

# City of Houston's Pension Dilemma

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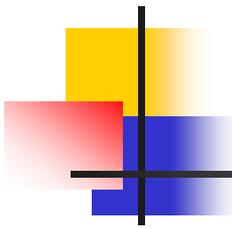
James A. Baker III, Institute for Public Policy, Rice University

Presentation to the City of Houston

Long-Range Financial Management Task Force

November 28, 2011

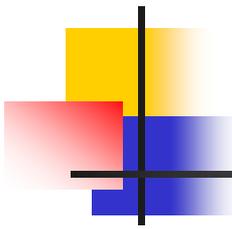




# Pension and Other Problems

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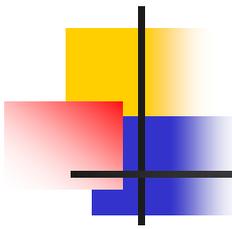
- Houston public employee pensions are underfunded by \$2.3 billion as of July 1, 2010
  - HMEPS unfunded accrued liabilities = \$1.4 billion
  - HPOPS unfunded accrued liabilities = \$0.7 billion
  - HFRRF unfunded accrued liabilities = \$0.2 billion
- More than \$600 million in pension contributions since 2003 have been funded by pension obligation bonds (POBs)
  - Reduces funding ratio by roughly 5 percentage points
- Other post employment benefits are underfunded by over \$3 billion



# Questions to Address

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- How serious is the pension problem?
- How will it affect the city of Houston?
- What are the risks moving forward?
- What are the potential solutions?



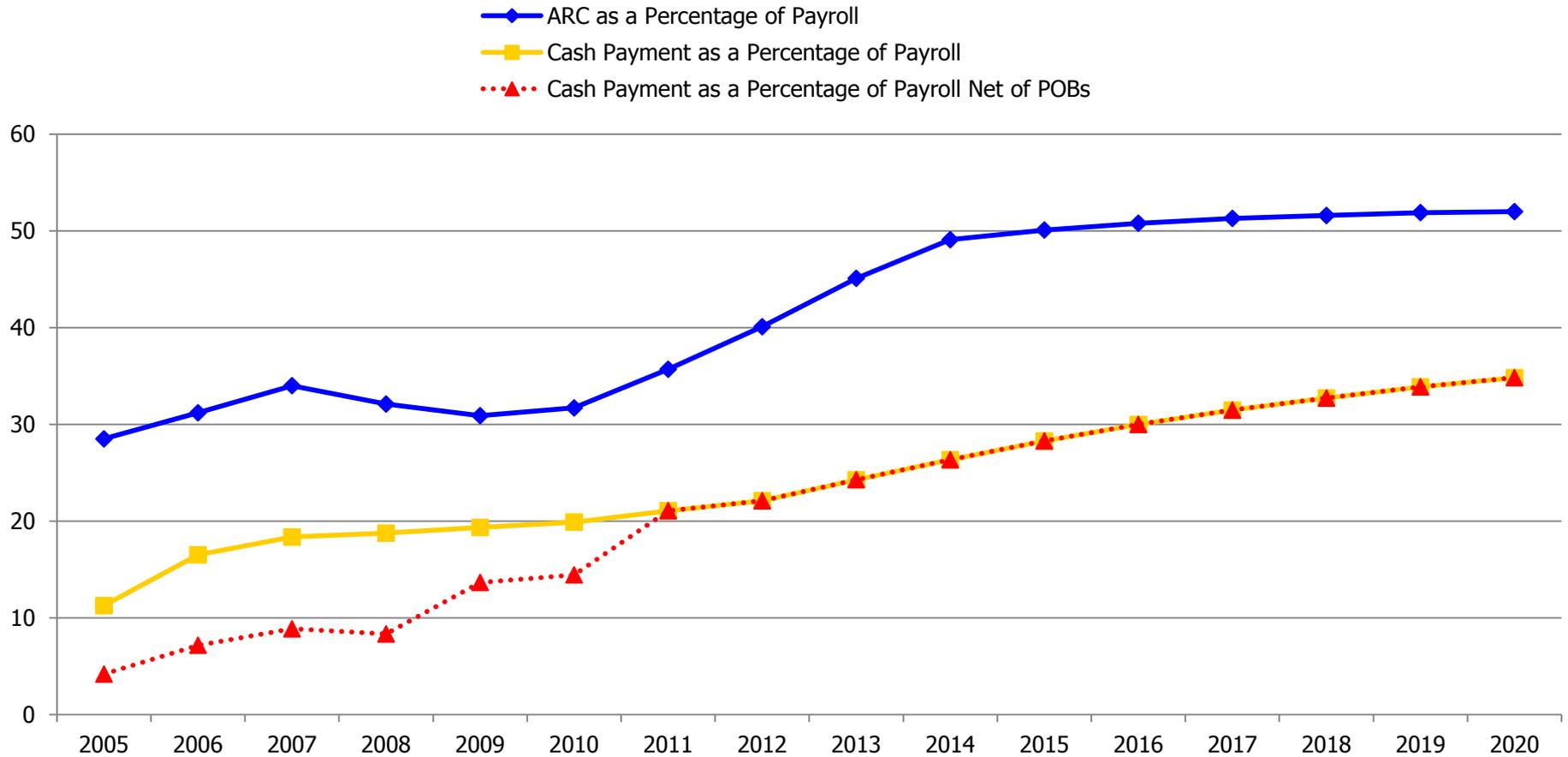
# How Serious is the Problem?

