Discussion: Risky Choices: Simulating Public Pension Funding Stress with Realistic Shocks by James Farrell and Daniel Shoag

Byron Lutz
Board of Governors of Federal Reserve

Municipal Finance Conference
July 17, 2017

Federal Reserve Disclaimer

The opinions expressed are those of the author and do not necessarily express the opinion of the Board of Governors of the Federal Reserve.

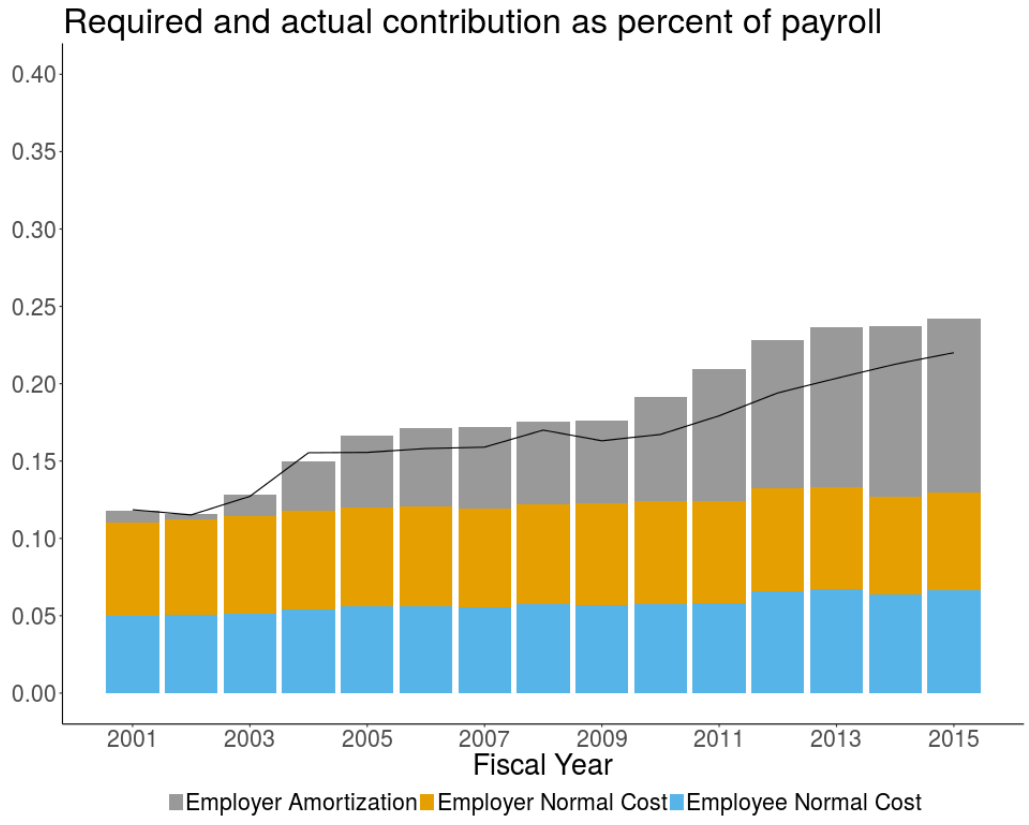
Very Nice Contribution

1. Previous work on S&L pensions has tended to focus on liability side
2. Asset side is important, particurarly for "mature" plans (Munnell et. al. 2013)
    - Assets are large relative to funding base
    - Cash flows are negative
    - Significant share of plan participants are retired and no longer contributing

Very Nice Contribution

1. Previous work on S&L pensions has tended to focus on liability side
2. Asset side is important, particurarly for "mature" plans (Munnell et. al. 2013)
   - Assets are large relative to funding base
   - Cash flows are negative
   - Significant share of plan participants are retired and no longer contributing
3. Important not only for individual government finances and retiress, but economy more broadly

Required and Actual Contributions



Source: Public Plans Database, Boston College

- Increase in required contribution mostly due to asset returns which were 1.5% per year lower than assumed

Major Impact on S&L Gov. Budgets

Annualized Growth 2001-2015 (nominal $)	
Actual Total Pension Contributions	7.4%
Actual Employer Contributions	**9.0%**
Actual Benefits paid out	7.0%
Tax receipts	3.9%
GDP	3.9%
Workforce	0.3%
Construction	2.6%

Very Nice Contribution (cont.)

