Wilshire

INDUSTRY RESEARCH

2023 Report on Corporate Pensions: Funding Levels and Asset Allocations

Financial Overview

Wilshire's 2023 Report on Corporate Pensions: Funding Levels and Asset Allocation reports the aggregate funded status and asset allocation of 253 defined benefit plans sponsored by S&P 500 Index companies.

The Data

Wilshire collects fiscal year-end (FYE) data on U.S. pensions from 10-K filings for the companies in the S&P 500 Index. All data is based on S&P 500 Index constituents as of year-end 2022 and, therefore, may differ slightly from the list of companies represented in earlier years. Wilshire has been compiling these statistics since 1990.

The financial health of corporate pension plans, as indicated by the aggregate funding ratio of S&P 500 company pensions, increased in fiscal 2022, according to our latest survey of 253 companies in the S&P 500 Index that maintain defined benefit plans.

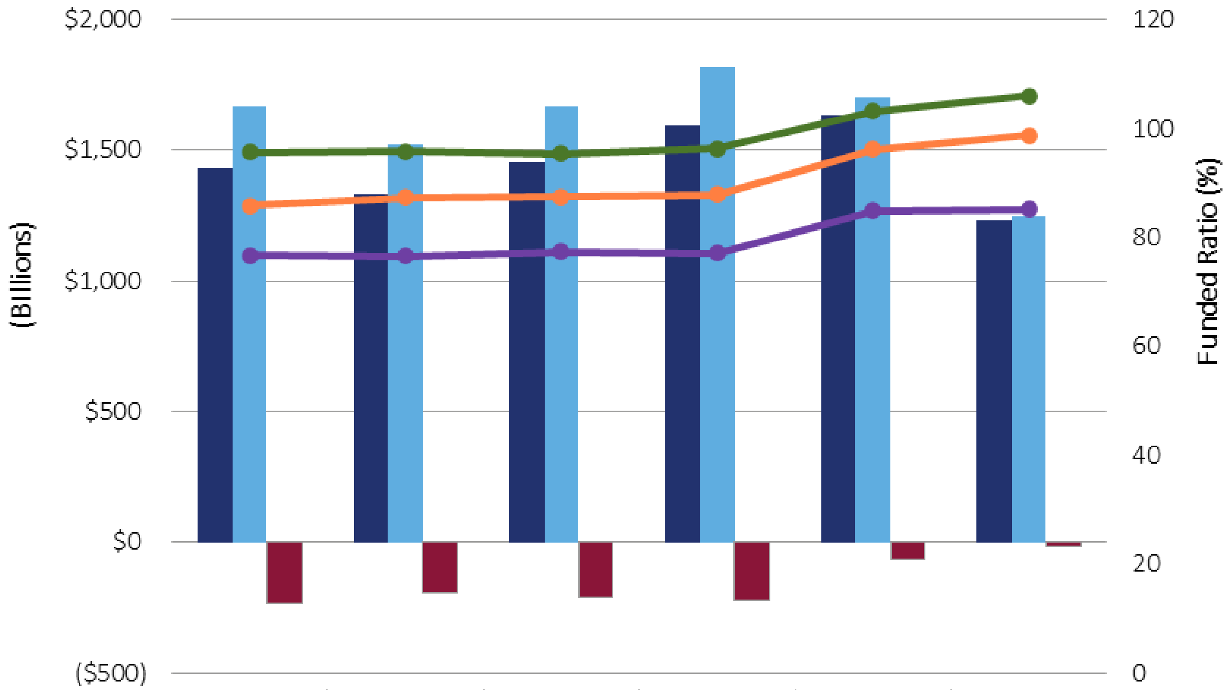
Funded Ratio

Wilshire estimates that the aggregate funded ratio was 98.7% at FYE 2022, which represents a 2.5 percentage point increase from FYE 2021 (96.2%), its highest level since year-end 2007, which was estimated at 107.8%, before the Great Financial Crisis.

