October 27, 2021

Ms. Theresa Taylor
Chair of the Investment Committee
California Public Employees' Retirement System
400 P Street
Sacramento, CA 95814

Re: Agenda Item 7b - ALM: PERF Policy Portfolio & Discount Rate Selection

Dear Ms. Taylor:

You requested Wilshire's opinion on the Staff's presentation of candidate policy portfolios within CalPERS' 2021 Asset Liability Management (ALM) process. The establishment of the portfolio's strategic asset allocation targets is a key Investment Committee decision, and the culmination of an extended period of analysis, discussion, and debate. CalPERS Investment Belief 6 recognizes that strategic asset allocation is the dominant determinant of portfolio risk and return.

Consistent with its importance to the organization, the asset allocation decision also touches upon a meaningful number of CalPERS' other core Investment Beliefs. Most notably, Investment Belief 1: Liabilities must influence the asset structure and Belief 2: a long-term investment horizon is a responsibility and an advantage. The connection to other Investment Beliefs will be illustrated with specific points below.

Asset Liability Management Process

Wilshire believes the ALM process was comprehensive and considered the salient factors necessary to make an informed decision in establishing an appropriate target asset allocation for the PERF. These factors include the capital market assumptions (CMAs), portfolio construction constraints, liquidity, contribution impacts, risk metrics, and liability measurements. In addition, the portfolio modeling incorporated both upside and downside expectations to illustrate assumption sensitivity as well as stress test results. These decision factors are diverse in accordance with Investment Belief 9: risk to CalPERS is multi-faceted and not fully captured through measures such as volatility or tracking error.

The objectives laid out at the start of the 2021 ALM process have been addressed with the Investment Committee through multiple discussions and presentations:

- Deliver a manageable number of candidate portfolios which balance CalPERS' objectives and risks over a strategic horizon
- Illustrate the uncertainties impacting the candidate portfolios and the potential downside results
- Regular monitoring and review of results and assumptions

Wilshire advocated on behalf of the Board throughout the process to improve the clarity and flow of information, specifically around portfolio modeling and optimization. The introduction of multi-period optimization has the potential to improve expected portfolio outcomes, but the ultimate efficacy of that approach is predicated on the assumptions used in the modeling. Given the discussion around multi-period optimization, Wilshire is comfortable focusing on single period optimization results in determining the target policy portfolio. The insights from building multi-period portfolios can inform portfolio positioning and remains an active area of research, which will be discussed with the Board going forward.

Wilshire previously opined on the reasonableness of the CMAs, which serve to establish baseline expectations to define the characteristics of investable asset classes (i.e., the "A" in "ALM") over various time horizons. September's Investment Committee meeting provided a full discussion on the results of CalPERS' survey of external investment advisors and represents a consensus view of market forecasts. Wilshire will continue to dialogue with Staff on the ongoing research agenda to develop internal models for establishing baseline, upside, and downside capital market expectations. Wilshire views this work as critical for continuing to improve the organization's asset allocation capabilities.

During the 2017 ALM process, Wilshire recommended that CalPERS continue to research the broader use of financial leverage to serve as a valuable tool in helping CalPERS meet its return objectives while providing greater portfolio balance/diversification. The 2021 ALM process included further education and substantive discussion on the potential benefits and risks of leverage utilization, specifically during the Board offsite in July and again during discussions around portfolio modeling. Staff has provided target policy portfolios both with and without leverage to allow the Investment Committee to make an informed decision. Given the diversification benefits, Wilshire supports the Staff recommendation to incorporate a target amount of leverage in the strategic asset allocation, consistent with Wilshire's recommendation coming out of the 2017 ALM process. While a leverage target does increase the complexity of the portfolio, Wilshire feels the organization is well positioned to handle implementation and has sufficient tools in place to monitor the amount of leverage and the liquidity requirements necessary to support such an approach during challenging market environments. Leverage management is also governed by the Total Fund Investment Policy.

