Discussion of

"The Sustainability of State and Local Government Pensions: A Public Finance Approach"

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Main points

1. The values of r considered here are not the best choices, even in this risk-free paradigm
   - Basic theory suggests r > g is a natural assumption in any analysis of a long-run steady state
   - The assumption about the risk free rate and its future value is contrary to what financial markets are telling us, and inconsistent with long-run historical data
2. Defining sustainability as a long-run equilibrium with a constant debt-to-GDP ratio is unsatisfactory for both conceptual and practical reasons
3. “r” (on assets) is likely higher, and much more volatile, than assumed here
4. Under a more reasonable definition of sustainability and more realistic parameter choices, funding levels matter a lot, and a larger number of plans would be classified as unsustainable

Basic theory suggests r > g in a long-run steady state

- A standard utility maximization framework suggests r > g in deterministic framework where r clears debt market:

Max $U(C_1) + \beta U(C_2)$

s.t.

$C_1 = Y_1 - S$

$C_2 = Y_2 + S(1 + r)$

Optimal choice of S =>

(1) $$\frac{1}{1+r} = \beta U'(C_2)\frac{U'(C_2)}{U'(C_1)}$$

Say $U(C) = \ln(C)$, endowment economy so $C = Y$, and $Y_2/Y_1 = (1+g)$.

Then (1) implies that $(1 + r) = (1 + g)/\beta$. If $\beta < 1$, then $r > g$

e.g., $\beta = .98$, $g = 1\%$ implies $r = 3.06\%$

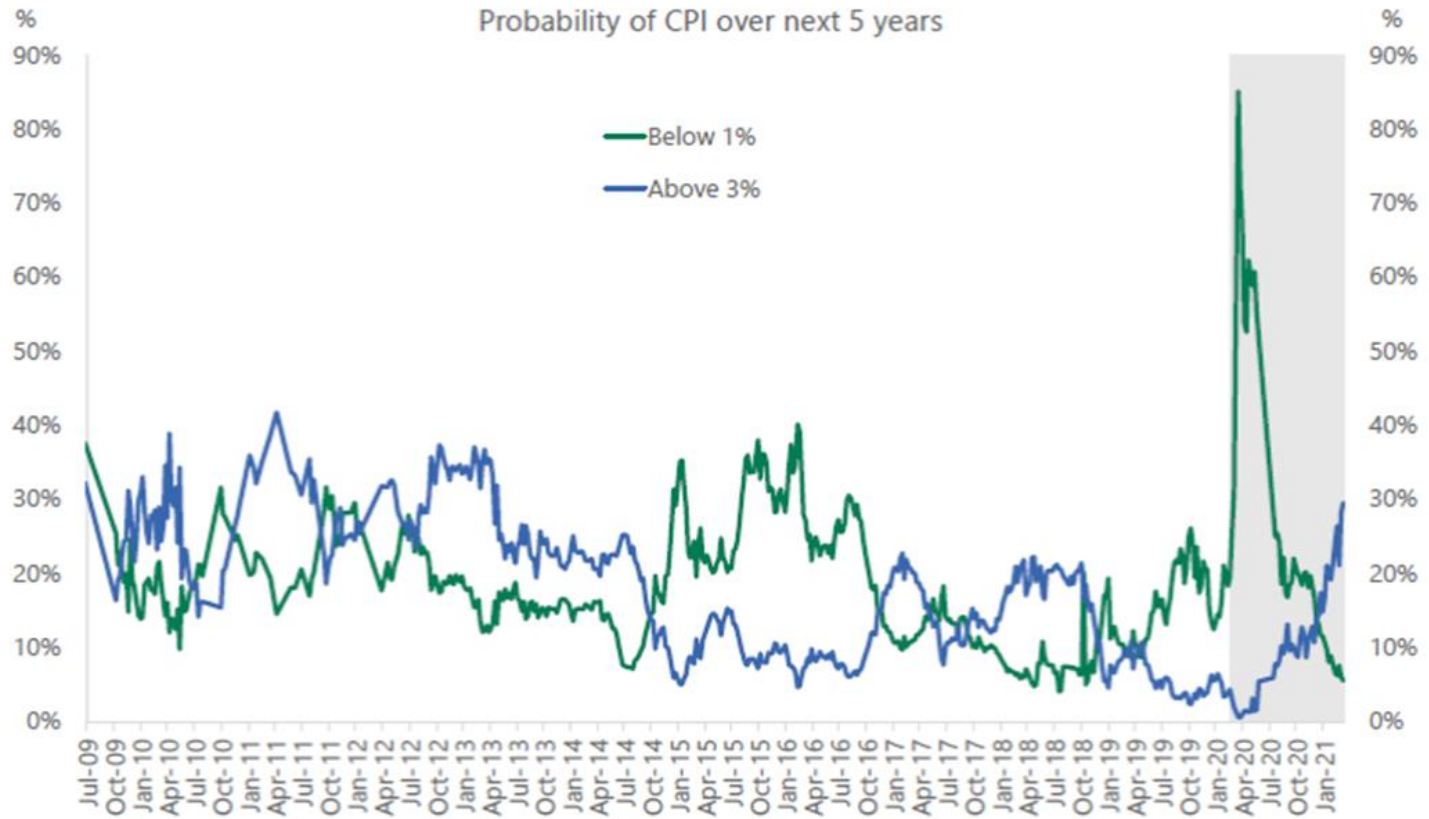
In the steady state r – g is roughly the rate of time preference.