Wilshire's estimate of the aggregate funded ratio as of June 30, 2023 (i.e., the most recent month-end as of this publication) is 103.4%. The 4.7% increase from our FYE 2022 measurement was mostly driven by changes in liability values. Since the beginning of the year, we've seen the impact of debt ceiling negotiations and markets' interpretations of the Federal Reserve's (Fed's) future monetary actions on yields decreasing the liability values used to discount corporate defined benefit pension liability values. While assets whipsawed in reaction to a variety of factors, most notably concerns with bank failures and the impact of the Fed's interest rate hiking cycle.

Exhibit 1 shows the change in aggregate asset values, liability values and surplus (assets minus liabilities) for the surveyed companies from 2017 to the most recent 2022 fiscal reporting year.

Exhibit 1: Funded Ratio History



	2017	2018	2019	2020	2021	2022
Assets	1,433.1	1,330.6	1,455.1	1,596.9	1,633.0	1,229.1
Liabilities	1,669.6	1,523.2	1,664.6	1,819.0	1,698.2	1,245.0
Deficit	(236.5)	(192.6)	(209.5)	(222.1)	(65.2)	(15.9)
25th Percentile	76.7	76.5	77.4	77.1	84.9	85.2
Aggregate	85.8	87.4	87.4	87.8	96.2	98.7
75th Percentile	95.6	95.8	95.4	96.3	103.1	106.0

Wilshire estimates that the aggregate liability value decreased to $1.25 trillion as of FYE 2022, down 26.7%, or $453 billion, from $1.70 trillion as of FYE 2021. The aggregate asset value decreased to $1.23 trillion as of FYE 2022, down 24.7% or $404 billion, from $1.63 trillion as of FYE 2021.

Due to the larger decrease in liability value, the aggregate pension deficit is estimated to have decreased by $49 billion to $16 billion from $65 billion. The change in liabilities is the largest decrease since we started tracking corporate pension plan funded ratios 17 years ago (2006), which has brought aggregate U.S. corporate pension plans close to full funding.

Attribution of Changes in Funding

Exhibit 2 shows the components of aggregate annual change in projected benefit obligations (liabilities) and market value of assets.

Exhibit 2: Changes in Asset and Liability Values

	($, Billions)	% of BoY
Projected Benefit Obligation, BoY	$1,698.2	
Service Cost	22.0	1.29%
Interest Cost	44.4	2.61%
Benefit Payments	-101.1	-5.96%
Actuarial (Gains)/Losses	-383.6	-22.59%
Other	-34.9	-2.05%
Projected Benefit Obligation, EoY	**$1,245.0**	**-26.69%**
Market Value of Assets, BoY	$1,633.0	
Total Contributions	17.7	1.09%
Actual Return on Assets	-289.8	-17.75%
Benefit Payments	-101.1	-6.19%
Other	-30.7	-1.87%
Market Value of Assets, EoY	**$1,229.1**	**-24.73%**

Liabilities

Wilshire estimates that the aggregate liability value decreased to just under $1.25 trillion as of FYE 2022, which is down more than 26% from just under $1.70 trillion as of FYE 2021. Liability values declined year-over-year due to the significant increase in high-quality corporate bond yields used to calculate reported liability values.

There are three recurring items that affect the growth in liability values.

1. Service Cost:
   - This cost arises from employees earning additional benefits from an additional year of service.
   - Service cost, which changes little from year to year, added $22.0 billion, or 1.29%, to aggregate pension liabilities in 2022.
2. Interest cost:
   - Liability values are calculated by discounting expected future benefit payments. As each year passes, liability values increase by the interest cost as there is one less year to discount each payment.
3. Benefit payments:
   - Liability values are reduced by benefits paid during the year.

If these recurring items were the only changes, then aggregate corporate pension liability values would have decreased by $34.7 billion, or 2.05%. However, the aggregate liability value decreased by $453.2 billion, or 26.69%, in 2022.

The difference is due to the "Actuarial (Gains)/Losses" line item which refers to changes in liability values, either negative or positive, that arise when actual experience differs from actuarial assumptions or when there are assumption changes. The most significant actuarial losses (gains) occur due to changes in discount rates. In general, when discount rates fall, the present value of liabilities rise (and vice versa when discount rates rise).

Median discount rates as of FYE 2022 increased by 248 basis points year-over-year from 2.82% in 2021 to 5.30% in 2022 (see exhibit 5) for the plans in this year's report, which is the primary reason for the aggregate actuarial gains of $383.6 billion.

