Pedagogical Notes | MIPC 2018

Team Theta | University of Connecticut

Proposal at a Glance

Team Theta seeks to devise a strategy for VanPERS, carefully considering the interest of all its stakeholders. Their proposal addresses the optimal risk-return mix required to meet beneficiary liabilities while also minimizing city contributions. Theta suggests a new strategic asset allocation, focused on maximum efficiency at the lowest cost, and avoids the use of leverage or short-term derivatives, which differentiates them from the other winning proposals. They also provide recommendations on fundamental policy and fund management aspects to complement the asset allocation effort. Thus, Theta's proposal shows that they understand the impact that VanPERS' current situation poses for its stakeholders and seeks to provide realistic and implementable solutions which adapt to VanPERS' evolving needs over time.

Identifying an optimal Risk-Return target

Theta aims to measure the impact of the burden on city governments, who need to use their own revenue towards supporting VanPERS, by means of 'government contributions'.

This innovative quantitative model proposed by Theta highlights the impact of portfolio returns on required city contributions throughout the life of the fund. The model, based on a normal distribution of returns, seeks to identify an optimal risk-return pair that minimizes contributions. This helps achieve a two-fold objective of meeting liabilities and reducing the financial burden on the government, which allows cities to evade a bankruptcy situation.

Annual Geometric Return (%) \ Annual Standard Deviation (%)	4	5	6	7	8	9	10	11	12
7	84%	86%	88%	90%	93%	94%	94%	99%	100%
8	51%	53%	57%	58%	61%	64%	66%	67%	69%
9	27%	29%	31%	34%	37%	39%	41%	44%	46%
10	9%	11%	15%	17%	18%	21%	23%	26%	29%
11	1%	3%	4%	6%	8%	10%	12%	13%	15%
12	0%	0%	1%	2%	3%	4%	5%	7%	8%

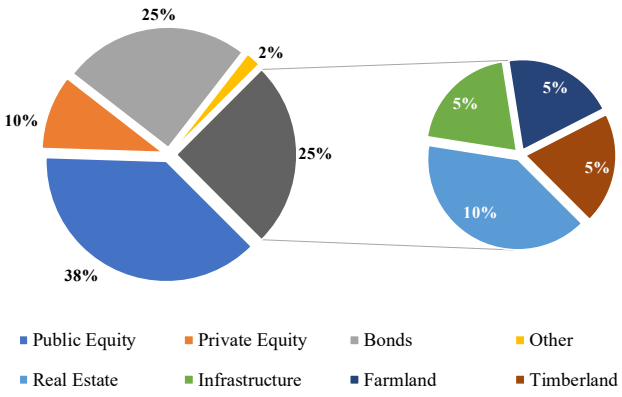
Figure 1: Extract of THETA's Quantitative Model

For example, in the table above, a return of 9% with a standard deviation of 11% corresponds to a reduction in city contributions to 44% of current estimates.

Theta recognizes the limitations of this model in terms of the distributional assumptions and uncertainty about the underlying parameters. Thus, they suggest using this model only as a decision support tool. Theta is also pragmatic in accepting the fact that VanPERS will not survive without special contributions from the government under realistic risk-return assumptions.

Asset Allocation

Theta suggests the following asset allocation:



The allocation strategy, as denoted above, leads to an annual portfolio return of 8.57%, with a standard deviation of 9.49%, reducing city contributions to 40% - 60% of current levels.

A significant fund allocation of 38% is earmarked for Public Equities, followed by Bonds and Real Assets investment classes at 25% each. There are subsequently smaller allocations across Private Equity and other alternatives. Considering the size of the fund and its current situation, Theta has suggested investments in Real Estate, Infrastructure, Farmland and Timberland through more manageable products like REITs, ETF's and the use of Investment Management Organizations. These avenues save VanPERS the effort of directly investing, while still reaping the benefits of the return from these assets.

A key differentiator for Theta as compared to the other winning solutions is the fact that it does not

take on an additional risk from leverage to increase returns. Theta has also avoided allocation of capital to hedge funds due to the high fees involved. Similarly, the use of derivatives is held off in the short term, until the third phase of asset allocation. These recommendations show that Theta has chosen to take up a simple and effective strategy, while keeping VanPERS' existing abilities at the centre of its recommendation.

Analysis of Asset Classes

Theta undertook a detailed evaluation of various asset classes and provides suggestions for its customised application, aimed to meet VanPERS' requirements. By highlighting each asset's features, Theta provides a robust inventory of investment avenues that VanPERS can pick and choose from to optimize their returns.

The asset allocation strategy focuses on maintaining short-term positions in public equity, which draw on the tax advantage of dividends. It also seeks to create alpha by capturing illiquidity premiums from alternative assets. Finally, cash flow matching using bonds helps to maintain a steady stream of cash inflow and to manage liquidity risk while protecting short term benefits.

On the other hand, Theta warns against foreign currency plays based on the current risk appetite and the high volatility involved. They also suggest avoiding investments in locally significant industries like automotive and aeronautics as well as local municipal bonds to avoid the positive correlation between the government's income and their ability to pay contributions.

Evolution of Asset Allocation

Theta recognises the evolving life-cycle of the fund and has suggested a phased approach for its investments.

Phase I: Short Term Performance – Change to the new proposed asset allocation and implementation of revised compensation methodology.

Phase II: Liquidation – Use of additional returns to invest in bonds, creating a steady stream of cash flows to meet liquidity needs, and liquidation of long-term assets based on favourable market conditions.

Phase III – Hedging – Implementation of a dynamic self-funded collar based on call and put options, initially closer to the strike price, which will gradually shift further away from the strike price based on VanPERS' funded capacity. This helps to reduce risk and thus limits special city contributions.

Stakeholder Recommendations

Theta, like Team SH, provides recommendations and suggestions to the municipal governments as well as VanPERS, aimed at creating a win-win situation for all the stakeholders involved.

Theta makes the case for a performance-based compensation system, payable when the fund reaches a 90% funding ratio. Thus, Theta understands the vital role that management plays and seeks to incentivise the team accordingly. This will not only improve the underfunding situation but also align the objectives of the management and the company towards a common long-term goal.

Though SH recommended a cut in the benefit factor for employees, Theta advised Municipalities to increase the retirement age based on life expectancy and also allow for a progressive retirement option, after the age of 60 years. These initiatives would delay and reduce pension pay-outs while increasing cash inflows from employee contributions.

Final Considerations

Theta provides a holistic approach to address the underfunding issue to VanPERS. Combining their quantitative model for asset allocation with a widespread array of investment avenues, Theta seems to apprise VanPERS on the plethora of opportunities available to suit their evolving needs.

In addition, Theta demonstrates that the issue, at its core, is not purely financial and combines its investment strategy with simple and effective recommendations to the management and the government, which are expected to ultimately benefit Vandalia as a whole.