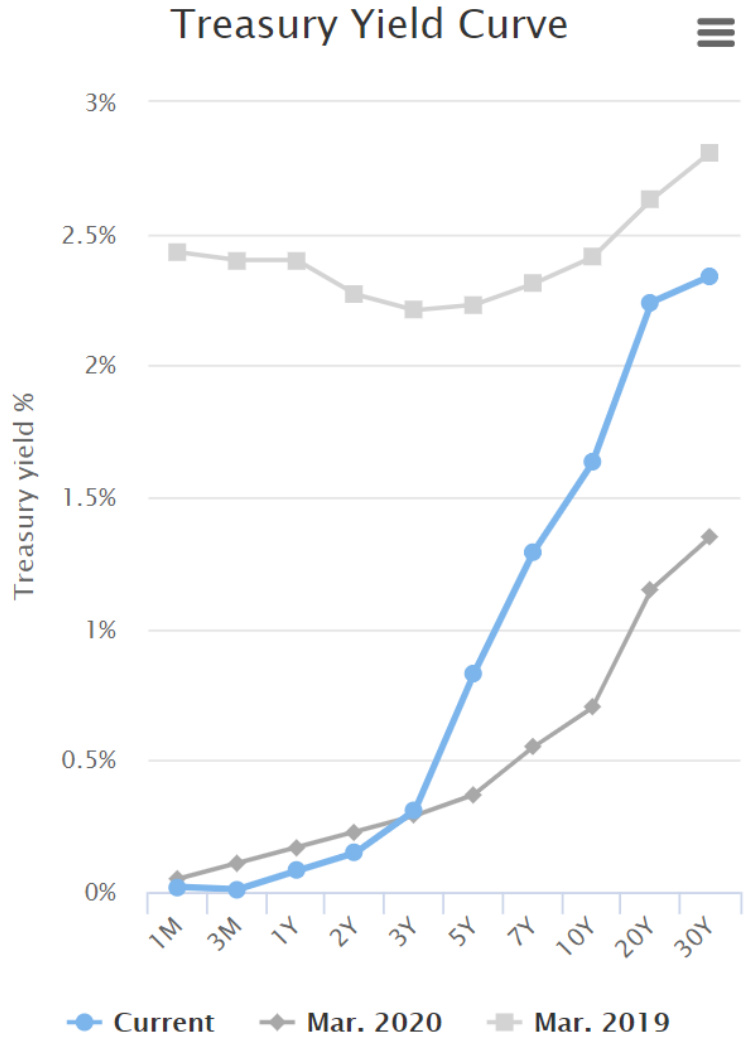
- Casts doubt on the most controversial conclusions in this paper that depend on r = 0 and g > 0
- Also see Viscusi (2006) “Rational Discounting for Regulatory Analysis” for related paradoxes when the social discount rate is taken to be 0 (e.g., no cost to delaying action).