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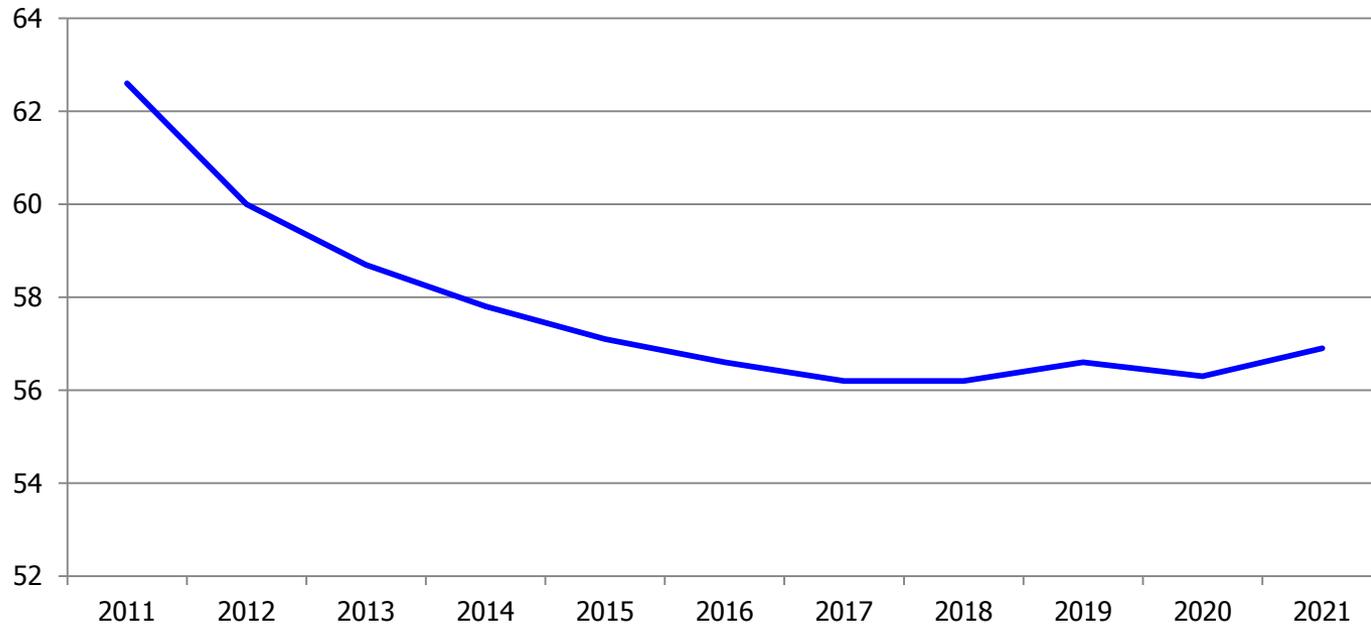
- To understand the seriousness of the problem we can examine
  - projected funded ratio of the pension systems, and
  - cash flow requirements to meet actuarial required pension contributions
- For example, HPOPS reports that actuarial projections indicate that with an 8.5% (12.5%) return on assets from 2010-2020 the funded ratio will fall to 50% (70%) assuming no changes to contributions or benefits

Source: page 39 of HPOPS Comprehensive Annual Financial Report (CAFR)

