



MIPC 2018 Case

VanPERS Pension Fund

Disclosure

This case was written by the students of FINE 435—Pension Investing (Winter 2018) under the direction of Professor Sebastien Betermier at the Desautels Faculty of Management of McGill University. Authors of the case include David Balass, Christopher Balian, Alexandre Cassagne, Robert Chen, Tatjana Dimock, Sophie Forest, Jacob Horne, Thomas Lussier-Arpin, Isaac Maciera-Kaufmann, Omar Mohsen, Quentin Spehner, Shane Terrillon, Jake Titleman, Wai Tong Wong, and Philo Yacoub. The authors would like to thank Clifton Isings, Bernard Morency, and Christophe Truong for their insightful comments throughout the design and writing of the case.

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Case Introduction

Preface

This year's edition of the McGill International Portfolio Challenge centers on the case of a severely underfunded state defined-benefit (DB) pension plan, which delivers pension benefits to public-sector employees in a fictional U.S. state, Vandalia. The purpose of the case is to propose an asset allocation strategy for this pension fund. While all numbers contained herein are fictional, they are meant to reflect the overall situation of state pension funds in the United States.

The State of Vandalia

Vandalia is a Midwestern state in the United States of America with a population of 4 million¹. In 2017, Vandalia boasted a GDP of \$150 billion and exported approximately \$28 billion worth of goods outside its state borders. Vandalia's economy is heavily dependent on aerospace and automobile manufacturers, whose in-state production—which totaled \$15 billion last year—account for over half of the state's annual exports. This Rust Belt state has struggled in recent years as a result of the decline in the American steel and mining industries. As a result, an increasing number of young Vandalians are leaving the state in search of high-paying jobs in America's more popular business hubs. To make matters worse, as the majority of America's Baby Boomers enter retirement, Vandalia's population has been aging over the last decade, so the number of retirees in the state has been increasing. These two factors coupled together have led to some severe consequences for Vandalia and its state-run pension fund.

Introduction to VanPERS

The Vandalia Public Employees Retirement System—commonly referred to as VanPERS—is a state DB pension plan offered to the public servants of Vandalia. VanPERS covers all teachers and local government employees. The pension fund currently manages \$29 billion in assets. However, the present value of its liabilities is equal to \$37 billion, rendering the pension plan only 78.4% funded. This shortfall of \$8 billion has become the subject of attention and even controversy in Vandalia. The state's public employees are concerned that the benefits promised to them will not be delivered in full, while the state government and local municipalities are realizing that the cash injections required to keep the pension fund afloat are becoming too expensive. The conflicting interests of VanPERS' stakeholders along with the underperformance of the fund's investment strategy has the pension plan at a crossroads.

¹ Vandalia was a former British colony in the late 1700s located in what are now parts of Kentucky, Pennsylvania, and West Virginia. If any case participants wish to conduct further analysis, they are welcome to do so but should adhere to the boundaries of Vandalia.

MIPC 2018 Mandate

VanPERS has made some significant changes to its Board of Directors, which is responsible for overseeing the fund's investment and strategic decision-making process. Most recently, Olivia Adams, a CFA charterholder and seasoned professional in the pension field, was elected to be Chairwoman of the Board. As Chairwoman, Olivia is responsible for maintaining the overall health of the pension fund and ensuring that the public servants of Vandalia receive adequate retirement benefits—a daunting task considering VanPERS' severe underfunding.

In her new role as Chairwoman of the Board, Olivia has decided to bring in a group of external consultants to tackle the issues afflicting VanPERS and attempt to solve the underfunding situation of the pension fund. Your team will assume the role of these talented consultants to design a new asset allocation for Vandalia's DB Pension Fund, which is to be implemented immediately. The Chairwoman is expecting a comprehensive investment proposal at next month's Board Meeting. Detailed instructions and guidelines for the report are provided in a separate PDF file.

