CalPERS

Investment Committee

Agenda Item 7a

November 15, 2021

Item Name: Asset Liability Management: Adoption of Affiliate Funds' Capital Market Assumptions

Program: Trust Level Portfolio Management and Implementation

Item Type: Action

Recommendation

For use in the 2021-22 ALM process for the Affiliate Funds, adopt the proposed baseline economic scenario Capital Market Assumptions (CMAs), which include:

1. Projected returns, 5 years and 20 years
2. Projected volatility, 20 years
3. Asset class correlations, 20 years

Executive Summary

This agenda item puts forth for adoption the CMAs to be used in the CalPERS 2021-22 ALM process for the following Affiliate Funds[1]:

- Legislators' Retirement Fund
- Judges' Retirement Fund
- Judges' Retirement Fund II
- California Employers' Retiree Benefit Trust Fund
- California Employers' Pension Prefunding Trust Fund
- Public Employees' Healthcare Fund
- Public Employees' Deferred Compensation Fund
- Supplemental Contributions Program Fund

[1] The Public Employees' Long-Term Care Fund is not listed, as its ALM was completed earlier in 2021.

The Affiliate Funds' CMAs have been developed using the same process that was used for the Public Employees' Retirement System CMAs that were adopted in September 2021. The CMAs are derived from survey data for a baseline economic scenario and are reviewed by the Investment Office to help ensure that the expected returns are appropriate for the asset classes and strategies. Economic scenarios (baseline, upside, downside) have been evaluated to understand a range of possible outcomes, and supplementary information about the economic scenarios and associated CMAs can be found in the appendix of Attachment 1.

Strategic Plan

This agenda item supports the CalPERS Strategic Plan goal to strengthen the long-term sustainability of the pension fund. This item provides information regarding the capital market assumptions, which are foundational elements of the ALM process, and supports the CalPERS Investment Committee in their oversight capacity.

Investment Beliefs

This agenda item supports CalPERS' Investment Belief 2: A long term investment horizon is a responsibility and an advantage and Belief 6: Strategic asset allocation is the dominant determinant of portfolio risk and return.

Background

CMAs for each asset class are critical inputs to the ALM process and have a direct impact on the portfolio allocation. Determining appropriate CMAs requires asset class expertise and an understanding of CalPERS' benchmarks and investment strategies. Given that there is uncertainty with CMAs, to capture as much information as possible, our process includes surveying consultants and asset managers, comparing the survey results against internal CMAs developed by our research team, and reviewing the CMAs with each asset class team in the Investment Office.

The CMAs are presented for 5 years and 20 years to incorporate both long-term and near-term views of the market. While longer views are relevant to the discount rate, the near-term economic and market environment can be impactful.

To understand a range of possible outcomes when assessing portfolios, an upside and downside economic scenario are applied to the CMAs. This helps to evaluate possible portfolio performance in different economic and market environments, in addition to the baseline economic scenario.

Analysis

Not Applicable.

Budget and Fiscal Impacts

Not Applicable.

Benefits and Risks

CMAs are the essential inputs and starting points of the ALM process. The benefit of adopting the CMAs is that it allows the process to proceed with the evaluation of candidate portfolios. A risk of adopting the CMAs is that they are inherently uncertain and need to be evaluated with an understanding that they are not precision estimates. The risk of non-adoption would be more time and effort spent without a clear target for improvement.

Attachments

Attachment 1 – Asset Liability Management – Adoption of Affiliate Capital Market Assumptions

Attachment 2 – Wilshire Opinion Letter

James Sterling Gunn
Managing Investment Director
Trust Level Portfolio Management

Dan Bienvenue
Interim Chief Investment Officer

Asset Liability Management:
Adoption of Affiliate Funds' Capital Market Assumptions

Christine Reese, Investment Director, TLPMI
Sterling Gunn, Managing Investment Director, TLPMI

Investment Committee
November 15, 2021

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Summary

- Capital Market Assumptions (CMAs) include projected asset returns, volatility and correlation. This presentation brings forward the CMAs for adoption to use in the 2021-22 Asset Liability Management (ALM) of the following Affiliate Funds[1]: Legislators' Retirement Fund, Judges' Retirement Fund, Judges' Retirement Fund II, California Employers' Retiree Benefit Trust Fund, California Employers' Pension Prefunding Trust Fund, Public Employees' Healthcare Fund, Public Employees' Deferred Compensation Fund, and the Supplemental Contributions Program Fund.