# HPOPS Employer Contributions 2005-2020

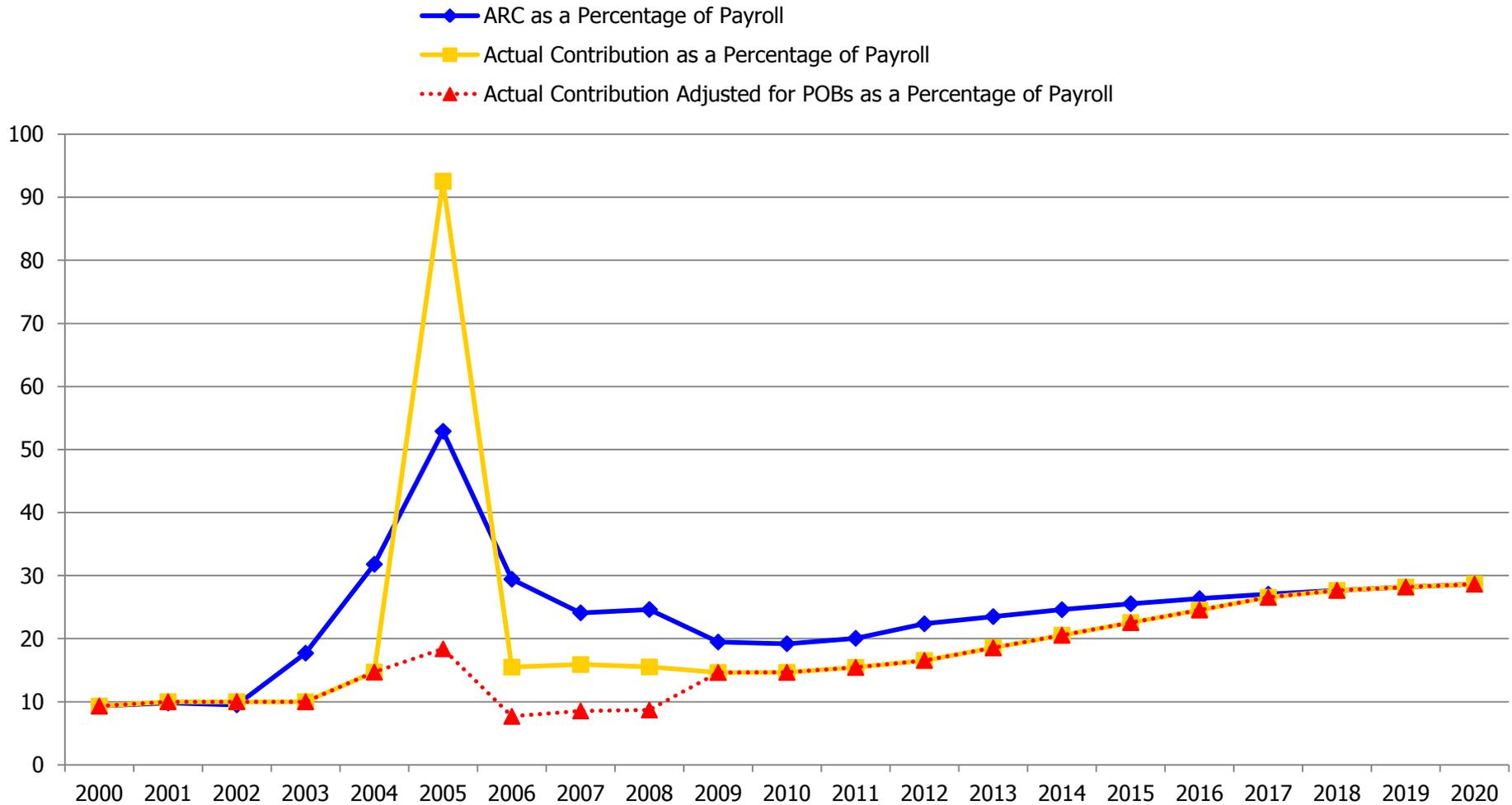


# HMEPS Funded Ratio

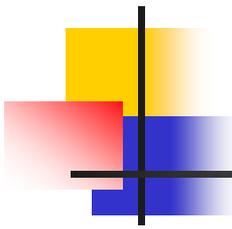


- Assumes 8.5 percent rate of return is realized and that the city makes the actuarially required contributions

# HMEPS Employer Contributions 2000-2020



Source: HEMPS CAFR for year ended June 30, 2010.