Olivia Adams' Letter

In my role as Chairwoman of the VanPERS Board of Directors, it is clear that one of the most challenging tasks is balancing the interests of the various stakeholders of the pension fund. I have included below a description of all relevant stakeholders and their interests. I also provided a set of specific considerations that are pertinent to the design of VanPERS' asset allocation.

The Unions:

The unions represent the interests of all the public servants in Vandalia. If the unions are not satisfied with the way VanPERS is managed, they have the power to initiate a strike, which would give them leverage over other stakeholders. The main concern of the unions is to ensure that the pension benefits of its current workers are never cut, and that public employees receive what they were promised upon retirement. Improving the funded status of the pension plan is therefore of utmost importance to the unions. However, since VanPERS is a government-backed pension fund, the unions believe that a cut to employees' pension benefits is unlikely. For this reason, the unions have not taken issue with an aggressive asset mix in the past.

Municipalities:

The municipalities of Vandalia must regularly contribute capital to VanPERS to help meet the fund's pension obligations. However, these required cash contributions have been gradually increasing as VanPERS' underfunding becomes more severe, causing great financial distress to some cities and even bringing others to the brink of bankruptcy. Municipalities are particularly sensitive to changes in the fund's asset allocation since their required contributions are directly tied to the expected return on the fund's assets. More specifically, the regulation in Vandalia is such that de-risking initiatives—which reduce the fund's expected return—directly lead to additional mandatory contributions from municipalities. Therefore, municipalities have generally met such initiatives with opposition.²

Vandalian Government:

To maintain the approval of its voters, the Vandalian Government adheres to its political agenda which may not always be compatible with the interests of other stakeholders. In the past, the state's government has been particularly resistant to raising additional taxes for the purpose of restoring health to the pension fund, and to slashing retirement benefits, as neither a tax increase nor a cut to benefits would bode well with its voters.

² The link between municipality contributions and VanPERS' expected return on assets is discussed in detail in the "Going Concern" section of the case.

Active Members:

The active members of VanPERS work in the current period in return for both immediate salary and deferred compensation in the form of a pension. Active members care about the long-term health of the pension plan because they want to ensure their benefits will be paid out to them when they retire. Thus, it is important that the pension fund performs relatively well and continues to operate for the foreseeable future (going concern), so that their benefits remain available to them when they reach retirement.

Retired Members:

Retired members, compared to active members, care more about the short-term restoration of the health of the plan, as their benefits are currently being paid out. The incentives of retired members are therefore more myopic in nature and may lack a longer-term perspective. These retirees would prefer a more conservative asset allocation because they do not want to risk a major short-term loss for the fund, which might result in a cut to their benefits.

Pensioners and Cities

VanPERS' Pensioners

The total number of members in the VanPERS plan is 170,000. Of these, 65% are active members (i.e. currently employed), while the remaining 35% are retired members. Active members contribute a portion of their salaries to the VanPERS fund every year, while retired members collect an annual pension from VanPERS.

VanPERS is responsible for delivering pension benefits to two categories of pensioners in the state of Vandalia: public school teachers who comprise 55% of total members, and public agency members (e.g. firemen, law enforcement) who comprise 45%.

Figure 1: Pensioner Breakdown

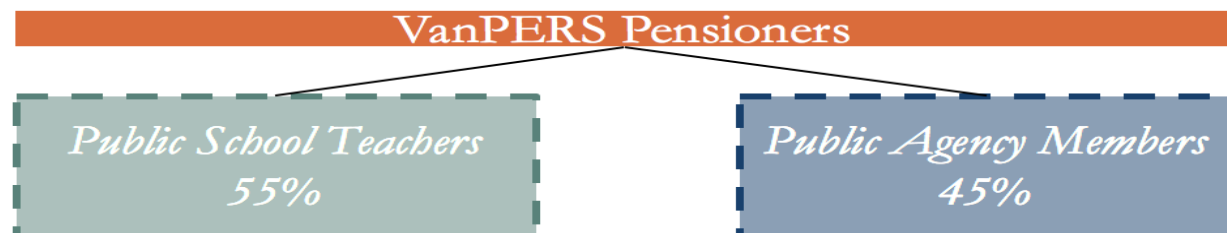


Figure 2 below shows the age distribution of all VanPERS members (active and retired). This distribution is standard and common for state pension funds in the U.S.