Market data => r expected to rise, but very uncertain how much

Prices for interest rate caps and floors reveal market view on volatility

Market is pricing in a 30% chance of an extended period of high inflation



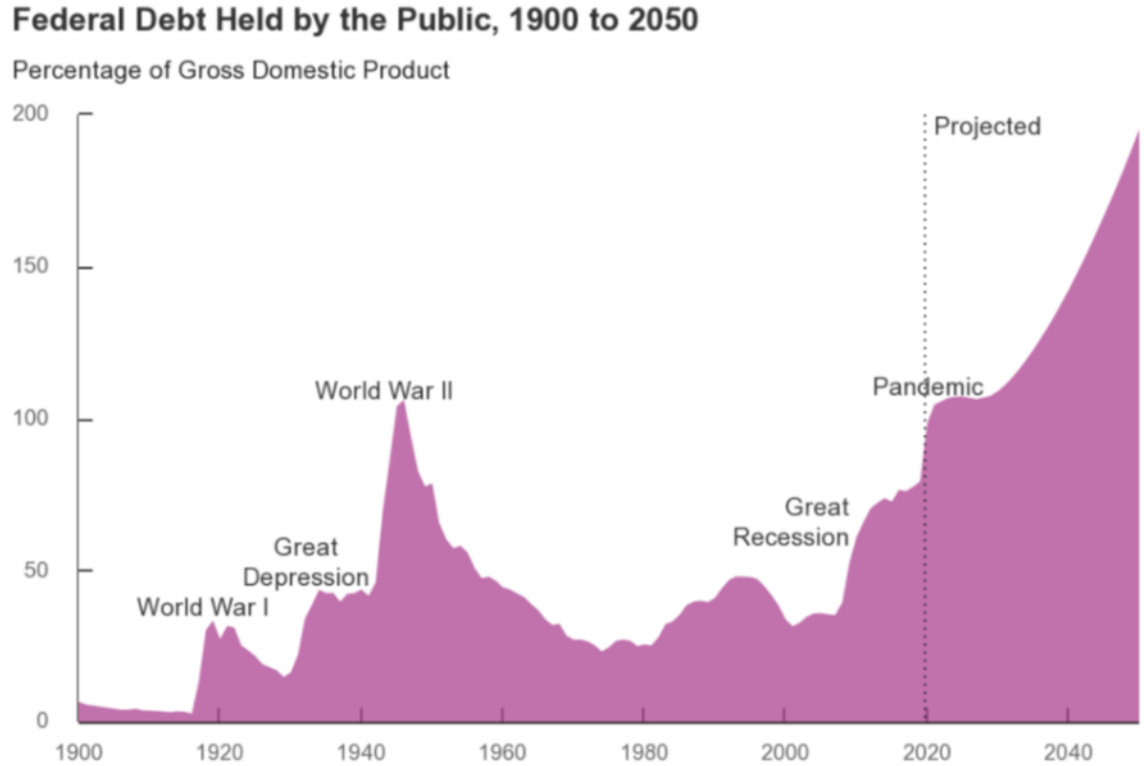


Note: Implied forward rate between 2026 and 2051 is 4.4%

Conclusion: Better to use historical average rates instead of transitory current values for steady state analysis.

What constitutes sustainability?

- Paper focus is on ***stability*** of "steady state" debt-to-GDP ratio
- Size also matters for debt-to-GDP ratio sustainability
  - Compare debt service burden at 100% vs 500% GDP (at r=3%, cost goes from 3% to 15% of GDP)
  - Pension debt is on top of federal debt
  - No indication we'll converge to steady state



Source: CBO Long term budget outlook

What constitutes sustainability?

- More fundamental considerations arise from political and institutional constraints

- Alternative definition: A fund is sustainable if it can meet its contractual obligations with a high probability
  - Analogy to Social Security and exhaustion of trust fund: crisis occurs if budget authority runs out
  - Steady state or very long run is largely irrelevant
  - Uncertainty, particularly in asset returns, is critical to the conclusions

What are realistic assumptions about asset returns?

- Can group assets into two broad classes, risky stocks and a risk-free bond
- Then asset returns are reasonably approximated by:
  - risk-free rate of 2.5% (nominal)
  - expected stock returns of 7.5% percent, std. dev. of 20%, normally distributed (nominal)
  - Inflation rate of 2%
- Expected return and variance of outcomes will vary with investment choices
  - Typical fund is 60-80% in risky assets
- For a given funding ratio, this affects the likelihood of exhaustion in two ways
  - Higher expected returns than suggest even less likelihood of insolvency than in paper
  - Volatility implies there is a chance of running out of funds
- Importantly, the likelihood of exhaustion increases with underfunding

Are most public pension plans sustainable?