The final change is the "Other" category. The "other" category refers to changes in liability values, either negative or positive, that arise from the addition or subtraction of liabilities from plan changes, curtailments or corporate acquisition activity. Large dollar figures in the "other" category are often the result of corporate mergers and acquisitions, in which the resultant company absorbs the pension liability of the components or the transferring of pension liabilities to a third party such as an insurance company; one also finds liability changes due to pension plan amendments and settlements folded into "other." When that happens, there also is a corresponding entry into the "other" category under Assets.

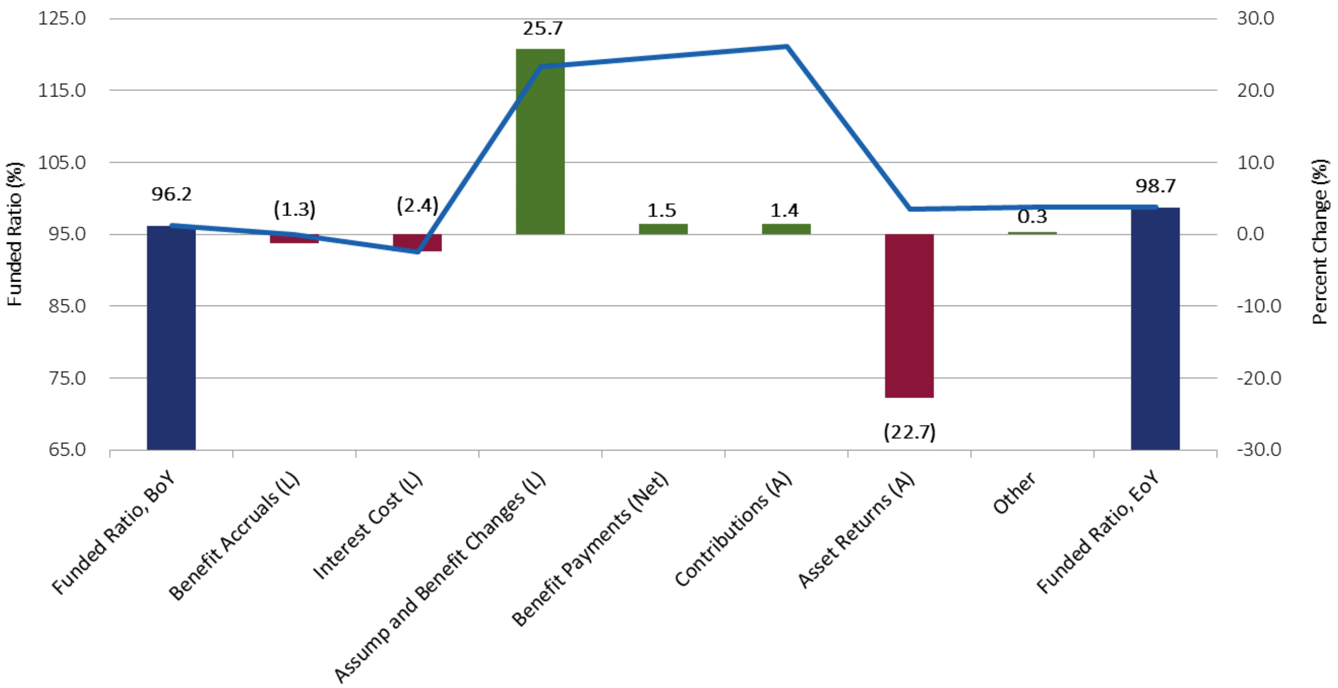
Assets

Wilshire estimates that aggregate assets decreased to $1.23 trillion as of FYE 2022 – a decrease of nearly 25% from $1.63 trillion as of FYE 2021. This is the largest asset value decrease since the 2008 Great Financial Crisis.

- Contributions increased asset values by 1.09% for the year, almost all of which were contributed by plan sponsors.
- Investment returns decreased asset values by 17.75% for the year.
- Benefit payments are estimated to have decreased asset values by 6.19%.
- "Other" items are expected to have decreased asset values by 1.87%.