Figure 2: Age Distribution of VanPERS Members

Age Cohort	% of Total Members
15-24	0%
25-29	1.04%
30-34	5.46%
35-39	8.34%
40-44	11.45%
45-49	17.17%
50-54	14.04%
55-59	7.50%
60+	35%
Total	100%

Critical Issues Facing Vandalian Cities

The VanPERS plan is sponsored by Vandalian municipalities, which employ the public school teachers and public agency members. Currently, most cities are running on tight budgets and some of them are even at risk of bankruptcy. The financial distress of Vandalian cities has much to do with the severe underfunding of VanPERS, which has forced an increase in mandatory city contributions to the fund. What is more, most Vandalian cities expect their spending on public employee pensions to climb significantly over the next decade, restricting their ability to fund basic public services. The dire state of many cities in Vandalia can be attributed to the following factors:

1. **Rising life expectancy:** Since VanPERS' inception, the life expectancy of its members has been rising steadily. Retired members of the pension fund are entitled to receive benefits for as long as they live after retirement. Therefore, if members are living longer, VanPERS' liabilities increase as it must pay out more benefits.
2. **Generous pension promises:** Cities in Vandalia have made generous pension promises to their public employees, which are becoming increasingly difficult to sustain for the fund. One of the reasons why cities promise such generous pensions is to make up for the less competitive salaries of public sector employees as compared to the private sector.
3. **Difficulty of raising taxes to fund city contributions:** In theory, the government of Vandalia can increase state taxes in order to help cities meet their mandatory annual contributions to VanPERS. However, the proposition of raising taxes for this purpose has been met with disapproval from taxpayers, making it difficult to accomplish.
4. **Regulation ties city contributions to VanPERS' asset allocation:** Any changes to VanPERS' asset allocation directly affects the amount of city contributions to the fund. In particular, de-risking initiatives taken on by VanPERS increase the mandatory annual contributions that cities must make to the fund.³

³ Again, the link between city contributions and VanPERS' asset allocation is discussed in greater detail in the "Going Concern" section of the case.

Assets and Liabilities

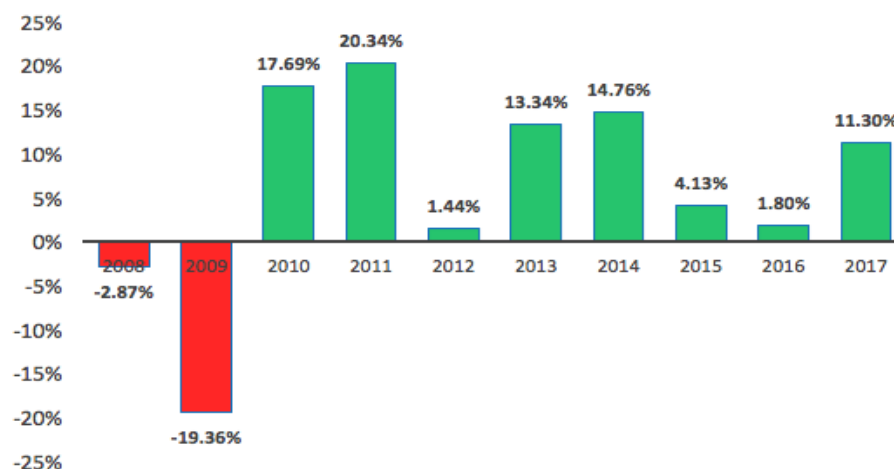
Asset Allocation & Historical Performance

VanPERS uses five strategic asset groups (public equity, fixed income, private equity, real estate, and hedge funds) as part of its long-term asset mix. The fund's performance over the last several years has been rather volatile, in part because of the high allocation to equities. Figure 3 below shows a breakdown of VanPERS' current asset allocation, and Figure 4 outlines the fund's performance since 2008.

