"2020 Update: Market Decline Worsens the Outlook for Public Plans"
by Jean-Pierre Aubry, Alicia H. Munnell and Kevin Wandrei

Projection Methodology

"2020 Update: Market Decline Worsens the Outlook for Public Plans" reports on the current status of public plans as of fiscal 2020 and projects their status out to 2025. However, of the roughly 200 major state and local government pension plans in the Public Plans Database (PPD), only half had released data for fiscal 2019 and none had reported for fiscal 2020. So, the brief's analysis relies on a plan-by-plan projection based on data provided in the most recently released reports. The appendix provides a description of the projection methodology.

Projected Investment Returns

The analysis assumes that plans maintain the most recent asset allocation reported in the PPD (generally, based on CAFRs reporting as of fiscal year 2019) through 2025. Annual returns for each asset class are based on changes to selected indices presented in Table 1.

Table 1. *Indices Used to Project Asset Class Returns*

Asset class	Index
Equities	Russell 3000
Fixed income	S&P Aggregate Bond Index
Cash	S&P 3-month US Treasury Index
Private equity	LPX Group Composite Listed Private Equity Index
Hedge funds	HFRI Fund of Funds Composite
Commodities	S&P World Commodity Index
Real estate	MSCI US REIT Index

For future periods in which index data is not available, the analysis assumes two scenarios:

- *Faster Recovery:* Indices remain at their current levels until June 2021 and then linearly return to pre-crisis levels – in this case, the level as of December 2019 – by June 2023. Thereafter, each plan achieves a 7.2-percent return each year – the average assumed return for PPD plans in 2019.
- *Slower Recovery:* Indices remain at their current levels until June 2021 and then linearly return to pre-crisis levels by June 2025.

Projected Contribution Growth

Total pension contributions (employee and employer combined) for each plan are assumed to grow by 8.5 percent in 2019 and 2020 – equal to the average annualized rate of growth for PPD plans between 2013 and 2018. Thereafter, each plan's contributions grow by 2.5, 2.6, 6.8, 6.5, and 6.5 percent from 2020 to 2025 – equal to the average year-to-year pattern of growth for all PPD plans immediately following the Great Recession in 2009.

Projected Benefit Growth

Annual benefit payments for each plan are assumed to grow by 6.1 percent each year – equal to the average annualized rate observed between 2013 and 2018 for PPD plans.

Projected Assets

Projected market assets for each plan are estimated based on the following equation: *Asset(t+1) = Asset(t)*(1+investment return(t+1)) + .5*(contributions(t+1) – benefits(t+1))*(1+investment return(t+1)) + .5*(contributions(t+1)-benefits(t+1)).*

To convert market assets to actuarial assets, the CRR applies each plan's method of actuarial smoothing to the estimated market gains and losses calculated by comparing each plan's projected investment returns to their assumed return.

Actuarial Liabilities

Actuarial liabilities for each plan are estimated based on the following equation: *Liabilities(t+1) = Liabilities(t)*(1+assumed investment return(t+1)) + .5*(normal cost accrual(t+1) – benefits(t+1))*(1+ assumed investment return(t+1)) + .5*(normal cost accrual(t+1) - benefits(t+1))*

The assumed return for each plan remains constant at the most recently reported levels. Normal cost accrual is equal to the total normal cost as a percent of payroll multiplied by covered payroll. The analysis assumes that each plan's total normal cost as a percent of payroll remains constant at the most recently reported levels while covered payroll grows by the plan's most recently reported assumption for payroll growth.