4. Policy relevant
    - Gives sense of stress on annual budgets
    - Risk is difficult to think about, yet paper provides very accessible results
    - Exercises which show how different policy maker choices–discount rates and annual contributions–interact with risk

Two Similar Papers on Same Topic

- Fortunnate to have two very high quality papers that come to broadly similar conclusions
- Provides opportunity to compare and contrast

Distribution of Asset Returns

- Assumptions over distribution of asset returns is most important difference between two papers
- F&S paper uses annual data from 1986-2013 to construct a nuanced baseline distribution. E.g.
  - Correlation in return across asset classes
  - Variation in individual fund performace relative to benchmark
  - "Thick tails"

Distribution of Asset Returns

- Assumptions over distribution of asset returns is most important difference between two papers
- F&S paper uses annual data from 1986-2013 to construct a nuanced baseline distribution. E.g.
  - Correlation in return across asset classes
  - Variation in individual fund performace relative to benchmark
  - "Thick tails"
- B&Y paper assumes a normal distribution and uses a mean and variance consistent with plan assumptions and past studies

Asset Returns in F&S and B&Y

- In principle the F&S approach has alot to recommend it in terms of realism, nuance and counterfactuals it allows
- In practice, though, I worry a bit that the F&S assumptions may be overly optimistic

Asset Returns in F&S and B&Y

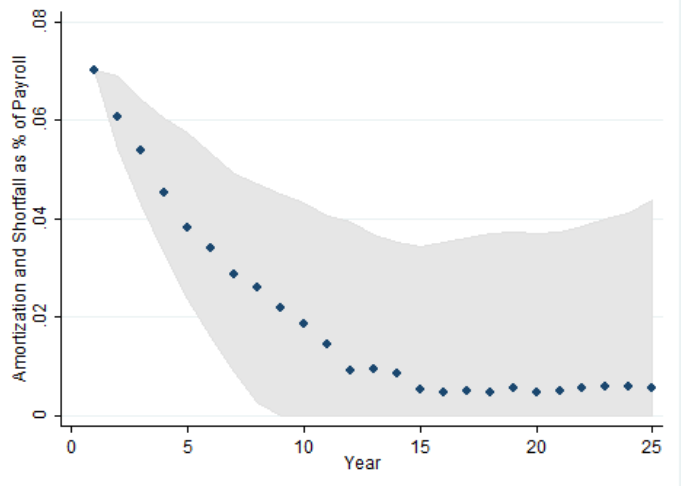
- In principle the F&S approach has alot to recommend it in terms of realism, nuance and counterfactuals it allows
- In practice, though, I worry a bit that the F&S assumptions may be overly optimistic
- Risk-free rate of return has been trending down
- Boston College PPD database has realized assumptions closer to B&Y for a more recent period

Baseline Return Assumptions

	Mean	Std. Dev.
F&S	10%	10%
B&Y	8%	12%

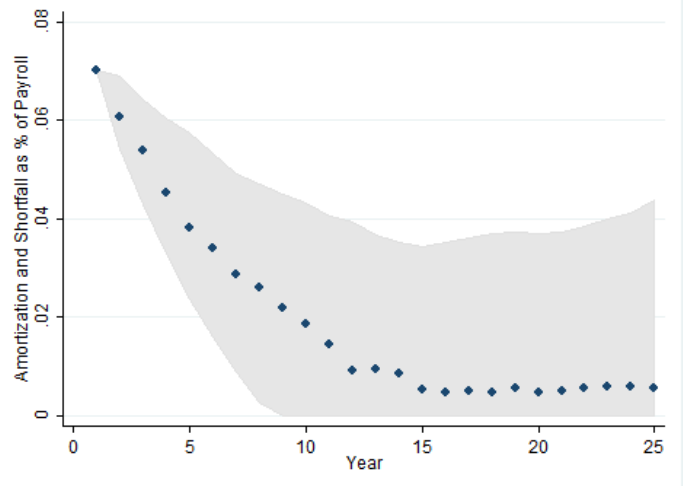
Different Asset Return Distributions Yield Different Conclusions in Some Instances

- F&S end up with a fairly rosy scenario in their base case



Different Asset Return Distributions Yield Different Conclusions in Some Instances

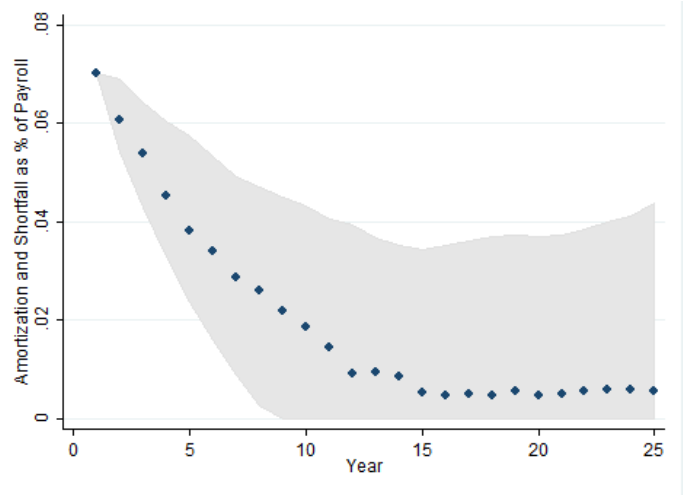
- F&S end up with a fairly rosy scenario in their base case



- B&Y finds only moderate improvement in funding status at median

Different Asset Return Distributions Yield Different Conclusions in Some Instances

