Year	(0.9)%	**(1.0)%**
Three-Year	0.4	0.5
Five-Year	2.8	3.1
Ten-Year	4.5	5.0
Inflation Protection		
One-Year	(6.6)%	(6.6)%
Three-Year	(4.5)	(4.5)
Five-Year	1.2	1.5
Ten-Year	3.2	3.8
Real Estate		
One-Year	14.9%	16.1%
Three-Year	13.4	15.7
Five-Year	13.8	16.7
Ten-Year	8.7	**7.4**
Private Equity		
One-Year	8.0%	10.4%
Three-Year	12.0	14.3
Five-Year	12.1	13.8
Ten-Year	9.6	11.5
Multi-Asset		
One-Year	(0.4)%	**(1.2)%**
Three-Year	4.6	**3.8**
Five-Year	4.9	5.7
Ten-Year	4.8	6.1

Period Ending in December 2015

Asset Class	Investment Benchmark	Average Annual Investment Return
Hedge Funds and Other Strategies		
One-Year	3.1%	**2.3%**
Three-Year	4.9	6.1
Since Inception (1/31/11)	4.4	5.2

[1] Returns that did not meet benchmarks are in **bold.**

[2] Returns are gross of management fees with the exception of Private Equity and Hedge Funds.

Period Ending in December 2014

Asset Class	Investment Benchmark	Average Annual Investment Return
Public Equities		
One-Year	4.7%	**4.1%**
Three-Year	15.2	15.5
Five-Year	10.5	10.9
Ten-Year	6.4	6.6
Fixed Income		
One-Year	4.4	4.6
Three-Year	2.4	3.1
Five-Year	4.4	4.9
Ten-Year	4.7	5.2
Inflation Protection		
One-Year	2.2	**2.1**
Three-Year	0.0	0.0
Five-Year	3.8	4.5
Ten-Year	4.2	4.8
Real Estate		
One-Year	12.4	14.0
Three-Year	12.3	15.3
Five-Year	12.1	13.2
Ten-Year	9.1	**8.5**
Private Equity		
One-Year	13.5	15.5
Three-Year	14.2	15.6
Five-Year	13.3	15.0
Ten-Year	11.8	14.6
Multi-Asset		
One-Year	3.3	7.0
Three-Year	8.8	**8.3**
Five-Year	7.5	8.4
Ten-Year	5.7	7.1

[1] Returns that did not meet benchmarks are in **bold.**

[2] Returns are gross of management fees with the exception of Private Equity and Hedge Funds.

Appendix 4

Wisconsin Retirement System Effective Rates and Annuity Adjustments[1]

Year	Core Fund			Variable Fund		
	Investment Earnings	Effective Rate	Annuity Adjustment [2]	Investment Earnings	Effective Rate	Annuity Adjustment
2001	(2.3)%	8.4%	3.3%	(8.3)%	(9.0)%	(14.0)%
2002	(8.8)	5.0	0.0	(21.9)	(23.0)	(27.0)
2003	24.2	7.4	1.4	32.7	34.0	25.0
2004	12.8	8.5	2.6	12.7	12.0	7.0
2005	8.6	6.5	0.8	8.3	9.0	3.0
2006	15.8	9.8	3.0	17.6	18.0	10.0
2007	8.7	13.1	6.6	5.6	6.0	0.0
2008	(26.2)	3.3	(2.1)	(39.0)	(40.0)	(42.0)
2009	22.4	4.2	(1.3)	33.7	33.0	22.0
2010	12.3	4.8	(1.2)	15.6	16.0	11.0
2011	1.4	1.5	(7.0)	(3.0)	(3.0)	(7.0)
2012	13.7	2.2	(9.6)	16.9	17.0	9.0
2013	13.6	10.9	4.7	29.0	31.0	25.0
2014	5.7	8.7	2.9	7.3	7.0	2.0
2015	(0.4)	6.4	0.5	(1.2)	0.0	(5.0)
10-year Compounded Average	5.8	6.4	(0.5)	6.1	6.3	0.6
15-year Compounded Average	6.0	6.7	0.2	5.1	5.1	(0.6)

[1] Annuity adjustments take effect with the April annuities that are paid on May 1 based on the previous year's performance. Adjustments only occur if the amount changes the Core Fund annuity at least 0.5 percent or the Variable Fund annuity at least 2.0 percent.

