Pedagogical Notes | MIPC 2018

Team SH Consulting | University of Calgary

Proposal at a Glance

SH's proposal offers a holistic and comprehensive solution to VanPERS' historically weak performance and underfunding. Extending beyond financial engineering, SH takes a longer-term view to solve the crisis. Paying respect to various internal and macroeconomic factors allows the team to address all stakeholders by appropriately splitting the burden of the underfunding. As such, SH recommends the following strategy: 1) optimized asset allocation and the use of leverage to yield higher returns with lower risk; 2) fundamental changes to the plan and governance to align objectives and incentives.

Situational Analysis

Under U.S. law, specifically the *Going Concern* principle, the present value of a pension fund's future liabilities should be calculated using the expected return on its assets as the discount rate. Hence, the higher that rate, the lower the liabilities, the higher the funding ratio- at least on paper. However, higher returns usually imply higher risk, hence a trade-off between theoretical funding ratio and actual volatility. Currently, VanPERS has an **$8Bn deficit** (funded status of 78%) using a discount rate of 7%.

Portfolio Composition

Asset Allocation: To match the severe underfunding, SH proposes a more efficient leveraged portfolio.

	Current	Ideal	Max
Expected return	7.00%	7.06%	9.33%
Volatility	15.04%	12.14%	19.58%
Sharpe ratio	0.466	0.581	0.305
Leverage	0%	20%	93%
Public equity	52%	24%	39%
Fixed income	19%	54%	87%
Real estate	11%	24%	39%
Private equity	8%	6%	10%
Hedge fund	6%	12%	19%
Cash	4%	0%	0%

With this new allocation, the portfolio is expected to generate a return of 7.06% with 12.14% volatility, and SH forecasts that VanPERS could become fully funded within five years.

Currently, VanPERS has 52% of its fund allocated to public equities, which SH proposes reducing to 24%. By still having some funds invested in public equities, VanPERS can take advantage of equity risk premiums and address the funding gap through a dividend-oriented portfolio. A large allocation to fixed income diversifies the portfolio and reduces overall risk, generating a steady income stream to gap the underfunding. Additionally, greater focus on alternative investment classes (i.e. real estate, private equity and hedge funds) provides less volatility with a steadier income stream than public equities. These assets also trade at lower valuations than public equities, due to lower liquidity and market segmentation. A small investment in hedge funds has the potential to stimulate the local economy and present opportunities to reinvest in future rounds of funding for well-performing investments. Finally, a portion of investment in private equity with a long investment horizon can result in higher returns through illiquidity and market segmentation premiums, as well as provide further stimulus to the local economy.

Leverage: SH Consulting recognizes that VanPERS' new asset mix fails to generate sufficient returns. Heavier focus on real estate and private markets yields lower absolute returns than public equities, leading to a higher valuation of the funds' liabilities and potentially forcing Vandalian cities to increase their contributions. With leverage, VanPERS can decrease its exposure to risk and boost equity returns in the short-term. This being said, downside risk and diminishing returns of increased leverage must be addressed.

To be fully funded, the portfolio return should be 9.45%. Using a Monte Carlo simulation, SH suggests a portfolio with 20% leverage, yielding 7.06% expected return with 12.14% volatility. A more levered portfolio would be overly exposed to downside risk in the event of a drawdown. The simulation gives a good sense of the value-at-risk by checking thousands of possible scenarios. At 20% leverage, the risk of significant drawdown is considerably lower compared to higher levels of leverage. Ultimately, leverage provides a short-term boost to overall performance that SH recommends slowly phasing out once the funding gap has improved.

Governance

Given that VanPERS' current board members have limited investment experience, SH proposes making this process more rigorous. VanPERS currently has no formal guidelines for how much experience a future board member should have. SH proposes implementing a filter for future additions to promote the highest levels of pension management experience. Thus, VanPERS will hopefully have leaders with more investment management experience and with the ability to bridge the underfunding gap.

Additionally, VanPERS' upper management salaries are considerably lower than their C-suite counterparts in the private sector. SH suggests a hybrid performance-based compensation structure to align the goals of the management and the fund. This will provide greater incentive to appoint experienced asset managers in the future. These steps address the goals of creating a well-performing fund, while retaining top talent to manage it.

Benefit Factor

A part of VanPERS' underfunding stems from the value of liabilities owed to pensioners being too large. Currently, VanPERS offers to each employee a pension worth 3% of his or her final salary for each year of service.

$$Annual\ pension = Years\ of\ service \times 3\% \times Final\ salary$$

SH proposes to reduce the benefit factor from 3% to 2.8% for all new employees, while still honoring current promises. Shifting the benefit factor is an effort to make the plan sustainable in the long-term, significantly reducing new member pension liabilities by approximately 7%. Although this yields less for new entrants, a benefit factor of 2.8% remains above the average peer benefit factor of 1.2%. SH believes a higher factor offers enough benefits for young Vandalians to convince those who might otherwise consider leaving because of the weak local economy. Making this subtle change would reduce the risk of not being able to pay all existing pensioners in the event of default, and risk of termination of the fund by municipalities.

Team Theta recommended a different approach to this issue, advising municipalities to increase the retirement age based on life expectancy. They also recommend allowing for a progressive retirement option after 60 years of age. These elements would reduce pension pay-outs while increasing cash inflows, and could be considered a valuable addition to SH's proposal.

Hybrid Plan

SH recognizes that defined benefit public pension funds are becoming increasingly difficult to manage in declining economies. The team takes advantage of the trend towards DC pension plans by recommending a stacked hybrid option, composed of both defined benefit and defined contribution components. The DB component guarantees a capped benefit paid in the form of an annuity. This is complemented by the DC component, which will be for wages that exceed the salary cap. As a result of the hybrid structure, more risk is shifted from the employer to plan participants without undue exposure, and VanPERS can continue to satisfy employees through manageable pension promises. This has been similarly implemented in seven other Rust Belt States, aligning VanPERS with its peers and giving Vandalians more flexibility. To address concerns that individuals may not always make rational investment decisions, SH recommends the following options: 1) set up plans with a curated and limited selection of investment options, 2) automatically enroll employees in life-cycle investment funds, or 3) provide access to an annuity purchase program.

Final Considerations

SH's clever and comprehensive solution calls for changes to portfolio allocation and plan components, appropriately splitting the burden amongst stakeholders. By addressing the underfunding and the fundamental issues with the plan, SH presents a sustainable solution for the VanPERS fund.

This note was written by FINE 435 – Pension Investing students at McGill University under the supervision of Professor Sebastien Betermier