Exhibit 3 shows components of aggregate change in liabilities and assets from Exhibit 2 and their relative impact on the overall funded ratio change during the fiscal year.

Exhibit 3: Changes in Annual Funded Ratio



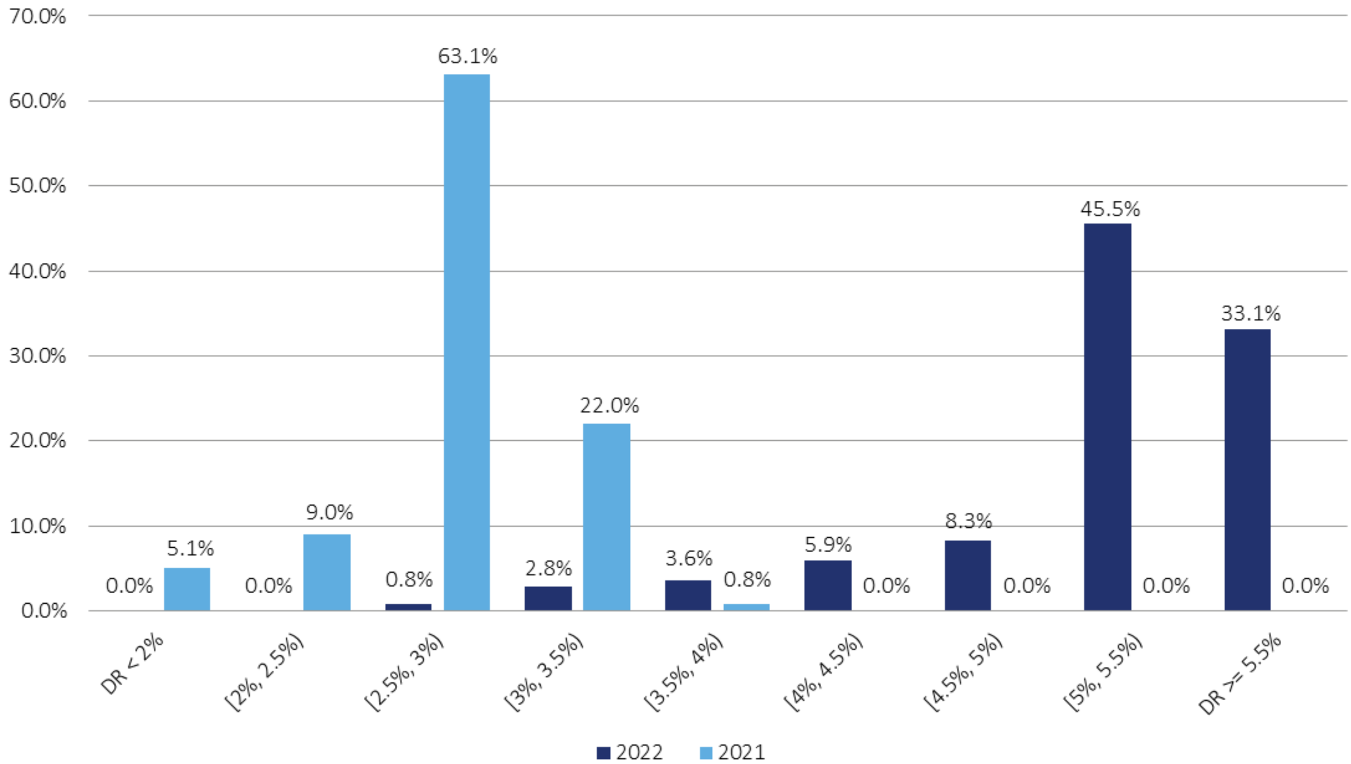
Assumptions and benefit changes increased the funded ratio by more than 25% partially offset by asset returns which decreased funded levels by close to 23%.

Discount Rates

Discount rates for corporate pension plans are determined using a high-quality corporate bond yield curve, which is generally understood to mean bonds that are rated as AA or above. Yields on such bonds have trended lower over the past several years, but recent years have seen an inflection point. This year marked the second consecutive annual increase and has contributed to a spike in discount rates due to Fed actions – the median discount rate increased by 248 basis points to 5.30% from 2.82% at the end of 2022.