Annuity adjustments are generally 4.0 to 6.0 percent less than effective rate adjustments to account for the 5.0 percent investment return assumption factored into the annuities and other actuarial adjustments. Larger adjustments have been necessary in recent years because of a number of factors, including the large number of retirees who have reached their minimum Core Fund annuity balance, carry over and timing adjustments, and other actuarial factors.

[2] Maximum adjustment that may be applied to a retired participant's benefit payment. Adjustments that would reduce a benefit payment are limited to increases a retired participant received in prior years because post-retirement adjustments may not result in benefit payments that are lower than the base benefit payment at the time of retirement. Consequently, not all retired participants experience the full amount of reductions determined for years with negative adjustments.

Response ■

SWIB STATE OF WISCONSIN INVESTMENT BOARD

December 16, 2016

Mr. Joe Chrisman
State Auditor
Legislative Audit Bureau
22 East Mifflin, Suite 500
Madison, WI 53703

Dear Mr. Chrisman,

Thank you for the opportunity to review and comment on the management audit of the State of Wisconsin Investment Board (SWIB). In a time when public pension funds across the country are struggling with issues related to underfunding, SWIB has helped to fuel one of the few fully-funded pension funds in the U.S., protecting and growing the assets that more than 600,000 members of the WRS count on for a more secure retirement. One reason the WRS is fully funded is the investment earnings that SWIB has generated, which have accounted for 72.6 percent of the total income of the WRS over the last 10 years.

As your report notes, in 2015 we saw a continuation of the sometimes challenging and turbulent financial markets that investors have been experiencing since the Great Recession in 2008. Because of the volatility and lessons learned from that downturn, SWIB has developed a disciplined, prudent and innovative investment strategy designed to protect our members' pensions from another major reduction, keep contributions stable and generate reasonable returns. While our performance trailed our peers during the specific periods of time covered by the audit, we remain confident that this strategy is sound for the WRS. Our pension plan is unique because the WRS relies on investment returns to protect retirees from inflation, since it has no cost of living adjustment. WRS annuitants have benefitted from the gains that SWIB generates. Over the 33-year lifetime of the WRS the Core Fund's annual increase in annuities has averaged 4 percent, and slightly higher for the Variable Fund, while inflation has been 2.7 percent over the same period. However, when investment markets turn down, as occurred in 2008, WRS annuitants can see a decrease in their monthly annuities. Therefore, we have adopted an investment strategy that is very different from our peers. Our innovative approach was recently recognized by Chief Investment Officer magazine as being the best among defined benefit pension funds with over $100 billion in assets.

The Core and Variable funds beat their three-, five-, and ten-year benchmarks as of December 31, 2015. Returns have been strong through September 2016 with the Core Fund beating all of its benchmarks as of that date and returning 8.2 percent year-to-date and 8.8 percent over the past five years net of fees.

We are proud of SWIB's long-term performance. For example, SWIB beat its three-, five-, and ten-year benchmarks for the Core Fund and the Variable Fund as of December 31, 2015 and the Core Fund's 20-year annualized return was 7.2 percent net of fees, which matches the WRS assumed rate of return. Both funds' performance for the five years ended December 31, 2015 provided $1.2 billion in additional value to the WRS funds in excess of market returns after accounting for all costs.

Returns referenced in the audit report are at one specific point in time and our ranking among our peers will always vary over time. For example, through September 2016, the Core Fund is once again beating all of its benchmarks and was returning 8.2 percent year-to-date and 8.8 percent over the past five years net of fees. We believe our investment strategy and asset allocation that focuses on avoiding large drawdowns best protects our members and most suitably meets the long-term needs of the WRS.

Investment Strategy

Our investment strategy is disciplined, balanced, and focused on long-term results. We invest first to protect the pension plan from the impact of another major market downturn and then to earn reasonable returns.