- The Affiliate Funds' CMAs have been developed with the same process that was used for the Public Employees' Retirement Fund (PERF) CMAs that were adopted in September 2021. The asset classes presented today include many that were adopted for the PERF as well as some that are specific to the Affiliate Funds.

- As long-term investors, we believe the longer views are most relevant to our discount rate; however, the near-term economic and market environment can be impactful. The CMAs presented here are 5 years and 20 years to incorporate this dynamic.

- When assessing portfolios, economic scenarios can be used to evaluate portfolio performance in varying economic markets. Included in the appendix are three economic scenarios: baseline, upside, and downside for the near-term and long-term time horizons along with corresponding CMAs for the upside and downside scenarios.

- Our process includes use of investment analysis tools and technology from leading industry providers.

- Recommendation: Adopt the proposed CMAs in the baseline economic scenario for use in the 2021-22 ALM

[1]The Public Employees' Long-Term Care Fund is not listed, as its ALM was completed earlier in 2021.

Affiliate Funds' Capital Market Assumptions[1] - Baseline Economic Scenario

Asset Class	Asset Segment	Projected Near-Term Return (5-year)	Projected Long-Term Return (20-year)	Projected Volatility (20-year)
Growth	Global Public Equity	6.8%	6.8%	17.0%
	US Public Equity	6.3%	5.6%	17.0%
	Private Equity [2]	8.9%	9.6%	30.1%
Income	US Aggregate	0.9%	2.7%	4.5%
	US Aggregate 1-3 Year	0.3%	2.4%	3.0%
	Long U.S. Treasuries	0.1%	2.6%	12.4%
	Mortgage-Backed Securities	1.2%	2.8%	3.1%
	Investment Grade Corporates	0.1%	3.9%	8.5%
	High Yield	2.2%	4.7%	9.2%
	Sovereigns	3.2%	4.5%	10.4%
	TIPS	0.6%	2.8%	5.9%
	TIPS 1-10 Year	0.4%	2.7%	3.9%
Real Assets	US REITS	5.3%	5.7%	17.0%
	Global REITS	5.4%	6.0%	18.7%
	Global Listed Infrastructure	7.3%	5.9%	18.0%
	Commodities	3.2%	3.4%	15.3%
	Public Equity Commodity and Resources Sector	7.7%	6.7%	24.2%
Liquidity	Liquidity	0.3%	1.7%	0.8%

[1] Some of the CMAs were also adopted for the PERF in September 2021 and some are additional and specific to the Affiliate Funds.
[2] Private Equity is not a current asset class allocation for the Affiliate Funds, but it will be evaluated in this ALM.