Figure 3: Asset Allocation

Asset Class	Allocation (\$)	Allocation (%)
Public Equity	15.08B	52%
Fixed Income	5.51B	19%
Real Estate	3.19B	11%
Private Equity	2.32B	8%
Hedge Funds	1.74B	6%
Cash & Equivalents	1.16B	4%
Totals	29B	100%

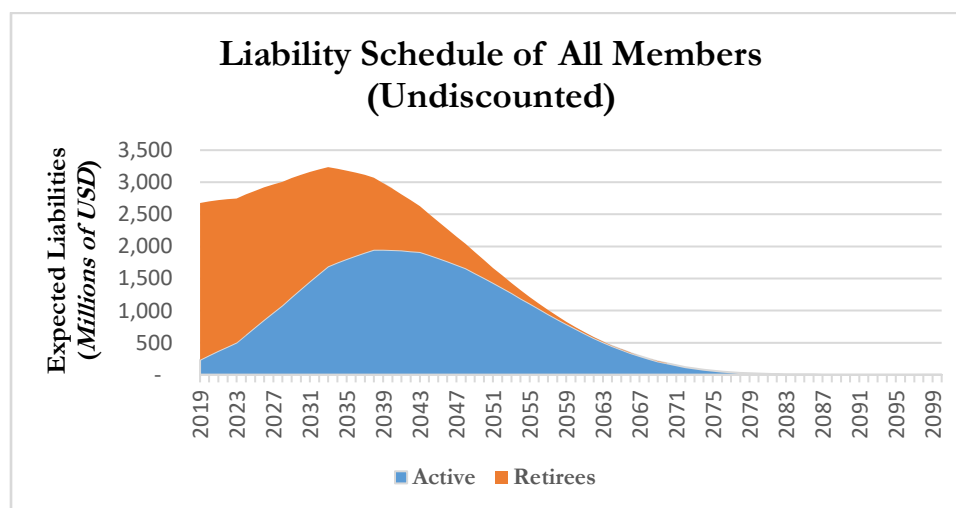
Figure 4: Historical Performance



VanPERS' Undiscounted Liability Schedule

Figure 5 below shows the undiscounted liability schedule of active and retired members of VanPERS.⁴ Notably, the liabilities shown below are only *accrued liabilities*. That is, they do not take into account the liabilities associated with future years of service.

Figure 5: Undiscounted Liability Schedule



To estimate the undiscounted liabilities shown in the above graph, the following assumptions are made by actuaries:

- The salaries of active members grow at a nominal rate of 2% per year until retirement;
- Annual pension payments are equal to 3% of members' final year's salary (referred to as the "Benefit Factor") multiplied by the number of years in service;
- All members retire at age 60—no resignations, terminations, or withdrawal from the plan;
- There is no inflation adjustment to members' annual pension payments.
- The average member has a lifespan of 85 years.

Under these assumptions, the pension payments are calculated using what is called the *projected unit* method. More specifically, the formula for calculating the annual pension payment owed to a given employee is as follows:

$$\text{Annual Pension} = (\text{years of service}) \times (3\%) \times (\text{Final salary})$$

⁴ The attached excel spreadsheet contains all relevant information on VanPERS' undiscounted liabilities.