In addition to being one of three public pension plans in the country that is funded at or above 100 percent, the WRS also has one of the lowest assumed rates in the country at 7.2 percent. The WRS has the highest funding ratio of the peers in LAB's peer group and only one of the plans has a lower assumed rate. The next closest plan was 86.5 percent funded and half were less than 80 percent funded. As such, we do not have to take unnecessary investment risks to reach for returns. As mentioned above, that is why we invest, first to protect the pension plan from the impact of another major market downturn and then to earn reasonable returns.

Achieving a return above the fund's benchmark is an important aspect of the SWIB investment strategy. Skilled investment managers make decisions to select investments and allocate funds that improve the portfolio returns above the benchmark, thereby increasing plan dividends and reducing required plan contributions.

Each pension system works to meet its own unique set of objectives through a diversified asset allocation. SWIB's allocation is designed to weather a variety of economic environments to ensure the WRS is able to meet its obligations today and in the future. SWIB has purposefully built in more downside protection. This means our returns may trail some of our peers when the markets are performing well but also will not dip as low when markets are negative. We regularly evaluate both risk and return because we expect to be well compensated for each unit of risk that is taken. A recent report from one of our consultants, Cliffwater, analyzed the risk/return ratio for 65 pension plans over the 10-year period ended June 30, 2015, and ranked the WRS near the top third of the group on a risk-adjusted basis. Eight of the nine plans in LAB's peer group were included in this analysis and only two ranked higher than SWIB during this period.

The report discusses SWIB's use of leverage. Unlike some investors, SWIB uses leverage to add protection to the WRS, as well as to generate returns. Our use of leverage lowers the market risk of the WRS investments when compared to more traditional strategies.

In an effort to address funding concerns and reach higher returns, some peers have greater allocations to U.S. stocks and private equity, which performed well during the recent bull market but are often riskier assets to hold. The 2014-15 period, and more precisely the entire 2011-15 period, can overall be characterized by an unusual combination of strong equity returns and low volatility, which limited the benefits of SWIB's leverage strategy to this point. SWIB does not believe that environment is sustainable, and remains focused on a strategy to protect plan assets from poorly-performing and volatile market environments over the long-term. We are confident that SWIB has implemented a strategy which takes less risk but will get the WRS to its ultimate goal of 7.2 percent over the long-term, just as we have done in the past.

Costs

SWIB saved $344 million over the past ten years when compared to its peers, which is more than our total cost in 2015. SWIB's 2015 costs were also the second lowest in its peer group of 15 large pension funds.

As important as it is to have a strong investment strategy, it is equally important to optimize the costs incurred in managing the WRS. Every dollar we are able to save in costs is just as good as a dollar we earn through investment returns.

The largest drivers of costs are tied to the mix of assets under management, growth in assets and proportion of external management used. Some asset classes, such as private equity and real estate are higher cost than stocks and bonds, but are used in the asset allocation mix for diversification or because of their strong earning potential. For example, our net private equity returns for the 10 years ending September 30, 2016, were 10.1 percent, while the S&P 500 returned 7.2 percent during this same period.

A key reason for our five-year increase in expenses has been the growth of our assets under management. As the size of the WRS increases, more dollars need to be put to work and the cost to invest them increases—hence, our expenditures go up as noted in your report. In fact, the more than 19 percent growth in assets under management from 2011 to 2015 was the single largest factor in the 25 percent increase in total costs during the same period. If you remove this factor from the equation, then our costs only increased by 5 percent, from 30 cents per $100 to 31.5 cents per $100 under management. In this business, those are enviable charges and have been duly noted by the cost benchmarking consultant, CEM, who serves as an advisor to the Trustees. In fact, CEM's 2015 report shows that SWIB's total costs were the second lowest in its peer group of 15 large pension funds, which range from $44 billion to $288 billion in size.

One of the ways we continue to be a low cost provider among our peers, is that we have transitioned more assets to internal management. In 2007, we managed 21 percent of our assets in house. Today, we use our own staff to invest 65 percent of those assets. We can invest those assets for 1/5 of what we would pay external managers to do the same work. In order to do this, additional resources and staff are required to manage assets and risk as well as to operationally support the investment strategies. That is another reason why our internal expenditures have grown in recent years. However, SWIB's internal positions are less expensive than the equivalent external manager costs, and SWIB's cost flexibility allows optimization of internal resources when it makes sense to save money on management fees. The savings from our strategy to increase internal management are extensive and speak for themselves. Although SWIB's Board approved an internal operating budget increase from fiscal year 2013-14 to fiscal year 2015-16, actual expenses remained relatively flat and total expenses decreased from 2013 to 2015. In addition, unspent budget funding is returned back to the WRS.