Affiliate Funds' Asset Class Average Correlations – 20 Years

	Global Public Equity	US Public Equity	Public Equity Commodity and Resources	Private Equity	US Aggregate	US Aggregate 1-3 Year	Long U.S. Treasuries	Mortgage-Backed Securities	Investment Grade Corporates	High Yield	Sovereigns	TIPS	TIPS 1-10 Year	Global REITs	US REITs	Global Listed Infrastructure	Commodities	Liquidity
Global Public Equity	1.00	0.90	0.82	0.62	0.19	0.27	0.11	0.13	0.29	0.38	0.21	0.14	0.14	0.68	0.61	0.79	0.30	0.11
US Public Equity	0.90	1.00	0.62	0.57	0.18	0.25	0.10	0.12	0.27	0.36	0.20	0.13	0.13	0.63	0.59	0.72	0.25	0.10
Public Equity Commodity and Resources	0.82	0.62	1.00	0.43	0.14	0.22	0.08	0.10	0.22	0.33	0.16	0.13	0.12	0.54	0.46	0.74	0.54	0.11
Private Equity	0.62	0.57	0.43	1.00	0.13	0.18	0.08	0.09	0.20	0.27	0.15	0.09	0.15	0.55	0.49	0.63	0.17	0.06
US Aggregate	0.19	0.18	0.14	0.13	1.00	0.61	0.98	0.83	0.96	0.86	0.98	0.61	0.58	0.14	0.13	0.17	0.01	0.12
US Aggregate 1-3 Year	0.27	0.25	0.22	0.18	0.61	1.00	0.49	0.75	0.63	0.65	0.59	0.49	0.47	0.20	0.18	0.25	0.06	0.52
Long U.S. Treasuries	0.11	0.10	0.08	0.08	0.98	0.49	1.00	0.77	0.91	0.79	0.96	0.59	0.56	0.08	0.10	0.10	-0.03	0.09
Mortgage-Backed Securities	0.13	0.12	0.10	0.09	0.83	0.75	0.77	1.00	0.72	0.66	0.78	0.59	0.56	0.09	0.09	0.12	0.02	0.19
Investment Grade Corporates	0.29	0.27	0.22	0.20	0.96	0.63	0.91	0.72	1.00	0.93	0.94	0.56	0.54	0.21	0.19	0.25	0.01	0.10
High Yield	0.38	0.36	0.33	0.27	0.86	0.65	0.79	0.66	0.93	1.00	0.86	0.51	0.49	0.30	0.25	0.35	0.20	0.10
Sovereigns	0.21	0.20	0.16	0.15	0.98	0.59	0.96	0.78	0.94	0.86	1.00	0.59	0.56	0.16	0.12	0.19	0.01	0.11
TIPS	0.14	0.13	0.13	0.09	0.61	0.49	0.59	0.59	0.56	0.51	0.59	1.00	0.96	0.10	0.07	0.12	0.10	0.20
TIPS 1-10 Year	0.14	0.13	0.12	0.15	0.58	0.47	0.56	0.56	0.54	0.49	0.56	0.96	1.00	0.10	0.06	0.12	0.09	0.19
Global REITs	0.68	0.63	0.54	0.55	0.14	0.20	0.08	0.09	0.21	0.30	0.16	0.10	0.10	1.00	0.97	0.69	0.10	0.08
US REITs	0.61	0.59	0.46	0.49	0.13	0.18	0.10	0.09	0.19	0.25	0.12	0.07	0.06	0.97	1.00	0.64	0.05	0.09
Global Listed Infrastructure	0.79	0.72	0.74	0.63	0.17	0.25	0.10	0.12	0.25	0.35	0.19	0.12	0.12	0.69	0.64	1.00	0.20	0.13
Commodities	0.30	0.25	0.54	0.17	0.01	0.06	-0.03	0.02	0.01	0.20	0.01	0.10	0.09	0.10	0.05	0.20	1.00	0.09
Liquidity	0.11	0.10	0.11	0.06	0.12	0.52	0.09	0.19	0.10	0.10	0.11	0.20	0.19	0.08	0.09	0.13	0.09	1.00

Recommendation and Next Steps

Recommendation:

For use in the 2021-22 ALM process for the Affiliate Funds, adopt the proposed baseline economic scenario CMAs, which include:

1. Projected returns, 5 years and 20 years
2. Projected volatility, 20 years
3. Asset class correlations, 20 years

Next Steps:

Develop candidate portfolio options for the Affiliate Funds to present for adoption at the March Investment Committee meeting.