Example 1. Consider an *active member*, Charles Smith, aged 55, with 5 more years of service remaining in his career, who has worked for the state of Vandalia for 10 years, and currently has a salary of \$45,000. The projected annual pension payment owed to this active member upon retirement is:

$$10 \text{ years} \times 3\% \times (\$45,000 \times 1.02^5) = \$14,905.09 \text{ for approximately 25 years}$$

Example 2. Consider a *retired member*, Linda Davidson, aged 65, who contributed 25 years of service to the state of Vandalia, with a final year salary of \$60,000. Here, the annual pension payment owed to this retired member is:

$$25 \text{ years} \times 3\% \times \$60,000 = \$45,000 \text{ for approximately 20 years}$$

VanPERS' Discounted Liabilities

Examples 1 and 2 above demonstrate how VanPERS' undiscounted liabilities are calculated. The present value of these liabilities can then be estimated by using annuity formulas as shown in the following examples.⁵

Example 3. Consider Charles Smith, the 55-year-old active member from *Example 1* above. The present value of Smith's pension can be estimated by using the deferred annuity formula:

$$PV = \left[\frac{\text{Pension Payment}}{\text{Discount Rate}} \left(1 - \left(\frac{1}{1 + \text{Discount Rate}} \right)^{25} \right) \right] * \frac{1}{(1 + \text{Discount Rate})^5}$$

Example 4. Consider Linda Davidson, the 65-year-old retiree from *Example 2* above. The present value of Davidson's remaining pension can be estimated by using the annuity formula:

$$PV = \left[\frac{\text{Pension Payment}}{\text{Discount Rate}} \left(1 - \left(\frac{1}{1 + \text{Discount Rate}} \right)^{20} \right) \right]$$

The present value of VanPERS' total liabilities is simply the sum of the present value of liabilities owed to each individual member.

One critical parameter in the calculation of discounted liabilities is the discount rate. A low discount rate leads to a high PV of liabilities and, conversely, a higher discount rate leads to a lower PV of liabilities. In the case of VanPERS, the appropriate discount rate is determined according to a specific regulation in the U.S. called Going Concern, which is discussed in detail in the following section.

⁵ In reality, the calculation of the liabilities is based on the projected benefits obligation method (PBO), which is slightly more complex.

Going Concern

Going Concern Regulation

In Vandalia, the regulation for valuing the liabilities of VanPERS is referred to as Going Concern, which rests on the assumption that the pension plan is going to continue operating indefinitely.

Under Going Concern, VanPERS is required by law to use the expected rate of return on its assets as the discount rate when calculating the present value of its liabilities. This regulation runs counter to conventional finance theory, which would dictate that liabilities are to be discounted at a rate that is reflective of their riskiness. However, going concern is the rule of law in Vandalia (as well as in most states located in the U.S.), and the rationale behind it is as follows: if the present value of the liabilities, discounted at the expected rate of return, is contributed to the pension fund, and then those contributions grow at this expected rate, then the fund will have precisely the right amount of capital to meet its pension obligations as they come due.

Calculating Discount Rate Under Going Concern

The formula for the discount rate under the going concern method is simply the weighted average of the expected return of each asset class in the fund, as shown below. Forecasts for the expected returns of the different asset classes are determined by actuaries.

Discount Rate Formula under Going Concern:

$$E r = w_a \times e(r)_a + w_b \times e(r)_b + \dots w_n \times e(r)_n$$

Actuarial Forecasts for Expected Return:

Asset Class	Expected Return	Portfolio Weights
Public Equity	7.54%	52%
Fixed Income	3.95%	19%
Real Estate	8.45%	11%
Private Equity	8.90%	8%
Hedge Funds	10.30%	6%
Cash & Equivalents	1.80%	4%
Totals	7.00%	100%

Applying the discount rate formula under going concern, we arrive at a discount rate of 7% with VanPERS' current asset allocation.

Impact of Going Concern on Valuation of Liabilities and Funded Status

Applying a discount rate of 7% to the annuity formulas on p.12, we obtain a present value of total liabilities of approximately \$37 billion:

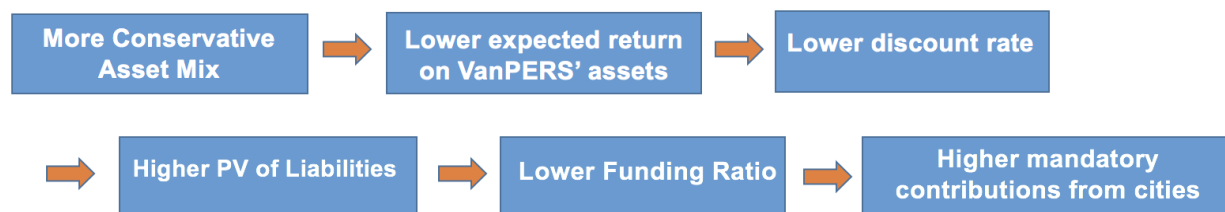
$$PV(\text{Undiscounted Pension Liabilities}) @ 7\% = \$37 \text{ billion}$$

According to this valuation, VanPERS faces a shortfall of approximately \$8 billion since the market value of the fund's assets only amounts to \$29 billion. In other words, VanPERS is only 78.4% funded.

Link Between Asset Allocation, Funded Status, and City Contributions

The Going Concern regulation creates an intricate relationship between the asset allocation of the fund, its funding ratio, and the required contributions from the cities of Vandalia. This relationship is illustrated in Figure 6 below.

Figure 6: Visual Representation of Link



As demonstrated above, the asset allocation of VanPERS has a profound effect on its funding status and the financial situation of Vandalian cities. In essence, the relationship is as follows: a lower expected return on assets yields a higher present value of liabilities, thereby decreasing the funding ratio of the pension plan. This, in turn, impacts the required contributions to VanPERS from the cities of Vandalia, since a lower funding ratio will demand higher contributions from cities. What this means is that a more conservative asset mix will lead to higher required contributions from cities. Given the current state of financial distress of some Vandalian cities, higher contributions may push them to the brink of bankruptcy. In the next section of the case, we provide a detailed example of this relationship for a representative Vandalian city.

One consequence of the going concern regulation is that it incentivizes pension plans to invest in riskier assets (with higher expected returns) as a way to report lower liabilities and improved funding ratios.⁶

⁶ See Andonov, A., Bauer R., Cremers, K.J. (2014). "Pension Fund Asset Allocation and Liability Discount Rates," *Review of Financial Studies*, Vol 30:8, pp. 2555-2595.

Shortfall Contingency Plan

When VanPERS' funding ratio is below 100% (as it is now), the pension fund experiences a shortfall, which means that it has insufficient capital to pay off its pension liabilities. A shortfall is caused by demographic changes, changes in actuarial assumptions, or when VanPERS is not performing as expected (i.e. below its target discount rate). The shortfall means that one or more Vandalian cities have liabilities that exceed their proportional share of VanPERS' assets.

In the case of a shortfall, cities must take one of the following two actions:

- A. **Pay up a set of “special contributions” to the fund.** A city with liabilities that exceed its proportional share of VanPERS' assets can opt to pay a set of special contributions to the fund to make up for the shortfall. Once the shortfall occurs, VanPERS does not require cities to pay an immediate lump sum payment. Rather, the fund allows cities to amortize the shortfall over a period of 20 years.
- B. **Terminate VanPERS membership and purchase an annuity.** Alternatively, the city can exit the fund, thereby terminating its VanPERS membership. Here, the city would purchase an annuity from an insurance provider at a hefty price to ensure that a certain fraction of pension benefits are paid to their employees each year. In this case, benefits to pensioners of that particular city would be slashed. Even though the pensions of public employees are protected constitutionally, benefits must be reduced if the city simply does not have sufficient cash to pay them in full. The example in the next section illustrates the process of termination.

Example: Going Concern's Impact on City Contributions

In this section, we provide an integrative example to examine a representative member city of VanPERS and the impact of the going concern regulation on this city's annual contributions to the plan. For simplicity, this member city will be hereafter referred to as VanCity. The following calculations are back-of-the-envelope and only intended for illustrative purposes. This example comes attached with an excel spreadsheet containing all relevant formulas and calculations.

