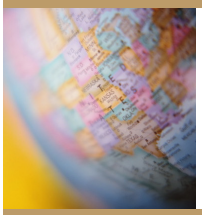

CENTER for RETIREMENT RESEARCH at BOSTON COLLEGE

STATE AND LOCAL PENSION PLANS NUMBER 73, SEPTEMBER 2020

2020 PUBLIC PLAN INVESTMENT UPDATE AND COVID-19 MARKET VOLATILITY

*By Jean-Pierre Aubry**

INTRODUCTION

State and local pension funding is the product of two key factors: required contributions and investment returns. Achieving the actuarially assumed return is critical to limit increases in contributions (for plan sponsors, participants and, ultimately, taxpayers). Even though financial markets have recovered from the crash sparked by the COVID-19 pandemic, most public pension plans will close fiscal year (FY) 2020 – which generally ends in June – with an annual return that falls short of actuarial expectations.

This *brief* investigates public pension investments and the implications of the market downturn. The first section documents the investment performance of public pension plans as of June 2020, a date that includes the crash in March and subsequent rebound. The second and third sections assess the concerns raised during the crash regarding public plan liquidity and vulnerability to sharp downturns. The final section concludes that even though public pension investment returns have fallen short of actuarial expectations in FY 2020, plans maintain a consistent cache of U.S. Treasuries that could be easily liquidated to pay benefits during severe market downturns.

UPDATE ON PUBLIC PENSION INVESTMENT RETURNS

State and local plans, on average, outperformed their assumed return in FY 2019 (the most recent reported annual data), with an average return of 8.9 percent compared to the average actuarially assumed return of 7.2 percent.[1] However in early 2020, the financial markets were severely affected by the COVID-19

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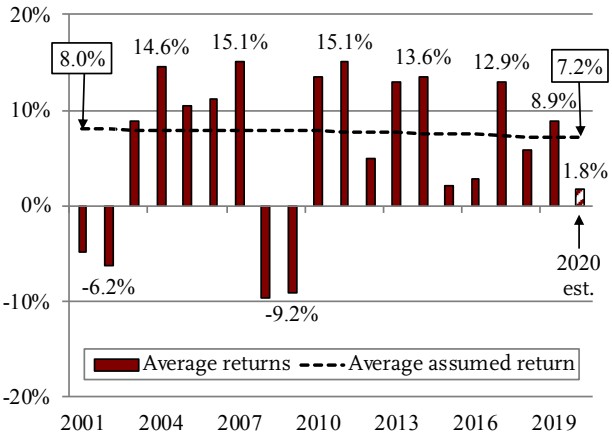
global pandemic and subsequent economic shutdown. Even though the market has recovered from the March crash, average returns for public plans in FY 2020 will fall short of actuarial expectations (see Figure 1).[2]

Figure 1. Average Net-of-Fee Investment Returns, FY 2001-2020

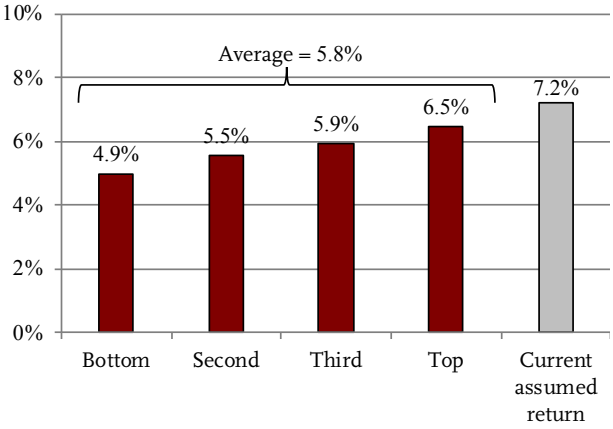


Note: See Endnote 2 for more on 2019 and 2020 values.
Sources: Public Plans Database (PPD) (2001-2020); and authors' calculations.