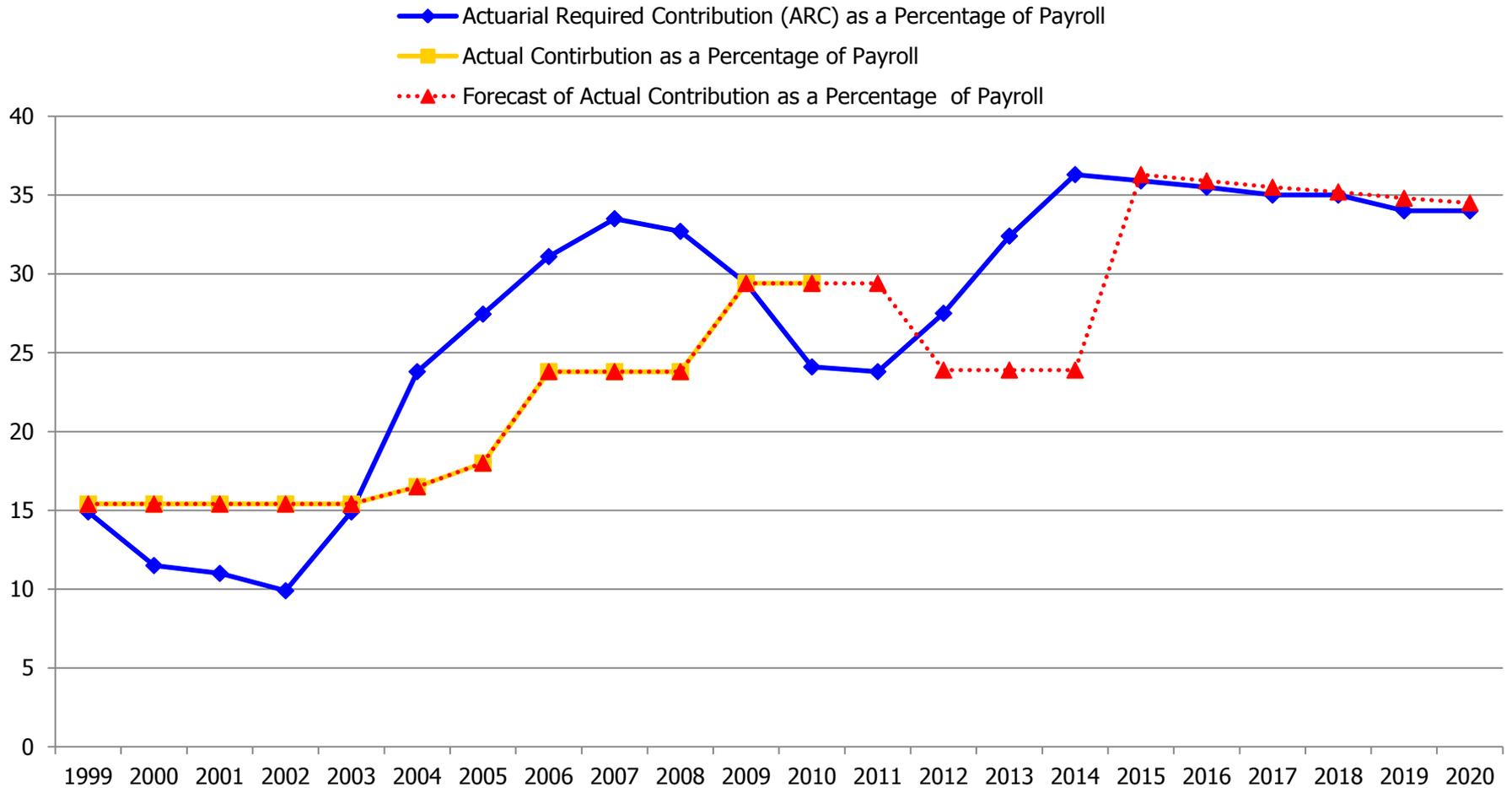


# HFRRF

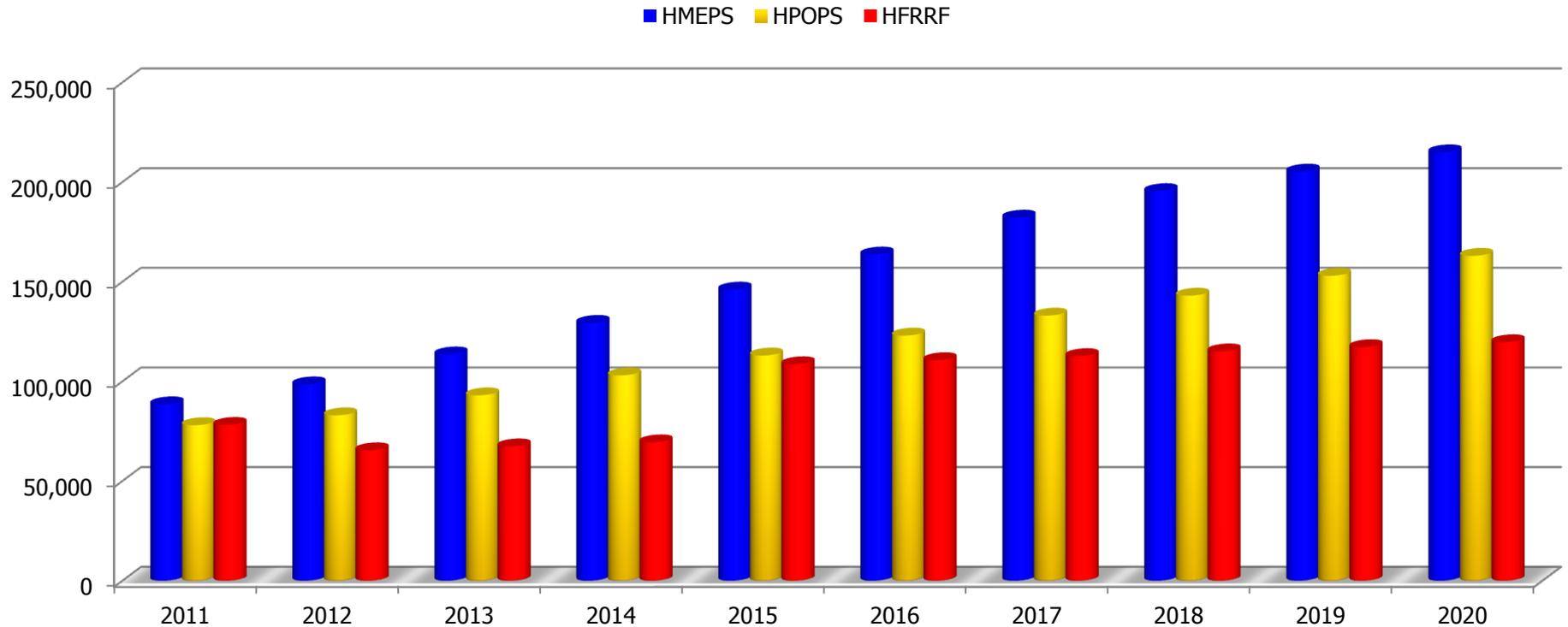
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- HFRRF is adequately funded
  - No Meet and Confer agreements
  - No City approval needed to increase benefits, but instead weak legal language regarding not creating a “material risk”
- However, HFRRF still poses a significant financial risk