VanCity Characteristics

VanCity is a member city of VanPERS located in Vandalia with a population of 200,000 and annual revenue of \$600M. The city's proportional share of VanPERS' assets is \$1.45B and the expected return on assets is 7%. The city is directly responsible for 60% of the employees' pension costs (the other 40% are paid by the employees themselves). There are 5,500 active members and 3,000 retired members. The average characteristics of active and retired public employees in VanCity are displayed in the table below:

	Active	Retired
Age	46	70
Salary / Pension (\$)	63,000	37,000
Life expectancy	85	85
Number of years of service	13	

VanCity's Normal Contribution to VanPERS

VanCity's annual normal contribution to VanPERS represents the present value of the active members' annual pension earned for one year of service that is owed by the city.⁷ Based on the characteristics of the average active member and the actuarial assumptions on p. 11, the average forecasted annual pension for one year of service is:

$$\text{Projected Salary at Retirement} * \text{Benefit Factor} = 63,000(1.02)^{14} * 3\% = \$2,494$$

The present value of this pension can be calculated using the deferred annuity formula:

$$PV = \frac{2,494}{0.07} * \left(1 - \frac{1}{1.07^{25}}\right) * \left(\frac{1}{1.07^{14}}\right) = \$11,271$$

⁷ In reality the calculation of the normal contribution is based on the entry-age-normal-cost method (EAN), which is slightly more complex but yields similar estimates.

The city's normal contribution corresponds to 60% of this present value, multiplied by the number of active members:

$$\text{Normal Contribution} = 11,271 * 60\% * 5,500 \approx \$37M$$

Intuitively, this contribution represents what the city needs to transfer to VanPERS today in order to meet the pension obligation that is associated with the employees' latest year of service. The calculation is based on the assumption that VanPERS will earn an expected return of 7% on its investments.

VanCity's Special Contribution to VanPERS (linked to shortfall)

Like the other member cities of VanPERS, VanCity's pension plan is currently facing a shortfall on its pre-existing pension obligations. Consequently, the city needs to transfer an additional contribution to VanPERS ("special contribution") in order to bring its plan back afloat.

To calculate VanCity's special contribution, we first need to estimate the city's total pension liability. It is the sum of i) the present value of the accrued pension for all active members and for all their past years of service, and ii) the present value of the remaining pension for all retired members. The PV of the accrued pension for active members can be approximated as the PV of the average pension earned for one year of service, multiplied by the average number of years of service and the number of active members:

$$\text{PV of Full Accrued Pension for Active Members} = 11,271 * 13 * 5,500 \approx \$806M$$

The PV of the remaining pension for retirees can be approximated using the annuity formula:

$$\text{PV of Remaining Pension for Retired Members} = \left(\frac{37,000}{.07} \right) \left(1 - \frac{1}{(1.07)^{15}} \right) * 3,000 \approx \$1,011M$$

According to these calculations, VanCity's total pension liability is approximately \$1.8B. Considering that VanCity's assets total \$1.45B, this represents a funding ratio of 79.8% and a shortfall of \$366M. As mentioned on p.15, the shortfall is amortized into equal payments over twenty years, so the special contribution can be calculated by using the annuity formula:

$$366M = \left(\frac{\text{Special Contribution}}{0.07} \right) \left(1 - \frac{1}{1.07^{20}} \right)$$

$$\Rightarrow \text{Special Contribution} \approx \$35M$$

VanCity's Total Contribution to VanPERS

Currently, the total amount that VanCity must contribute to the fund is the sum of its normal and special contributions, which is about \$72M. This represents a hefty payment that makes up nearly 12% of the city's annual revenue.

VanCity's total contribution is highly sensitive to VanPERS' asset allocation. De-risking initiatives that reduce the fund's expected return (and by extension, the going concern discount rate) would significantly impact the total contribution that VanCity must make. For instance, if the expected return on assets fell from 7% to 5%, both the normal and special contribution would increase, and VanCity's total contribution would rise to approximately \$137M—about 23% of the city's annual revenues.