Annual returns since 2001 have been above the average assumed return about as often as they have been below. Therefore, one might think that investment returns have met expectations on average over this period. However, the year-by-year performance does not provide an accurate picture of plans' long-term performance relative to expectations. Calculating the annualized return (i.e. geometric return) from 2001-2020, public plans have averaged a 5.8-percent annual return over the last 20 years.[3] Although plans have incrementally reduced their actuarially assumed return from 8.0 percent in 2001 to 7.2 percent in 2020, their cumulative realized returns over this period have fallen far short of actuarial expectations.[4]

While virtually all plans have fallen short of their expectations, some have fared much worse than others. Plans in the top quartile of investment returns earned 6.5 percent on average compared to 4.9 percent for plans in the bottom quartile (see Figure 2).

Figure 2. Average Annualized Net-of-Fee Investment Returns, FY 2001-2020, by Quartile



Note: The average assumed return is very similar for each quartile.
Source: PPD (2001-2020).

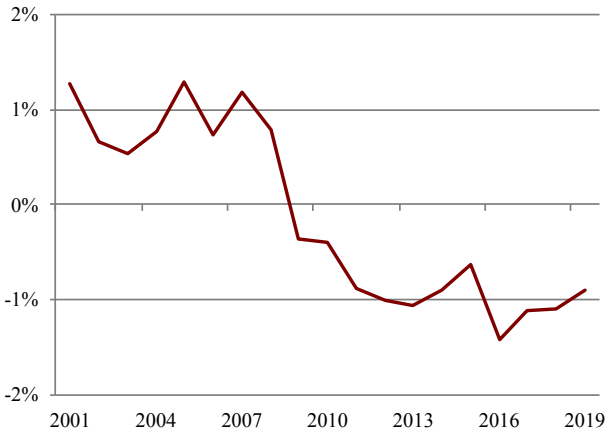
Initially, as long-term investors, public plans could point to long-term market performance to support their use of actuarially assumed returns that seemed high relative to recent performance and the shifting outlook for capital markets.[5] However, as the period of plan underperformance nears 20 years, pressure has increased for plans to use assumed returns that better align with the lower expectations for future market performance.[6]

Public Pension Liquidity and Market Downturns

Historically, pension funds could pay annual benefits from a combination of pension contributions and income from interest and dividends. In that way, the body of plan assets would remain untouched, allowing capital gains to accumulate unfettered. However, since the 2008-2009 financial crisis, contributions and investment income have fallen short of the amount needed to pay benefits, forcing plans to liquidate roughly 1 percent of their assets each year (see Figure 3 on the next page). In good years, plans can simply realize a portion of their capital gains to fund annual

benefits. But, during a market downturn – as experienced in the early spring of 2020 – plans could be forced to liquidate assets at depressed prices.

Figure 3. Contributions and Investment Income Minus Benefits, as a Percentage of Assets, FY 2001-2019

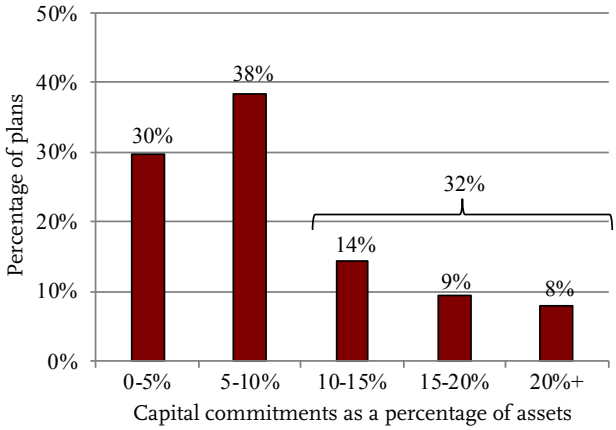


Source: Author's calculations based on PPD (2001-2019).

Contributing to liquidity challenges during market downturns is the increased allocation to alternative investments that has occurred since 2005. Alternatives often consist of hard-to-value illiquid investments, which means that existing appraisals could vary significantly from the value that plans would receive if they had to quickly sell their holdings in a crisis.[7]

Another challenge that comes with alternative investments – specifically private equity – is that plans are often subject to ongoing capital calls by their alternative asset managers. Generally, when a plan contracts with a private equity fund manager, it commits to the total capital it will provide to the fund manager to invest over the life of the fund. Then, as the fund manager identifies investment opportunities, the manager calls on the plan to provide portions of the total promised amount. In 2017, about one-third of plans in the PPD reported outstanding capital commitments equal to at least 10 percent of their total assets (see Figure 4). If alternative asset managers were to call for a significant amount of this outstanding capital during a crisis, it could force plans to liquidate more assets than they expected at the worst possible time.