- **By my definition of sustainability, which requires shortfalls to be unlikely, the answer appears to be "no"**
- A related result (from Lucas and Smith, 2020)
  - Model features realistic demographic, vesting, asset returns, contribution rates of 20%
  - We ask, what is the highest level of sustainable "scheduled benefits" (replacement rates) in a standalone collective defined contribution system, in the stochastic steady state?
  - "Sustainable" means chance of realized benefit falling short of the scheduled benefit is less than 10%, and the chance of it falling short of 80% of the scheduled benefit is less than 2%.
    - Realized benefit < scheduled benefit when extended period of low returns that exhausts asset holdings
  - The maximum replacement rate is about 30%, and the share invested in stocks is about 70%
  - **In a DB world, this loosely suggests a crisis in about 10% of years, even with modest benefits**
- **Authors are encouraged to simulate exhaustion date distributions for individual plans when returns are risky**

Appendix:
More on whether prefunding matters

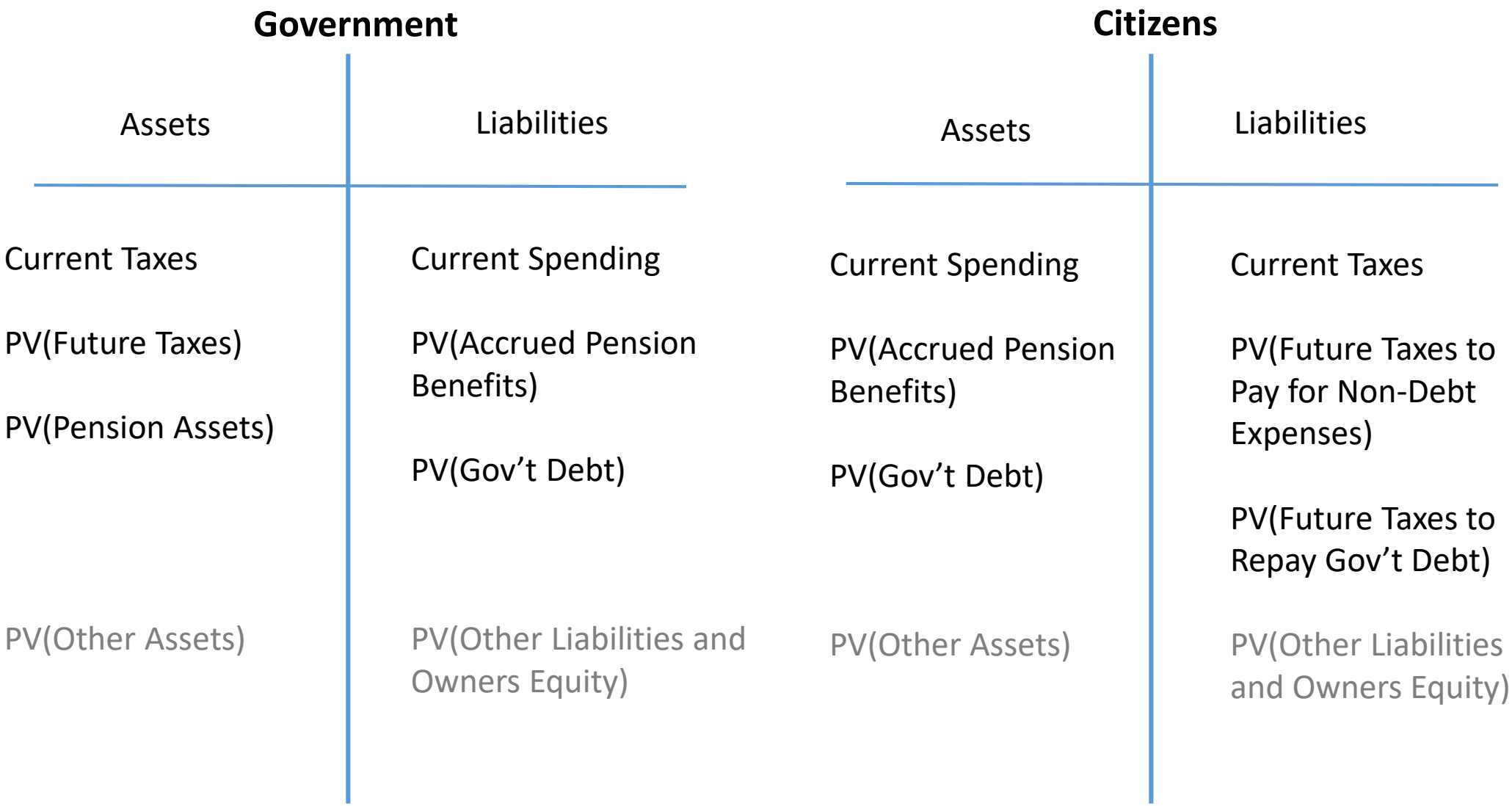
Indeterminacy of optimal funding rules

- **The economic decision to incur future pension obligations is made at the time of contractual commitment to an incremental worker**
  - Does the value of the contracted services justify the total costs incurred?
  - Total cost includes current wages and benefit accruals
- **As a first approximation, the degree to which a pension system is funded is irrelevant to government cost and risk**
  - Modigliani-Miller for pension accounting
  - The do-it-yourself policy option for taxpayers; they can undo risk in own portfolios
  - If taxpayers are borrowing constrained may prefer government to borrow more and take risk

Indeterminacy of optimal funding rules

- **Pension contributions need not crowd out other spending**
  - When they appear to do so, it is a political phenomenon, not an economic one
  - A local gov't can borrow in the muni bond market to cover asset purchases; this simply swaps explicit debt for implicit debt
  - This is illustrated on the following slides taking a balance sheet approach
  - For more details see Lucas, 2017, "Towards Fair Value Accounting for Public Pensions: The Case for Delinking Disclosure and Funding Requirements"
- ***Bottom line:*** Whether or not a plan is funded, and whether or not borrowing is used to buy assets, the **cost of pension accruals is ultimately paid for through current or future tax increases and/or reductions in other spending**. The **distributional consequences can be significant,** and should not be neglected