- F&S end up with a fairly rosy scenario in their base case



- B&Y finds only moderate improvement in funding status at median
- Encourage both sets of authors to explore alternative return assumptions more thoroughly

Amortization Method

- F&S assume a open 30 year level-percent payoff amortization method
- Very sensible choice if using only one method, but it is very liberal

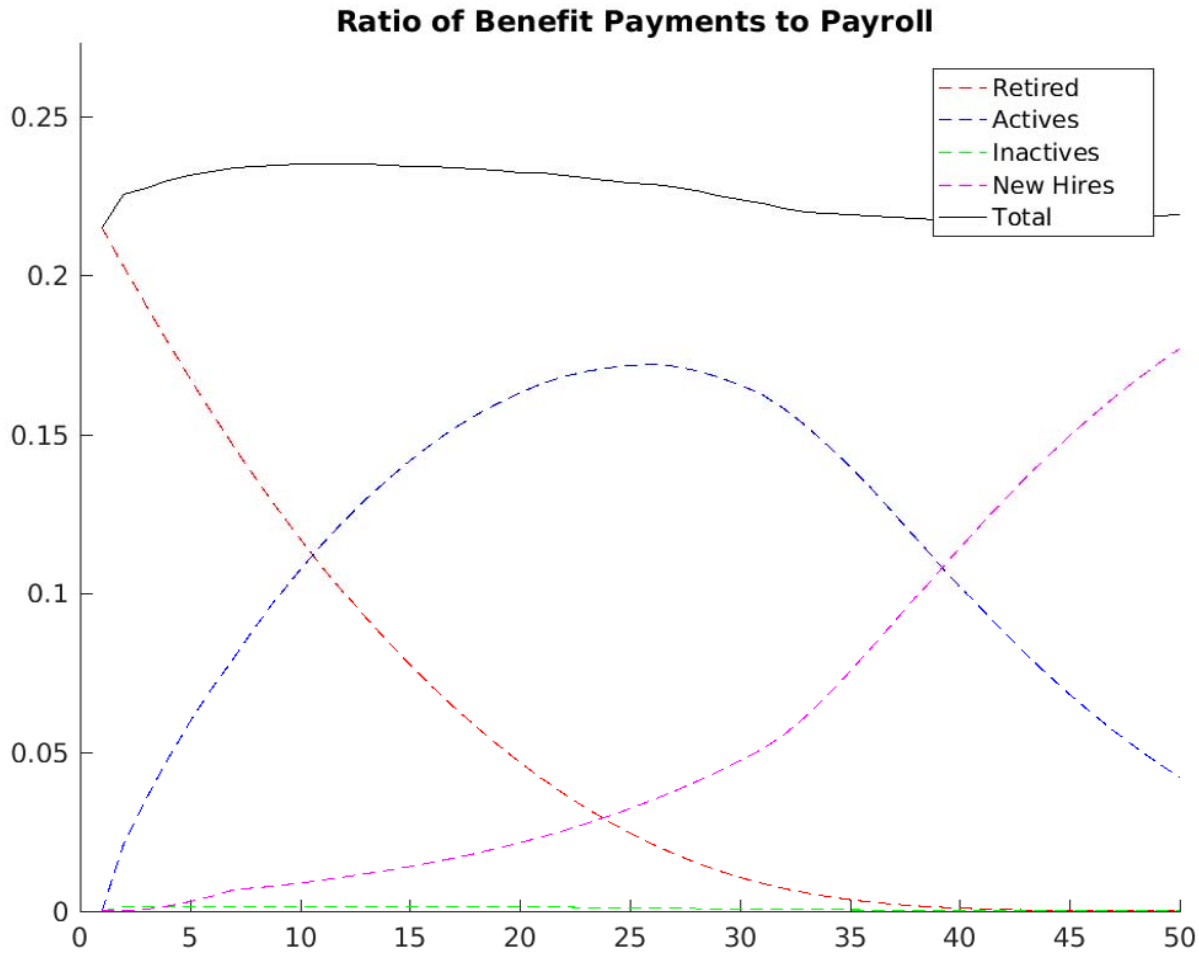
Amortization Method

- F&S assume a open 30 year level-percent payoff amortization method
- Very sensible choice if using only one method, but it is very liberal
- B&Y explore a number of different methods, including shorter horizons (15 years), closed window, level dollar
- Dramatically different outcomes
- Amortization very likely provides a frame of reference that alters funding behavior

Liability Side

- Both papers are heavily focused on asset side, but have a sophisticated machinery for the liability side
- Both papers base their simulations on a single plan that is very reasonably viewed as representative – Texas ERS (F&S) and Arizona SRS (B&Y)
- Plans often have very different projected benefit cash flows - e.g. Texas Teachers and Illinois Teachers
- Do conclusions of analysis change for plans with different paths for cash flows?

Texas Teachers Projected Benefit Cash Flows



Illinois Teachers Projected Benefit Cash Flows