Figure 4. Distribution of Plans by Outstanding Private Equity Capital Commitments as a Percentage of Assets, FY 2017



Source: Author's calculations based on plan financial reports and PPD (2017).

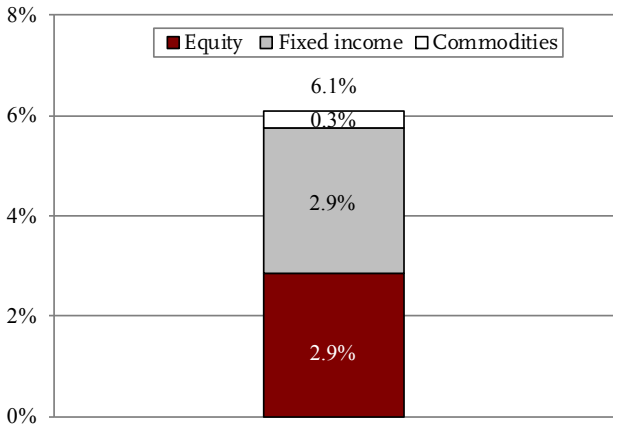
What Can Plans Do to Protect Themselves in Market Downturns?

Since 2009, as noted, public plan contributions and investment income have fallen short of what is required to pay benefits, so some portion of plan assets must be sold each year. In theory, pension funds can protect themselves from having to sell depressed assets during market downturns by holding some assets that tend to rise in value (or, at least, maintain their value) during downturns. One approach might be to hold derivatives that rise in value when pension asset values decline.[8] Another might be to hold U.S. Treasuries, which also tend to rise in value during market shocks and are extremely liquid.[9]

Derivatives

As of 2019, public pension plans held derivatives contracts covering assets worth about 6 percent of their total assets.[10] The assets covered by derivatives were split nearly equally between equities and fixed income, with a small fraction in commodities (see Figure 5 on the next page).[11]

Figure 5. Plan Assets Covered by Derivatives as a Percentage of Total Plan Assets, FY 2019



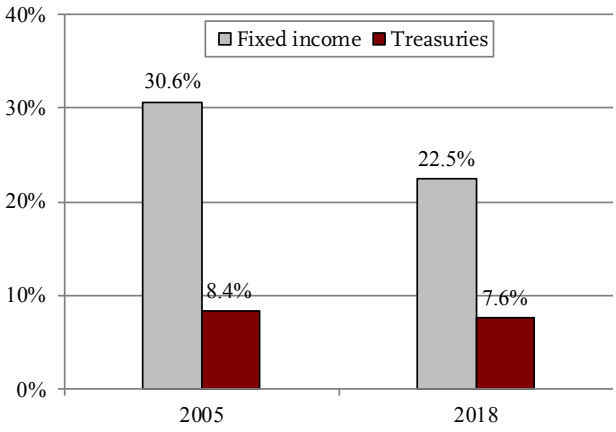
Source: Author's calculations based on plan financial reports and PPD (2019).

In theory, if these derivatives were designed to perfectly offset any decrease in pension assets, roughly 6-percent worth of pension assets would increase in value whenever plan assets declined. The pension plan could liquidate some or all of these derivatives during market downturns to help fill in the gap between contributions and benefits – limiting the need to sell pension assets at depressed levels. While we do not know precisely how derivatives will perform during future market downturns, we do know that the annual change in the fair value of derivatives and the annual return on pension assets have both been positive in each year from 2010 to 2019. This pattern suggests that derivatives are not being used purely as hedges against asset declines.

Treasuries

Most public plans maintain a small, but relatively consistent, portion of their portfolio in U.S. Treasuries. The average allocation to Treasuries dropped only slightly from 8.4 percent of assets in 2005 to 7.6 percent in 2018, even as the overall allocation to fixed income declined by about 8 percentage points over this same period (see Figure 6).[12] Treasuries would presumably rise in value in a market downturn due to a "flight to quality" and could be easily liquidated to cover the gap between contributions and benefit payments.

Figure 6. Average Allocation to Fixed Income and U.S. Treasuries, FY 2005 and FY 2018



Sources: Author's calculations based on PPD (2005, 2018).