Appendix

Economic Scenarios: U.S. Near-Term

Economic Scenario	Growth	Inflation	Drivers/Assumptions	Representative Projected Returns		
				Public Equity	US Treasuries	US Real Estate
Baseline	2.7%	2.4%	• Labor force participation recovers moderately • Fed keeps rates low for longer • No assumptions made on US fiscal infrastructure bill	6.8%	0.1%	5.3%
Upside	2.9%	2.6%	• Rapid recovery, confidence boost, re-opening • Labor force participates in labor market sooner • Fed keeps rates low for longer • Output driven by pent-up demand and excess savings	7.2%	-0.5%	5.7%
Downside	2.3%	1.8%	• Labor force participation recovers moderately • Business investment weakens • Fiscal debt overhang, government seeks to repay gradually	6.2%	0.9%	4.5%

Growth and Inflation forecasts are 5-year compound average growth rates derived from annual data. Historical database sourced from Oxford Economics, dated March 31, 2021. Projected returns are from the 5-year CMAs.

Economic Scenarios: U.S. Long-Term

Economic Scenario	Growth	Inflation	Drivers/Assumptions	Representative Projected Returns		
				Public Equity	US Treasuries	US Real Estate
Baseline	1.8%	2.3%	• Long-run equilibrium relationships remain consistent with history	6.8%	2.6%	5.5%
Upside	2.3%	2.7%	• No permanent negative impact to supply side of economy from pandemic • In the long-run total factor productivity rises • Fed framework facilitates higher inflation on average • Income accrues to labor	7.5%	2.7%	6.2%
Downside	1.6%	1.7%	• Demographics/population growth remain weak • Flat productivity growth	6.3%	2.7%	4.7%

Growth and Inflation forecasts are 20-year compound average growth rates derived from annual data. Historical database sourced from Oxford Economics, dated March 31, 2021. Projected returns are from the 20-year CMAs.

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Affiliate Funds' Capital Market Assumptions - Upside Economic Scenario

Asset Class	Asset Segment	Projected Near-Term Return (5-year)	Projected Long-Term Return (20-year)	Projected Volatility (20-year)
Growth	Global Public Equity	7.2%	7.5%	17.0%
	US Public Equity	6.8%	6.5%	17.0%
	Private Equity	9.7%	10.8%	30.1%
Income	US Aggregate	0.7%	2.9%	4.5%
	US Aggregate 1-3 Year	0.4%	2.5%	3.0%
	Long U.S. Treasuries	-0.5%	2.7%	12.4%
	Mortgage-Backed Securities	1.1%	2.9%	3.1%
	Investment Grade Corporates	-0.5%	4.0%	8.5%
	High Yield	2.2%	4.8%	9.2%
	Sovereigns	2.7%	4.6%	10.4%
	TIPS	0.5%	2.9%	5.9%
	TIPS 1-10 Year	0.4%	2.8%	3.9%
Real Assets	US REITS	5.4%	6.0%	17.0%
	Global REITS	5.6%	6.4%	18.7%
	Global Listed Infrastructure	7.5%	6.1%	18.0%
	Commodities	3.5%	3.9%	15.3%
	Public Equity Commodity and Resources Sector	8.1%	7.4%	24.2%
Liquidity	Liquidity	0.4%	1.7%	0.8%

Affiliate Funds' Capital Market Assumptions - Downside Economic Scenario

Asset Class	Asset Segment	Projected Near-Term Return (5-year)	Projected Long-Term Return (20-year)	Projected Volatility (20-year)
Growth	Global Public Equity	6.2%	6.3%	17.0%
	US Public Equity	5.5%	4.8%	17.0%
	Private Equity	8.0%	8.5%	30.1%
Income	US Aggregate	1.3%	2.6%	4.5%
	US Aggregate 1-3 Year	0.3%	1.9%	3.0%
	Long U.S. Treasuries	0.9%	2.7%	12.4%
	Mortgage-Backed Securities	1.4%	2.5%	3.1%
	Investment Grade Corporates	0.8%	4.0%	8.5%
	High Yield	2.3%	4.3%	9.2%
	Sovereigns	3.9%	4.6%	10.4%
	TIPS	0.8%	2.7%	5.9%
	TIPS 1-10 Year	0.5%	2.5%	3.9%
Real Assets	US REITS	4.9%	5.3%	17.0%
	Global REITS	5.0%	5.6%	18.7%
	Global Listed Infrastructure	7.1%	5.6%	18.0%
	Commodities	2.4%	2.1%	15.3%
	Public Equity Commodity and Resources Sector	7.1%	6.2%	24.2%
Liquidity	Liquidity	0.0%	1.0%	0.8%