# HFRRF Employer Contributions 1999-2020

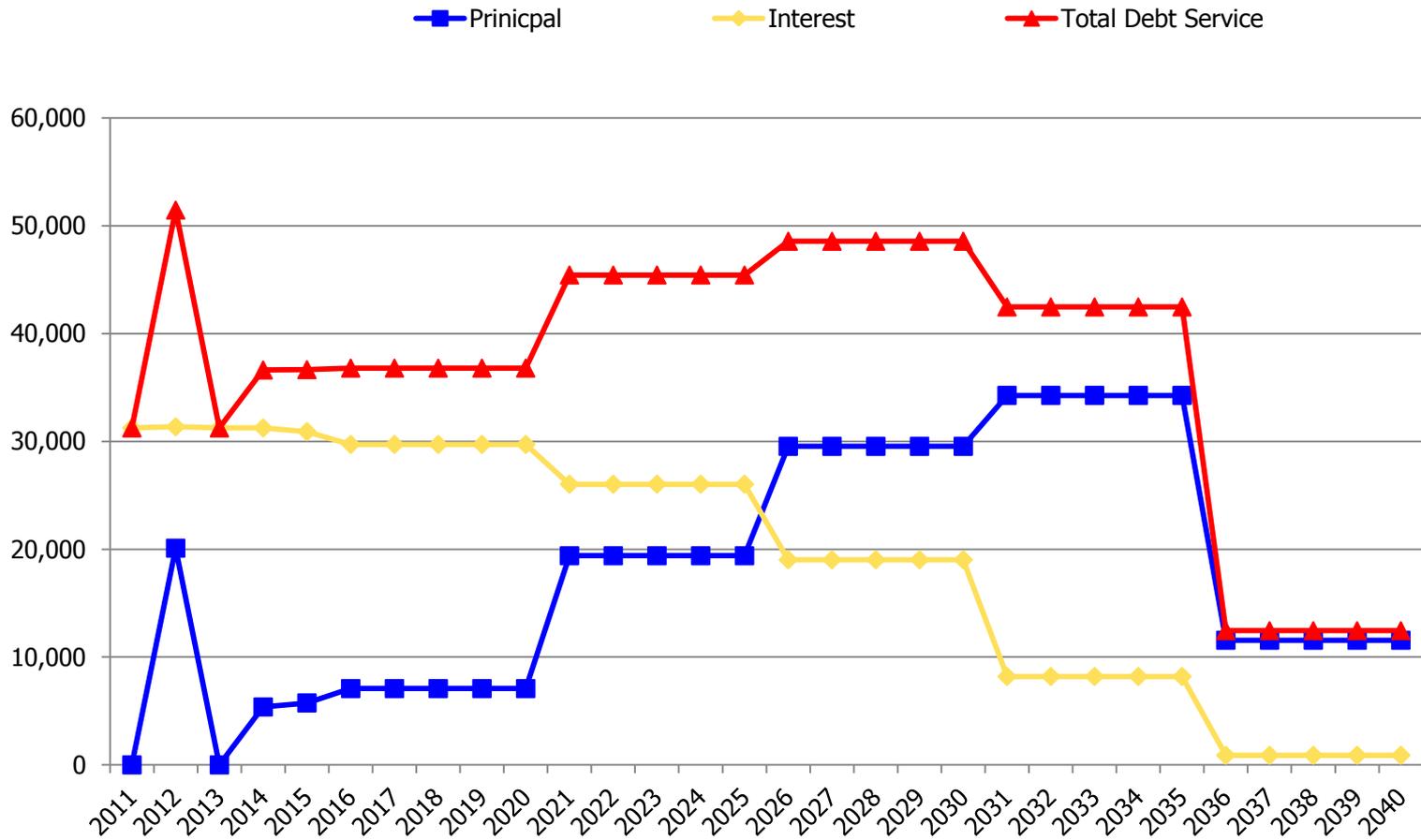


# Actual (2011) and Forecasted City Contributions (in thousands of \$)

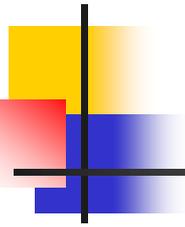


- As shown previously, contributions may be less than the ARC in some years

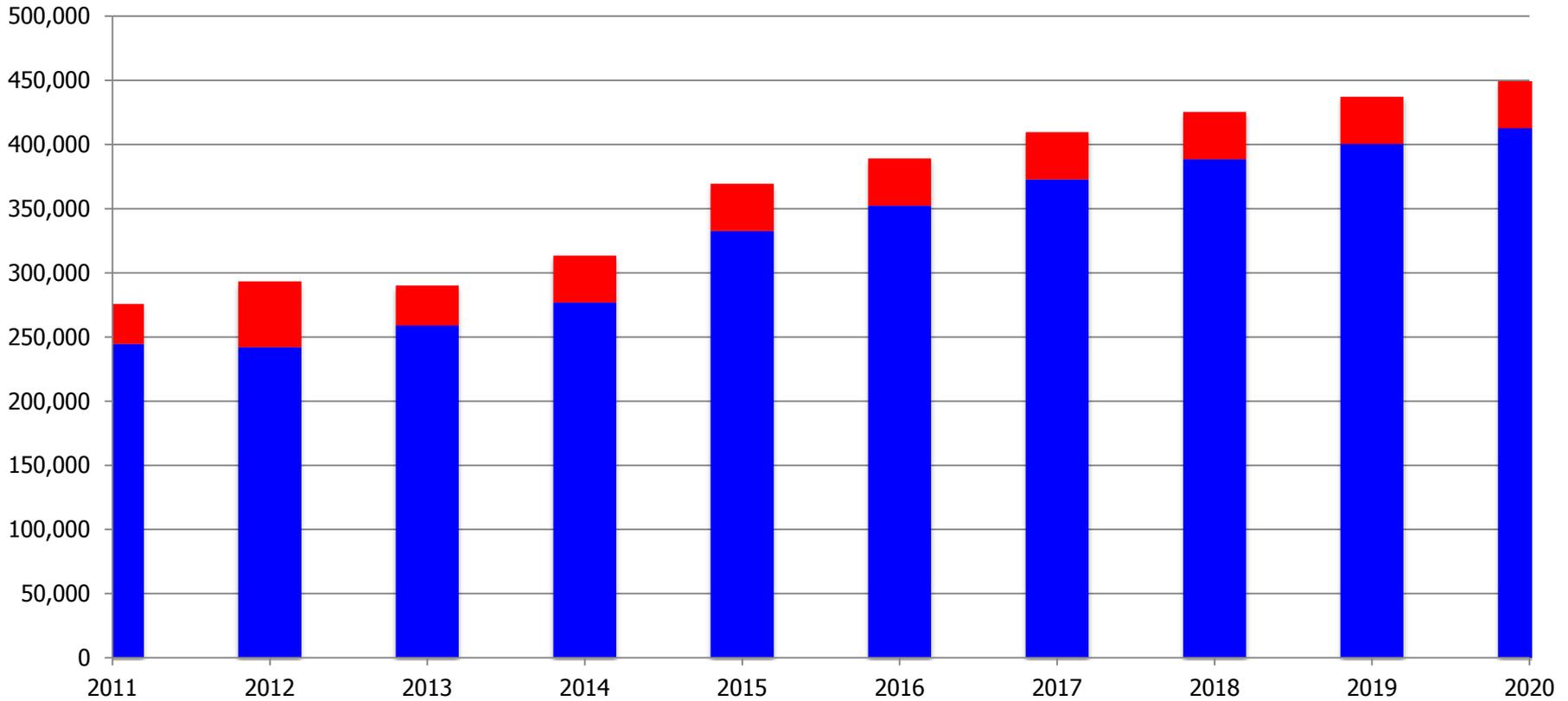
# Total Pension Obligation Bond Debt Service 2011-2040 (in thousands \$)