Exhibit 4 shows the distribution of discount rates used to calculate liability values over the past two years.

Exhibit 4: Distribution of Discount Rates*



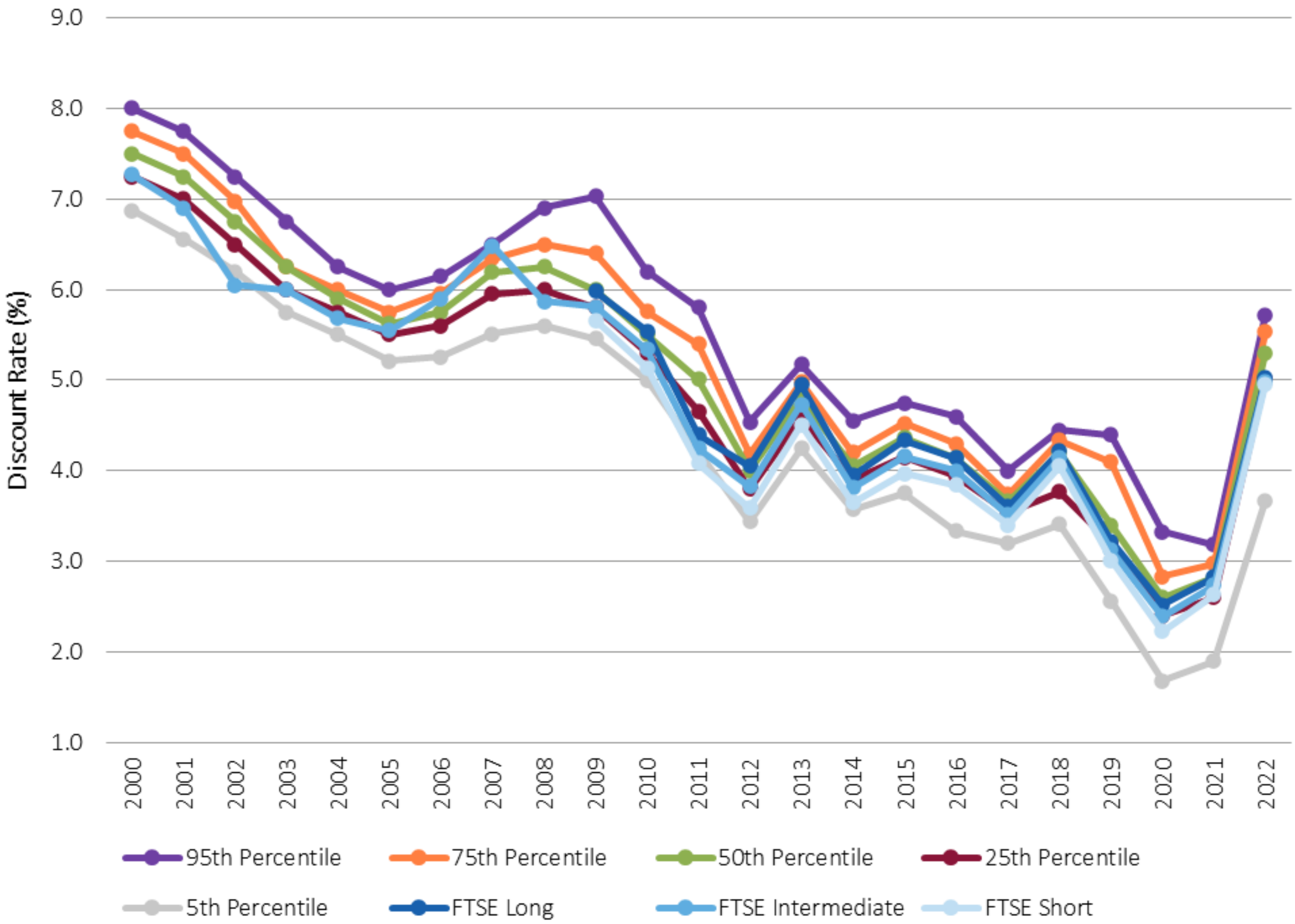
*The total may not sum to 100% due to rounding.