As an independent check on the strategic liquidity of the candidate portfolios, Wilshire calculated the liquidity profile of each asset mix using our Liquidity Metric assumptions. These metrics are meant to provide a comparison of strategic *convertible liquidity* by applying a penalty to asset classes which reflect the potential liquidity erosion that can result from asset class volatility and, perhaps more importantly, the sensitivity of that volatility to specific economic regimes. It is the relative comparisons between asset classes/portfolios, rather than the absolute values of the figures themselves, which make these metrics valuable when examining the potential liquidity trade-offs. The candidate portfolios A1 and A2 have similar convertible liquidity in stressed environments as the current portfolio. Portfolios B1, B2, and C1 have less convertible liquidity during stressed environments.

CalPERS' internal liquidity dashboard, which has been discussed previously with the Investment Committee, is a critical tool in monitoring the adequacy of liquidity over time and takes into account the implementation complexities of the portfolio's sources and uses of liquidity. It includes stress test scenarios and financing capacity over multiple horizons, as well as cash flow estimates for private equity, real assets, and opportunistic strategies. The holistic view of portfolio liquidity from the dashboard should prove effective in identifying and managing the specific liquidity needs of the Fund and maintain desired portfolio exposures. The regular reporting available to the Board of the PERF liquidity position also provides appropriate governance oversight.

Candidate Portfolios

In response to Investment Committee feedback, candidate portfolios are presented at 20-year expected return levels of 6.5%, 6.8%, and 7.0% alongside the current allocation with a 6.2% expected return. Of note, all of the candidate portfolio alternatives have a superior expected return/drawdown ratio versus the current target allocation, which aligns with the portfolio priority to protect the funded ratio by mitigating severe drawdowns. The alternative portfolios A1, A2, B1, and B2 have higher return/total risk profiles relative to the current portfolio, while C1 is modestly lower albeit with the highest expected return.

The candidate portfolios in the presentation have differing risk and return profiles, but do have similarities worth highlighting, which drive improvements in return/risk. All of the portfolios include an increase in the target for real assets (15%) and private equity (13%), as well as a new target for private debt (5%). The return premium associated with these private asset classes makes them important building blocks for constructing portfolios capable of meeting CalPERS' return objectives. The proposed increases are consistent with Investment Belief 7: CalPERS will take risk only where we have a strong belief we will be rewarded for it. These larger allocations are not without risk, as reflected in the CMA volatility assumptions, and the ultimate investment outcome will be driven by executing the investment programs in a consistent way. Wilshire has talked at length with the Investment Committee about the challenging expected return environment across asset classes, and supports the increased utilization of private investments in the PERF. Wilshire remains cognizant of Investment Belief 8: costs matter and need to be effectively managed and expects regular reporting to the Investment Committee on the efficient execution of mandates within private markets.

All of the candidate portfolios reduce the target Treasury allocation from 10% to 5%, due to a low starting yield and expectations that rates will normalize higher over the strategic horizon. This is partially offset by an increase in Emerging Market/Sovereign Bonds from 1% to 5%. The increase in expected return for these assets compensates for the moderately higher correlation (i.e. lower level of diversification) in relation to more growth sensitive assets. In aggregate, public and private fixed income allocations range from a high of 36% in A1 to 28% in C1, versus the current target of 29%.

The differences in risk across portfolios are primarily driven by the total allocation and makeup of public and private equity assets, which ranges from 49% in A1 to 62% in C1, versus the current target allocation of 58%. While equity assets are expected to have higher returns over time, they also come with downside volatility. Given the cash flow requirements from the portfolio, the path of returns matters and this downside volatility needs to be managed accordingly by incorporating diversifying assets in the portfolio construction. In Wilshire's view, each of the candidate portfolios is appropriately diversified to mitigate severe drawdown risk to the extent possible given target return objectives.

Conclusion

It is Wilshire's opinion that the ALM process was comprehensive and touched on the important components necessary to make an informed decision on a target asset allocation for the PERF. By systematically stepping through this process in a disciplined way, allowing guidance from each step to drive the direction of future steps and by including feedback from key stakeholders, the Investment Committee can be comfortable that the final candidate portfolios are consistent with its portfolio preferences, return objectives and appetite for various forms of risk.

Best regards,

Steven J. Foresti

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