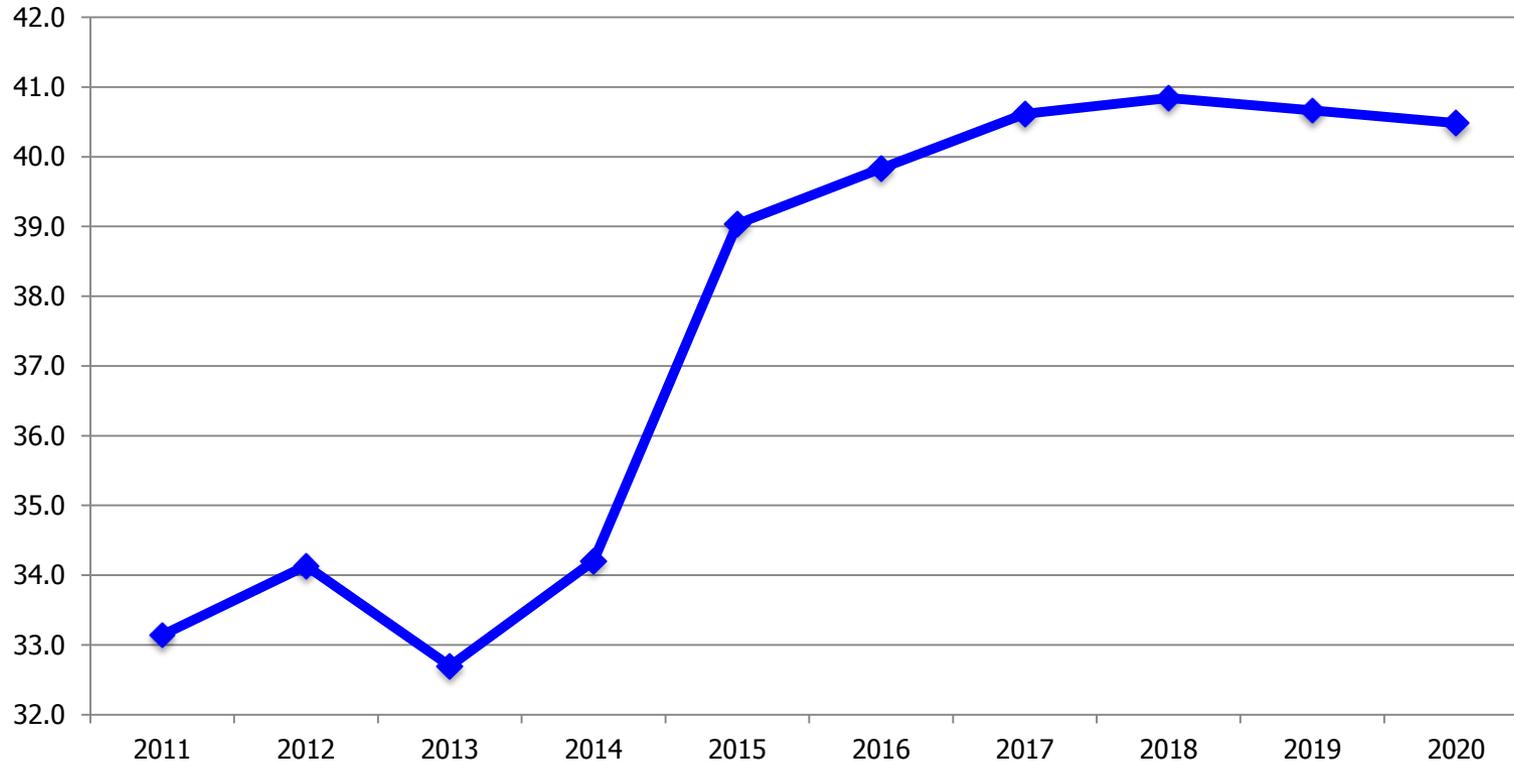
# Total City Contributions and Debt and Principal Payments on POBs



