

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

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Investment Committee  
November 15, 2021

# 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<sup>1</sup>: 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

# Affiliate Funds' Capital Market Assumptions<sup>1</sup> - 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 <sup>2</sup>	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%
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%

<sup>1</sup> Some of the CMAs were also adopted for the PERF in September 2021 and some are additional and specific to the Affiliate Funds.

<sup>2</sup> 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%	<ul style="list-style-type: none"> <li>Labor force participation recovers moderately</li> <li>Fed keeps rates low for longer</li> <li>No assumptions made on US fiscal infrastructure bill</li> </ul>	6.8%	0.1%	5.3%
Upside	2.9%	2.6%	<ul style="list-style-type: none"> <li>Rapid recovery, confidence boost, re-opening</li> <li>Labor force participates in labor market sooner</li> <li>Fed keeps rates low for longer</li> <li>Output driven by pent-up demand and excess savings</li> </ul>	7.2%	-0.5%	5.7%
Downside	2.3%	1.8%	<ul style="list-style-type: none"> <li>Labor force participation recovers moderately</li> <li>Business investment weakens</li> <li>Fiscal debt overhang, government seeks to repay gradually</li> </ul>	6.2%	0.9%	4.5%

# 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%	<ul style="list-style-type: none"> <li>Long-run equilibrium relationships remain consistent with history</li> </ul>	6.8%	2.6%	5.5%
Upside	2.3%	2.7%	<ul style="list-style-type: none"> <li>No permanent negative impact to supply side of economy from pandemic</li> <li>In the long-run total factor productivity rises</li> <li>Fed framework facilitates higher inflation on average</li> <li>Income accrues to labor</li> </ul>	7.5%	2.7%	6.2%
Downside	1.6%	1.7%	<ul style="list-style-type: none"> <li>Demographics/population growth remain weak</li> <li>Flat productivity growth</li> </ul>	6.3%	2.7%	4.7%



## 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%
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%
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%