Implications of Terminating VanPERS Membership

If VanCity does not have enough cash to make up for its shortfall and sustain the high contributions to VanPERS, it must terminate its membership to the fund and purchase an annuity from an insurer. Since the insurer takes on no risk, it invests on behalf of VanCity solely in risk-free assets. Therefore, the insurer discounts the liabilities of VanCity at the risk-free rate of 3% (rather than the going concern rate of 7%), rendering the PV of total liabilities at approximately \$3.38B. The final result is a significant slash to the pension benefits of public employees in VanCity⁸, who would now only receive 43% ($\$1.45\text{B}/\$3.38\text{B} \times 100$) of their yearly pension.

⁸ Although pension benefits to public sector employees are protected constitutionally, it is inevitable that benefits will be cut if cities do not have sufficient cash to deliver them.

Governance at VanPERS

Board of Directors

VanPERS' Board of Directors comprises ten members; five are elected, two are appointed, and three come from different organizations with an interest in VanPERS.

The five elected officials are broken down as follows: four are elected by the pensioners of VanPERS (two of which represent agency members and the other two represent school teachers), and the last one is elected by retired VanPERS members. Of the two appointed Board members, one is appointed by the Governor and the other is appointed by the state Senate. The remaining three Board members are the State Treasurer, the State Controller, and one member from the State Personnel Board.

The Board's primary objectives are to develop the VanPERS' strategy, approve any decisions or proposals made regarding the plan, and monitor other general activities relating to VanPERS.

Compensation

Employees and top executives who work at VanPERS are paid substantially lower salaries than their average counterparts in the financial services industry. This is largely due to the restrictions placed on salaries at organizations that are connected to the government. The Board of Directors has voiced concerns about the comparably low salaries at VanPERS. The Board argues that it is more difficult to recruit and retain the 'top talent' necessary to maintain the health of the fund, as the more skilled workers and executives tend to gravitate to the higher-paying firms.

Below is a chart that compares the salaries at VanPERS to industry averages.

Position	Salary at VanPERS	Average Salary in Private Sector (with bonus)
CEO	\$400,000	\$2,000,000+
CIO	\$375,000	\$1,000,000+
CFO	\$350,000	\$500,000+
General Counsel	\$280,000	\$500,000+

Responsible Investing Policies

In recent years, VanPERS has signed onto the United Nations Principles for Responsible Investing (PRI). Contained therein are six principles, all of which express a belief in incorporating Environmental, Social, and Governance (ESG) factors into their investment decisions. In addition, these principles state that signatories will report activities and progress towards achieving the PRI goals.

Stipulated in VanPERS' annual reports is a three-step plan to achieve the goal of supporting long-term ESG investing: integration, engagement, and promotion. VanPERS plans to integrate ESG factors, engage with companies on ESG issues, and use the fund's platform to promote ESG investing. However, VanPERS has been steadfast in its refusal to participate in the divestment movement. Since VanPERS is a fiduciary, the fund will not divest from assets that will negatively impact returns and by extension its pensioners. Therefore, VanPERS seeks to include ESG factors whenever possible but still aims to maximize returns in the shorter and longer term.

Statement of Investment Policies and Procedures

VanPERS' Statement of Investment Policies and Procedures (SIPP) highlights the overall goals of the investment strategies as well as different products' target exposures. VanPERS' SIPP emphasizes the desires to be well diversified, have acceptable volatility, have the liquidity and/or marketability to meet the terms of the program and have a return that allows to fulfill their payments to retired employees. In essence, the SIPP is a general guideline regarding risk and return that enforces specific constraints on the different asset classes.

Asset Class	Minimum	Maximum
Public Equity	20%	55%
Private Equity	5%	20%
Fixed Income	7%	45%
Real Assets	4%	25%
Cash / Money Market / Derivatives	30%	-30%
Other Alternatives	0%	10%

In addition to the above constraints, VanPERS' SIPP also enforces the following regulation on *leverage*: the loan-to-value ratio of the fund cannot exceed 50%.