■ Total City Contributions ■ Total Debt Service

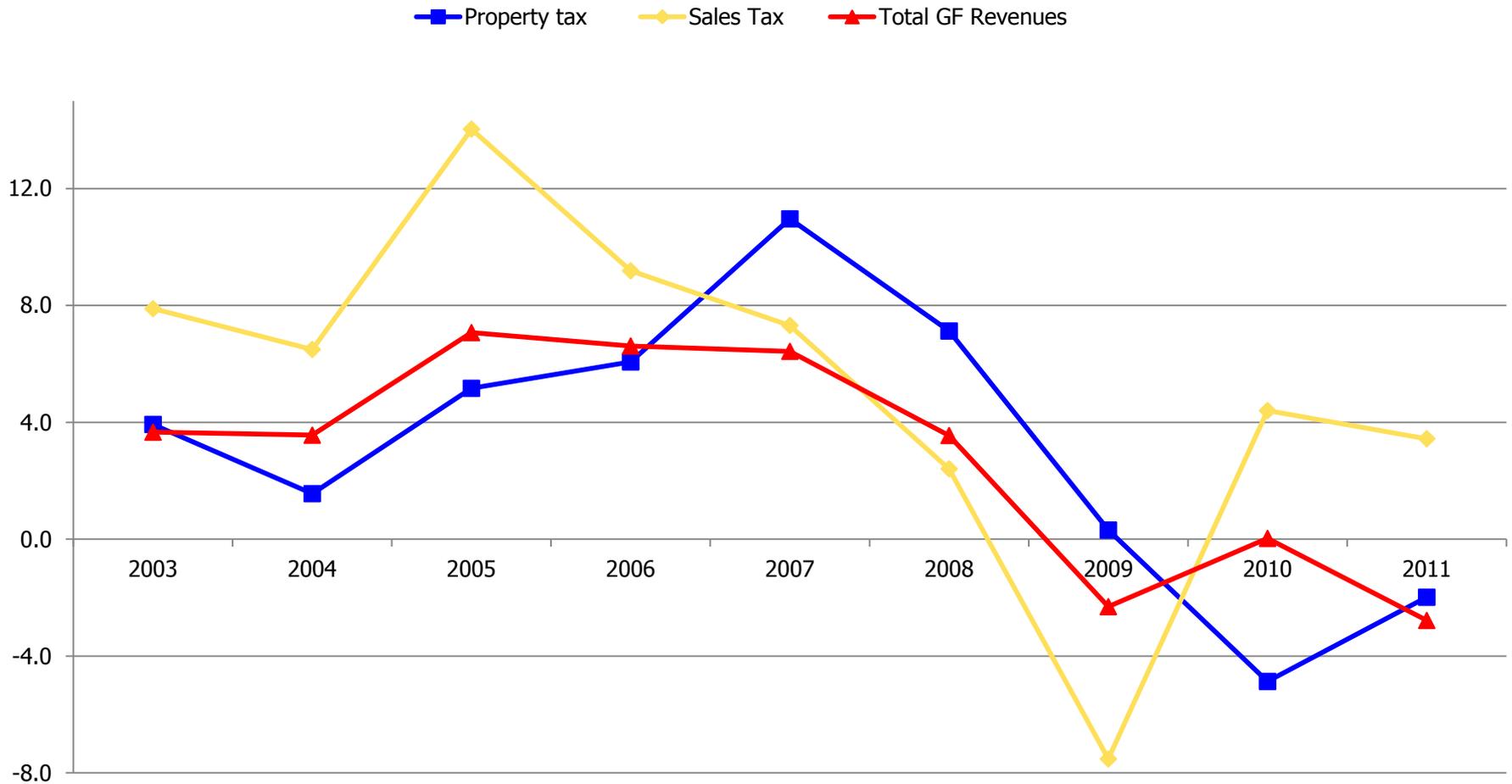


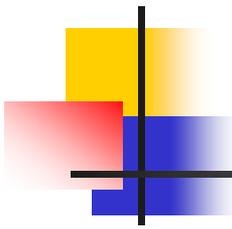
# Total Contributions as a Percentage of Total Revenues



- Assumes: 3.25% growth in total revenue per year  
4% in sales and property taxes and 1% in other revenues, and standard pension assumptions

# Growth Rates of Various Taxes: Problems Occurred in a Period of Booming Revenue

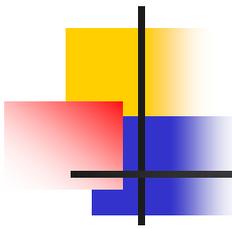




# The Potential Double “Whammy”

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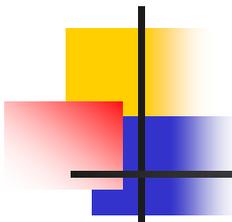
- A sustained period of slow economic growth could lead to below average returns and revenue growth
  - Below average returns on assets would lead to larger unfunded liabilities and increase ARC
  - Slower growth in revenues would reduce cash flows and require govt. spending cuts, which would be exacerbated by increased ARC
  - Increasing tax rates would hit taxpayers when they are least able to afford higher taxes (and would likely have other negative effects)
- In this respect, risk-taking in pension funds is the opposite of hedging (correlation of risk)



# Sensitivity of Pension Cost to Assumptions (accrued benefit - AB)

Source: Pension Mathematics with Numerical Examples, Howard E. Winklevoss

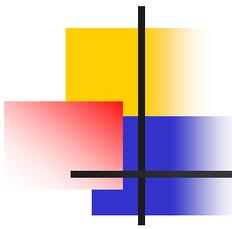
- 25% change in mortality, affects costs and liabilities by roughly 10-15% (relatively small)
- 25% change in termination or disability rates hardly affects normal costs or accrued liability
- 25% change in disability rates hardly affects normal costs or accrued liability (AB)
- Retirement rates have small effects under AB but larger effects under cost prorate methods
- Salary Rates (AB) 10% for 2 percentage points
- Costs are most sensitive to interest rates