Figure 1: Government and citizen balance sheets



From: D. Lucas (2017), "Towards Fair Value Accounting for Public Pensions: The Case for Delinking Disclosure and Funding Requirements"

Figure 2: Government and citizen balance sheets with **fully funded** incremental pension benefits and no immediate change in tax collection or other spending

Government

Assets	Liabilities
Current Taxes	Current Spending
PV(Future Taxes) + Δ(Accrued Pension Benefits)	PV(Accrued Pension Benefits) + Δ(Accrued Pension Benefits)
PV(Pension Assets) +Δ(Accrued Pension Benefits)	PV(Gov't Debt) + Δ(Accrued Pension Benefits)

Citizens

Assets	Liabilities
Current Spending	Current Taxes
PV(Accrued Pension Benefits) + Δ(Accrued Pension Benefits)	PV(Future Taxes to Pay for Non-Debt Expenses) + Δ(Accrued Pension Benefits)
PV(Gov't Debt) +Δ(Accrued Pension Benefits)	PV(Future Taxes to Repay Gov't Debt) +Δ(Accrued Pension Benefits)

- Gov't funds increased pension assets by issuing gov't debt.
- New debt is paid with future taxes, pension liabilities increase.

Figure 3: Government and citizen balance sheets with **no incremental funding** of pension benefits and no immediate change in tax collection or other spending

Government

Assets	Liabilities
Current Taxes	Current Spending
PV(Future Taxes) + Δ(Accrued Pension Benefits)	PV(Accrued Pension Benefits) + Δ(Accrued Pension Benefits)
PV(Pension Assets)	PV(Gov't Debt)

Citizens

Assets	Liabilities
Current Spending	Current Taxes
PV(Accrued Pension Benefits) + Δ(Accrued Pension Benefits)	PV(Future Taxes to Pay for Non-Debt Expenses) + Δ(Accrued Pension Benefits)
PV(Gov't Debt)	PV(Future Taxes to Repay Gov't Debt)

- New pension liabilities are a type of government debt. Obligation will be paid with future taxes.

Figure 4: Government and citizen balance sheets with **fully funded** incremental pension benefits and an **immediate change in other spending**

Government

Assets	Liabilities
Current Taxes	Current Spending - Δ(Accrued Pension Benefits) + Δ(Accrued Pension Benefits)
PV(Future Taxes)	PV(Accrued Pension Benefits) + Δ(Accrued Pension Benefits)
PV(Pension Assets) +Δ(Accrued Pension Benefits)	PV(Gov't Debt)

Citizens

Assets	Liabilities
Current Spending - Δ(Accrued Pension Benefits)	Current Taxes
PV(Accrued Pension Benefits) + Δ(Accrued Pension Benefits)	PV(Future Taxes to Pay for Non-Debt Expenses)
PV(Gov't Debt)	PV(Future Taxes to Repay Gov't Debt)

- Government cuts other spending to buy pension assets. Pension liabilities increase.