The FTSE Pension Liability Index (FPLI)[1] provides reasonable estimates for corporate defined benefit pension plan effective discount rates. As interest rates fall (rise), companies lower (increase) their discount rates, thereby increasing (decreasing) the accounting value of total pension liabilities.

[1] Formerly the Citigroup Pension Liability Index.

Exhibit 5 plots the historical distribution of these year-end corporate bond yields along with representative FTSE yields.

Exhibit 5: Discount Rates by Percentile



(%)	2002	2007	2012	2017	2018	2019	2020	2021	2022
95th Percentile	7.25	6.50	4.54	4.00	4.45	4.40	3.33	3.18	5.72
75th Percentile	6.98	6.34	4.18	3.74	4.34	4.10	2.84	2.97	5.53
Median	6.75	6.19	4.00	3.66	4.20	3.40	2.60	2.82	5.30
25th Percentile	6.50	5.95	3.80	3.55	3.77	3.20	2.40	2.60	5.02

The Impact of Net Periodic Pension Cost (NPPC) on Corporate Earnings

Exhibit 6 provides an aggregate accounting of pension expense (income) for calendar year 2022 for the 253 S&P 500 Index companies in our study.

Exhibit 6: Pension Expense/Income

	($, Billions)
Service Cost	$22.0
Interest Cost	44.4
Expected Return on Plan Assets	-90.1
Amortizations	20.6
Other	7.9
Pension Expense (Income)	$4.7

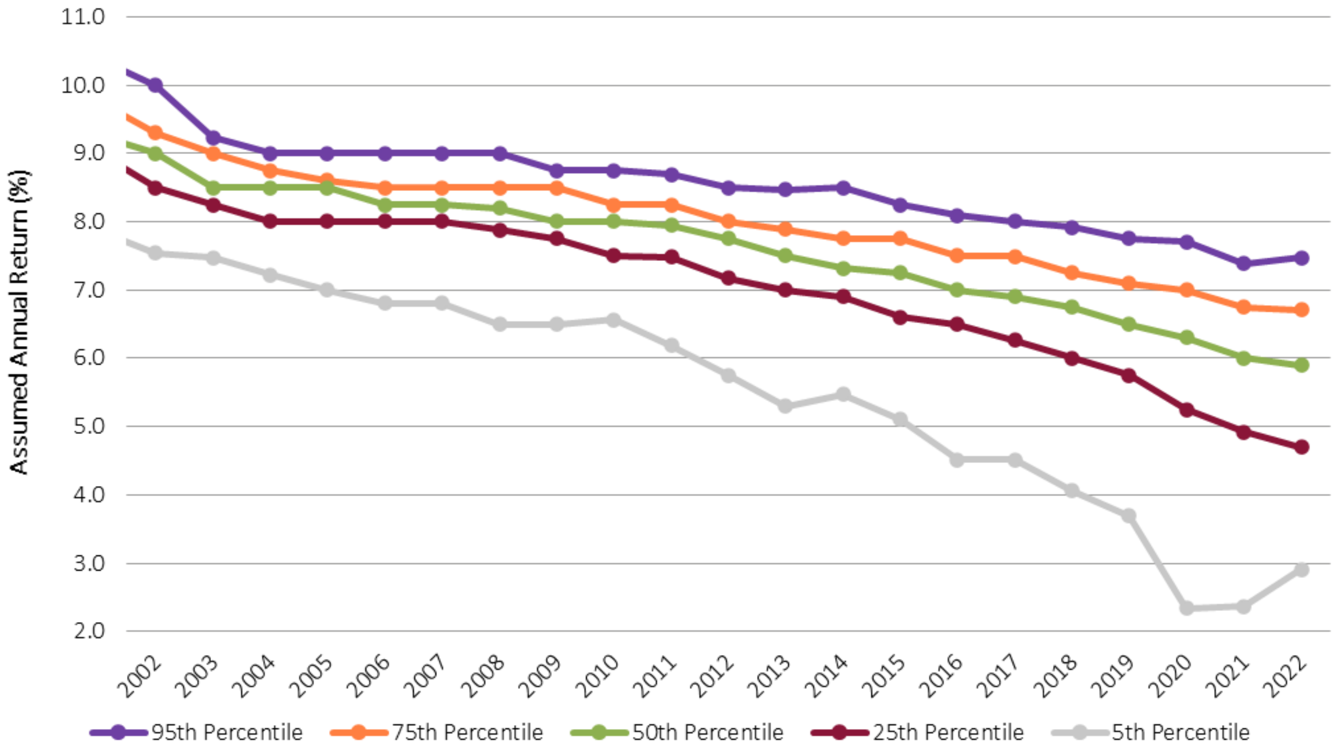
There are four recurring items that comprise pension expense (income). The first two are Service Cost and Interest Cost which were described in Exhibit 2.