We have been prudent in our usage and request for positions. For example, because of the major changes and temporary additional costs taking place at SWIB as the result of the ARIES implementation, staff did not request and the Board did not approve any new positions as part of the 2016-17 operating budget.

SWIB's cost effectiveness strategy is working. Because of our greater reliance on internal management, we are saving $75 million per year compared to what our peers would pay to manage the same assets. On a cumulative basis, over the past ten years, SWIB has saved $344 million compared to its peers in large part because of the transition away from external management for public markets. That is more than we spent in all of 2015.

It is our duty to be good stewards of the trust funds we manage. We appreciate the flexibility that the Legislature provided to our Trustees, to set our operating budget and approve staff increases, and believe our efforts demonstrate our commitment to the prudent spending of the funds entrusted to us.

Staffing & Compensation

SWIB's incentive compensation plan is a true pay for performance plan and is working as designed based on the high caliber professionals that SWIB needs to attract and retain.

A key component in meeting our investment objectives is to attract and retain highly qualified professionals. SWIB competes for staff with investment firms in the private sector throughout the country. SWIB's Trustees have implemented a compensation plan that establishes total compensation at the median pay of a defined peer group, excluding highly paid organizations on the East and West coasts. Our compensation is conservative relative to our peer group. At the end of 2015, investment management base pay was below our peer group median by 10 percent and investment services base pay was below the median by 11 percent.

In 2014, SWIB adjusted the approach to base pay to reflect the pay for performance aspect of our compensation plan and mirror how peer organizations handle base pay increases. We also eliminated "across the board" compensation increases, which did not align with our pay for performance philosophy. Although we increased our focus on merit increases, which are based on an employee's job performance, many staff did not receive a base pay increase and this approach did not increase our budget.

As for our incentive compensation plan, it is designed to have fluctuations in payment amounts based on actual performance compared to our benchmarks. The plan is heavily weighted towards the five-year returns, similar to the five-year smoothing period used for Core Fund participants. Because incentive compensation payments are tied to investment performance, fluctuations in payment amounts in recent years indicate that the plan is working exactly as intended as a true pay for performance plan.

The incentive compensation plan is designed to attract and retain highly qualified professionals to manage the trust funds. By almost any measure, this plan is achieving its desired results. In four years immediately following our increase in incentive compensation maximums, we experienced 0 percent investment management turnover of employees leaving for another job and an average annual turnover of only 2.7 percent for investment services staff leaving for another job. This is contrasted with annual turnover of almost 9 percent for each group before our incentive compensation structure was put in place a decade ago, and 4 percent for each group shortly before the increase in incentive compensation maximums. SWIB has experienced increased retirements in the last few years and some non-compensation related turnover but there is no doubt that our compensation plan has assisted in ensuring our turnover rate has been low. SWIB and our members benefit from the fact that the average investment experience for the investment management group, including junior level employees, is 16.8 years, which is a strong indication of the highly qualified staff we employ.

Hedge Funds

Hedge funds feature a wide range of different investment strategies and goals for returns. This means investors can use hedge funds for different objectives. SWIB uses hedge funds to provide important exposure for SWIB's overall active management strategy. SWIB's approach is different than many of our peers who have recently decreased or eliminated their hedge fund allocation. Many other pensions were seeking returns similar to the stock market. As a result, many were also paying hedge fund managers for passive stock market performance in addition to active returns.

SWIB is managing a portfolio of hedge funds that have low correlation with how the stock market performs. If the stock market goes down, then our hedge fund investments may generate stronger returns.

By designing a hedge fund portfolio to be focused on producing active returns above passive stock and bond market performance, as compared to our peers, we are better able to align fees, particularly performance fees, and costs around results that are based on actively managed funds.

A third-party firm used to benchmark costs shows we pay at or below peer median for management fees. In addition, we structure fees to reduce fixed costs and to align with realized performance from managers.