Conclusion

Even though financial markets have recovered from the downturn in the early spring of 2020 sparked by the COVID-19 pandemic, most public pension plans will close FY 2020 with an annual return that falls short of actuarial expectations. Additionally, the market crash raised concerns about public plan liquidity and vulnerability to sharp market downturns. Although many plans have a negative cash flow and may need to sell assets to pay annual benefits, most also maintain a consistent cache of U.S. Treasuries that could be easily liquidated if necessary. So, while public pension plans face many long-term fiscal challenges, most are able to weather sharp downturns relatively unscathed.

Endnotes

1 The analysis in this *brief* is based on the *Public Plans Database* (PPD), which consists of 200 major pension plans (118 state and 82 local) that represent over 95 percent of total U.S. state and local pension assets and membership. The PPD contains actuarial, financial, investment, and member data for each plan from 2001-2019.

2 As of mid-June, only half of the PPD sample of roughly 200 major state and local pension plans had reported their 2019 returns. None had reported 2020 returns. For these years, estimated investment performance is based on each plan's asset allocation and the performance of selected indices – Russell 3000 for domestic equities; MSCI ACWI ex-USA for international equities; S&P Aggregate Bond Index for fixed income; S&P 3-month US Treasury Index for cash; LPX Group Composite Listed Private Equity Index for private equity; HFRI Fund of Funds Composite for hedge funds; S&P World Commodity Index for commodities; and MSCI US REIT Index for real estate.

3 Based on the PPD, the annualized net-of-fee returns for the prior 10- and 15-year periods were 7.0 percent and 7.4 percent, respectively (using the same method as described in Endnote 2 to estimate returns for plans that have not yet reported their returns). Based on the U.S. Census Bureau, the annualized net-of-fee return over the prior 30-year period was 8.6 percent.

4 The decline in the assumed return has been mostly due to lower inflation and low interest rates. To offset this decline, plans have shifted away from fixed income and into riskier asset classes. In fact, by shifting into riskier assets, most plans have actually increased their real return assumption (that is, the expected return net of inflation). For an analysis of these trends, see Aubry, Munnell, and Wandrei (2019).

5 One reason that plans' assumed returns may deviate from recent performance or a shifting market outlook is that actuaries and plans are slow to move the long-term assumed return in any direction. A current example of this pattern is CalPERS. The plan has acknowledged a lower return expectation than it currently uses, but has chosen to implement a glide path toward that lower expectation over several years.

6 Aubry and Crawford (2019) find that the assumed returns of public plans – given their asset allocation – are on the optimistic end of the assumptions of investment experts.

7 See Aubry and Wandrei (2019). Another issue with alternatives is that, if they have long lock-up periods or are very illiquid, plans may not be able to liquidate the assets at all.

8 An additional benefit of some derivatives – such as options – is that they increase in value during periods of market volatility.

9 In practice, plans do anticipate future (negative) cash flows and structure their portfolios accordingly through the use of derivatives, Treasuries, STRIPs and laddered CDs, as well as other products.

10 In June 2008, the Governmental Accounting Standards Board (GASB) issued Statement No. 53 which introduced additional reporting standards for derivative instruments. The analysis of derivatives in this brief is based on a sample of 85 of the 200 plans in the PPD, which represents over 70 percent of total pension plan assets in the PPD.

The total assets covered by derivative contracts is based on the reported notional value for these contracts – that is, the amount of stocks, bonds, or other assets on which the derivative value is based. Interest rate swaps, warrants, and rights – whose total notional value represents roughly 2.5 percent of pension assets on average – are not included in this analysis. Foreign exchange derivatives – whose notional value represents 2 percent of pension assets on average (excluding three severe outliers) – are also excluded.

11 While the overwhelming majority of fixed income and commodities derivatives are futures contracts, equity derivatives are split roughly 50-50 between futures and options contracts.

12 In March 2003, the Governmental Accounting Standards Board (GASB) issued Statement No. 40, which amended GASB No. 3 by expanding the disclosure requirements for credit risk, interest rate risk, and foreign currency risk. Plans provide a detailed breakdown of their fixed income holdings by type (e.g., U.S. Treasury, corporate bond, municipal bond, collateralized mortgage obligation), credit rating, and duration.

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