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November 1, 2021

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

Re: Agenda Item 7a - ALM: Adoption of Affiliate Funds' Capital Market Assumptions

Dear Ms. Taylor:

You requested Wilshire's opinion with respect to adoption of the proposed 2021 capital market assumptions (CMAs) for use in CalPERS' Asset Liability Management (ALM) process for the Affiliate Funds. The process followed to derive the assumptions, which we briefly describe below, is entirely consistent with the method followed in creating the recently approved CMAs for use in the PERF's ALM process. In order to provide a comprehensive view, and at the risk of being repetitive with our September opinion letter, we reiterate the same salient points herein. The importance of the ALM process is clearly articulated by CalPERS Investment Belief 6, which recognizes that strategic asset allocation is the dominant determinant of portfolio risk and return. The CMAs serve to establish baseline expectations to define the characteristics of investable asset classes over various time horizons.

The Process

Staff surveyed external investment advisors (i.e., consultants, asset managers, etc.) to collect industry forecasts across a variety of asset class segments over 5, 10, 20, and 30-year horizons. The proposed 5-year and 20-year CMAs represent rounded medians from that dataset, including Staff adjustments made in cases where no survey respondents provided time horizon estimates for a particular asset class. For example, if no data was collected for a specific asset class over the 5-year horizon, Staff proxied those figures based on the respondents' median 10-year forecast for that asset class along with the respondents' 10 vs. 5-year median assumption spread for an adjacent/related asset class proxy.

The process benefits from taking a consensus view of market forecasts, which can protect against the potential risk of a unique/outlier in-house view to dominate candidate portfolio choices. The potential downside of such an approach, however, is the possible loss of internal consistency in relative asset class return relationships that might stem from the differing subset of respondents providing estimates across the various asset class segments (for example, where each asset class median is derived from the number of survey respondents providing data for that segment rather than from a consistent set of respondents providing data across all asset classes). While these issues are somewhat addressed through Staff's adjustment process, they are worth understanding when moving into future stages of the ALM process.

The Results

While the full assumption suite includes some asset class segments for which we do not maintain independent forecasts, Wilshire believes that Staff's recommended 2021 Affiliate Funds' CMAs represent a reasonable reflection of the potential return, risk and diversification properties across the Affiliate Funds' asset class universe, particularly when understood against the pros and cons of the survey method described above. The results generally reflect consensus views across a representative group of institutional investment organizations for the 5 and 20-year time horizons of interest to CalPERS' ALM process. Though they reflect consensus views from a variety of sources, Staff's recommended CMAs over the 20-year horizon are generally consistent with Wilshire's assumptions in these asset classes. And, while Wilshire does not maintain CMAs for a 5-year time horizon, Staff's recommended short-term CMAs are generally consistent with the directional impacts we would expect to see if moving from our standard 10-year forecasts to a shorter 5-year horizon (i.e., lower fixed income returns, etc.), albeit with some of the potential internal inconsistencies noted earlier.

Recommendation

Wilshire is generally comfortable with an approach of outsourcing the establishment of CMAs to a survey of trusted institutional advisors. We believe that with awareness of the strengths and weaknesses of such an approach, the Investment Committee should approve use of the 2021 capital market assumptions as proposed by Staff. We would also note that Staff has done considerable work to develop internal forecasting models and believe that CalPERS will be well served to make greater use of these views in future ALM projects.

Should you require anything further or have any questions, please do not hesitate to contact us.

Best regards,

Steven J. Foresti

Chief Investment Officer, Asset Allocation & Research, Wilshire Advisors

Thomas Toth, CFA

Managing Director, Wilshire Advisors