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New Model Highlights Link Between Public Pension Plan Demographics and Fund Volatility

Albany, NY — The Rockefeller Institute of Government of the State University of New York (SUNY) released a report and policy brief introducing a Public Pension Stochastic Simulation Model that examines the year-by-year dynamics of pension fund finances. The model forecasts the long-term outcomes of specific plans with real-world characteristics under different investment return scenarios and funding policies.

Starting from a plan's initial position, the model projects the future annual assets and cash flows — including benefit payments, employer and employee contributions, and investment income — based upon given model inputs. Don Boyd, the Rockefeller Institute's director of fiscal policy, and Yimeng Yin, programmer and research analyst, note that certain characteristics of plan maturity, in an environment of increased investment-return volatility, are associated with risks to plan funding:

- Growing plans with increasing numbers of workers are less susceptible to investment risk than are shrinking plans; and
- Very mature plans with high assets relative to payroll and high cash outflows face greater funding risk, all else equal.

These findings are particularly significant now, because public pension plans are much more mature now than they were 10 or 20 years ago, with lower numbers of active workers per beneficiaries, higher net cash outflows, and higher asset payroll ratios. Many funds will mature further as the population continues to age, and as government work forces age. This maturation will lead to higher risks of pension plan underfunding, all else being equal, unless pension funds invest in less volatile assets.

The Rockefeller Institute's efforts in this policy area are occurring as interest in, and concern for, the solvency of public pensions is growing nationally. Approximately two-thirds of public pension funds' $3.7 trillion of assets are in investments other than cash and fixed income, and have volatile investment returns. Under these circumstances, investment gains and losses can become larger relative to payroll, government contributions can become more variable, and plan funded ratios can become more volatile.

The Rockefeller Institute model takes into consideration: retirement benefit rules; plan demographics in the initial year; decrement tables with mortality rates, retirement rates and separation rates; salary schedules; inflation and aggregate payroll growth assumptions; actuarial rules and methods for determining actuarial liability, normal cost, and an actuarially determined contribution; employee and employer contributions; and rules or data specifying investment returns.

This is the third report of the Rockefeller Institute's Pension Simulation Project. In addition to the authors, the project team includes Lucy Dadayan, senior researcher, and Kathleen Tempel, project manager. The project is supported by the Laura and John Arnold Foundation and The Pew Charitable Trusts.

To read the report, go to www.rockinst.org/pdf/government_finance/2016-12-07-Pension_Demographic_Characteristics.pdf. To read the policy brief, go to http://www.rockinst.org/pdf/government_finance/2016-12-07-Demographic_Policy_Brief.pdf.

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