Private Equity Fees
Because of our emphasis on controlling costs, we monitor all management fees and performance fees (carried interest) paid to our external managers. Our private equity consultant, StepStone, assists with this activity, including the review of each fund's audited financial statements, and reports to us the management fees and carried interest paid by SWIB each year.

We support transparent reporting of all fees and expenses. We are a member of the Institutional Limited Partners Association (ILPA), whose membership includes over 300 organizations (pension funds, sovereign wealth funds, endowments, foundations and high net worth individuals). We have endorsed the ILPA Fee Reporting Template to encourage more robust and consistent standards for fee, expense and carried interest reporting and compliance disclosures.

There has been much discussion in the industry lately about how carried interest fees should be reported. Unfortunately, authoritative accounting guidance is absent on the treatment of carried interest, leaving accounting treatment up to the preparer of the financial statements. We do not report carried interest amounts separately as an expense. However, the carried interest amounts are included in the net investment return numbers for our private equity, venture capital and real estate portfolios, which to date, has been consistent with industry practices. As noted earlier, these net returns have been strong and have outperformed the S&P 500 over the past 10 years ending September 30, 2016.

Total private equity management fees for 2015 were $92.0 million, which represented 0.7 percent of committed capital and 1.5 percent of net asset value. The total carried interest paid to our private equity managers from our private equity investments was $124.3 million in 2015, compared with the net gain of $790.4 million from these investments in 2015. Returns from this asset class have helped strengthen our overall performance.

Wisconsin Investments
We have a long history as active local investors seeking investments in Wisconsin and believe there are good opportunities in the state. However, we must act prudently and not force capital into an investment where the risk outweighs the compensation. Our work to grow Wisconsin investments has been gradual and we are mindful to not overextend ourselves by taking excessive risk. We are opportunistic investors and capitalize on market trends at the appropriate time. As markets change, so does our level of investment activity.

Wisconsin investments have declined as a percentage of total commitments due to older funds maturing and liquidating. This trend should reverse in 2017 as we are currently considering two local funds and two funds in which Wisconsin is a target market for early stage companies.

We agree the 2011 commitment to Northgate Capital Management has not led to any commitments to Wisconsin funds; it was not part of the original investment thesis. This strategy has met its objectives to make our members money and to provide access to build and grow our relationships with other venture funds for future Wisconsin investments. We have leveraged the fund relationships that Northgate has provided us access to and they have become a resource of capital and knowledge for our local start-up community. A few of these funds we have met through our partnership have connected with Wisconsin companies leading to favorable outcomes. This relationship has benefited the Wisconsin start-up community.

Governance

The Board of Trustees places a priority on governance and examines itself each year through a self-evaluation facilitated by its governance consultant.

SWIB, and its Board of Trustees, prides itself on its robust governance. Other public pension plans regularly contact SWIB to learn more about how our governance structure works and to model themselves after us. This position is one that has evolved over years of work with the Trustees and a governance consultant, Aon Hewitt, who has helped put our governance system in place.

SWIB's Trustees view governance as a continuous process and essential to exercise their fiduciary duty. Each committee of the Board annually reviews its charter and the Board regularly updates and reviews its governance manual. The Board also examines itself each year through a self-evaluation facilitated by its governance consultant and makes recommendations for improvements. These are just a few of the activities that the Trustees undertake to support their efforts to maintain and implement the highest governance standards.

As the report notes, the Trustees have assigned the Strategic Planning and Corporate Governance (SPCG) Committee with a wide array of oversight and governance activities and the SPCG Committee met more often in 2015 than other committees. The breadth of the SPCG Charter has reduced the need for additional standing committees.

The Board and the SPCG Committee currently review actual, budgeted and forecasted expenses through the June budgeting process. This includes a review of all spending for internal and external management, and any request for changes in positions and the internal operating budget. The Board reviews the cost effectiveness of SWIB's spending relative to peers using a third party benchmarking consultant. As noted, SWIB's 2015 costs were the second lowest in its peer group of 15 large pension funds.

We appreciate the work of the audit team to clearly present these complex topics and we agree with the report's constructive recommendations.

Sincerely,

Michael Williamson
Executive Director