# Interest Rate is Most Sensitive Assumption, and Most Controversial

Source: Pension Mathematics with Numerical Examples, Howard E. Winklevoss

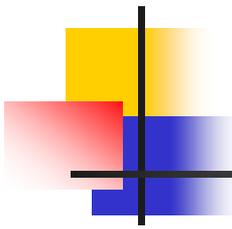
- Rule-of-thumb: each  $\frac{1}{4}$  of a percent change in the interest rate alters pension costs by 6-7%
- A rough estimate using 6.5% implies a 1 (2,4) percentage point reduction in the interest rate increase costs by 29% (160%,274%)
- Note the interest rate serves two purposes:
  - as a return on assets, and
  - as a discount rate for future benefits
- HMEPS, HPOPS, and HFRRF assume an 8.5%, which is moderately high (Rauh and Novy-Marx (2010) report an average of 8.03, median of 8.0)



# The Discount Rate – The Economists View

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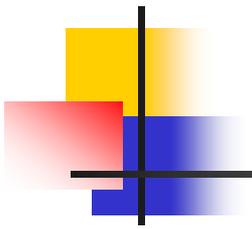
- The average return on assets should not be used as a discount rate for benefits:
  - Brown and Wilcox (2009): “finance theory is unambiguous that the discount rate used to value future pension obligations should reflect the riskiness of the liabilities”
  - Modigliani and Miller (1958) - future payment streams should be discounted to reflect their risks
  - Elliot (2010) “Virtually all economists, many actuaries, and the author, take issue with this approach to choosing a discount rate, an approach inconsistent with standard practice in finance, economics, and accounting for private sector firms”

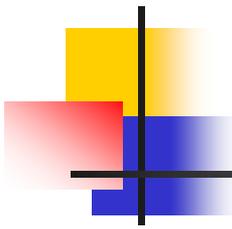


# Numerous Counter Examples to Using Expected Return as Discount Rate

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- Government borrows \$1 billion of 10-year bonds
- It spends \$558 million immediately
- It invests the remaining \$442 million in stocks and bonds with expected return of 8.5%
- We should be able to agree that the government has new debt of \$1 billion and unfunded liabilities of \$558 million
- Under GASB rules government has no unfunded liability because discounted PV of \$1 billion at 8.5% is \$442 million

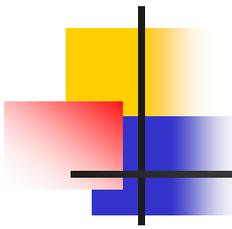
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- Using the expected return on assets ignores the risk of asset returns (i.e., the variance)
  - A common argument in favor (or against) of DB pensions is that employers faces the risk instead of workers
  - However, under GASB rules those risks are effectively ignored because we discount almost certain benefit payments at the risky return (which makes higher benefit payments more affordable)
  - Burden of risk is shifted to future taxpayers



# Some Argue in Favor Expected Return as Discount Rate

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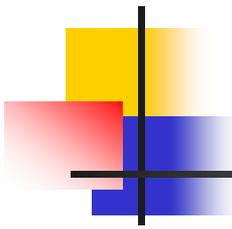
- For example, Picur and Weiss (2011; Government Finance Review)
- They argue that using a risk free rate could have negative consequences for public pensions:
  - Contribution rate volatility
  - Funding levels that are misleading or confusing
  - Contribution rates greater than what is needed
  - Lower investment returns as a result of shifting from equities to fixed income (J.P. Morgan study finds U.S. public pension plans tend to have higher equity exposure than corporate plans)
  - Abandonment of DB for DC plans



# The Burden on Future Taxpayers

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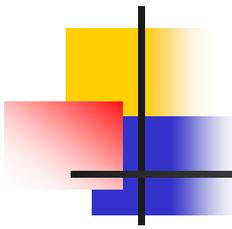
- Risk vs. reward trade-off is central to microeconomics
- Current assumption increase incentives for pension funds to invest in higher risk assets
  - Increases potential returns
  - Lowers the estimated actuarial cost of benefits making larger benefits seem affordable
  - Exposes future taxpayers to large risks
  - Risks that are correlated with other economic risks
- Is the City capable of contributing the ARC, if so at what cost (reduce services, higher taxes)?



# Potential Solutions

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- Near-term solutions (not many options)
  - Increased city contributions, which would also require a reduction in other services or increased revenues (where do these come from?)
  - Reduction in benefits of retirees or those nearing retirement
- Longer-term actions to increase stability
  - Increased contributions by city and employers
  - Reduction in benefits
  - Changing plan structure
- Questions?



# References

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- Brown and Wilcox (2009), "Discounting State and Local Pension Liabilities," *American Economic Review* 99(2), 538-542.
- Elliot (2010), "State and Local Pension Funding Deficits: A Primer," [http://www.brookings.edu/reports/2010/1206\\_state\\_local\\_funding\\_elliott.aspx](http://www.brookings.edu/reports/2010/1206_state_local_funding_elliott.aspx)
- Mergenthaler and Zang (2009), "Public Pension Funds: Asset Allocation Strategies," [http://www.jpmorgan.com/tss/General/Public\\_Pension\\_Funds\\_Asset\\_Allocation\\_Strategies/1289431691010](http://www.jpmorgan.com/tss/General/Public_Pension_Funds_Asset_Allocation_Strategies/1289431691010)
- Modigliani, F.; Miller, M. (1958). "The Cost of Capital, Corporation Finance, and the Theory of Investment". *American Economic Review* 48 (3): 261–297.
- Novy-Marx and Rauh (2010a), "Public Pension Promises: How Big Are They and What Are They Worth?" *Journal of Finance* 66(4), 1207-1245.
- Novy-Marx, Robert and Joshua Rauh, 2010b, "The Crisis in Local Government Pensions in the United States," October 2010, forthcoming, taken from Rauh's webpage on Northwestern University's website