There is some controversy surrounding the third item, the Expected Return on Plan Assets.

- Market Value accounting might suggest that service costs and interest costs would be offset by the actual return on assets in calculating pension expense (income). This would be consistent pension accounting under International Financial Reporting Standards (IFRS). Instead, pension expense was $4.7 billion in 2022 because of the method by which asset returns are reflected (i.e., using an expected return on assets rather than actual return). The expected return on plan assets is calculated using a “Market Related Value of Assets” (MRVA) and an expected rate of return on assets. The MRVA allows plan sponsors the ability to amortize (or “smooth”) asset gains and losses over a period of up to five years. This helps to reduce the short-term volatility of actual asset returns on corporate net income.

Exhibit 7 plots the historical distribution of Expected Return on Assets (EROA). The EROA impacts net periodic pension cost.

Exhibit 7: Pension Expense/Income



(%)	2002	2007	2012	2017	2018	2019	2020	2021	2022
95th Percentile	10.00	9.00	8.50	8.00	7.91	7.75	7.70	7.39	7.47
75th Percentile	9.30	8.50	8.00	7.50	7.25	7.10	7.00	6.75	6.71
Median	9.00	8.25	7.75	6.90	6.75	6.50	6.30	6.00	5.90
25th Percentile	8.50	8.00	7.17	6.27	6.00	5.75	5.25	4.92	4.70
5th Percentile	7.54	6.80	5.75	4.51	4.06	3.70	2.34	2.36	2.91

Expected rates of return for pension assets have declined over the past 20 years. The median expected return was 9.00% for FYE 2002 and has fallen to 5.90% for FYE 2022. Expected return assumptions are multiplied by MRVAs to arrive at dollar values for expected investment earnings that are then credited against service and interest costs. In 2022, companies collectively expected their assets to gain $90.1 billion (compared to the estimated loss of $289.8 billion), and it was this number that was used in the calculation of pension expense.

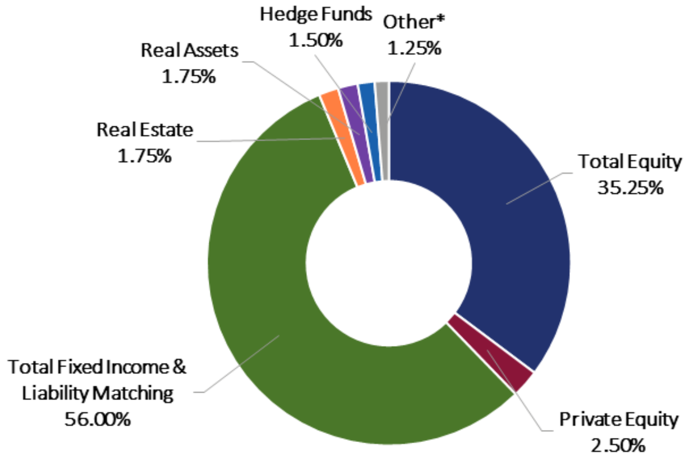
The fourth item, Amortizations, primarily represents the difference between actual and expected asset and liability growth recognized over several years, but it also includes prior service cost amortizations, settlements and curtailments.

Accounting Standards Update (ASU) 2017-07, Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost, issued by the Financial Accounting Standards Board (FASB) in March 2017 disaggregated the components of NPPC into operating and non-operating costs. Previously, the entire NPPC was considered an operating cost. Only the Service Cost component is now considered an operating cost with the remaining components considered to be non-operating costs.

Pension Plan Asset Allocation

Exhibit 8 shows the reported aggregate asset allocation for the 253 S&P 500 Index companies in our study.

Exhibit 8: Aggregate Asset Allocation



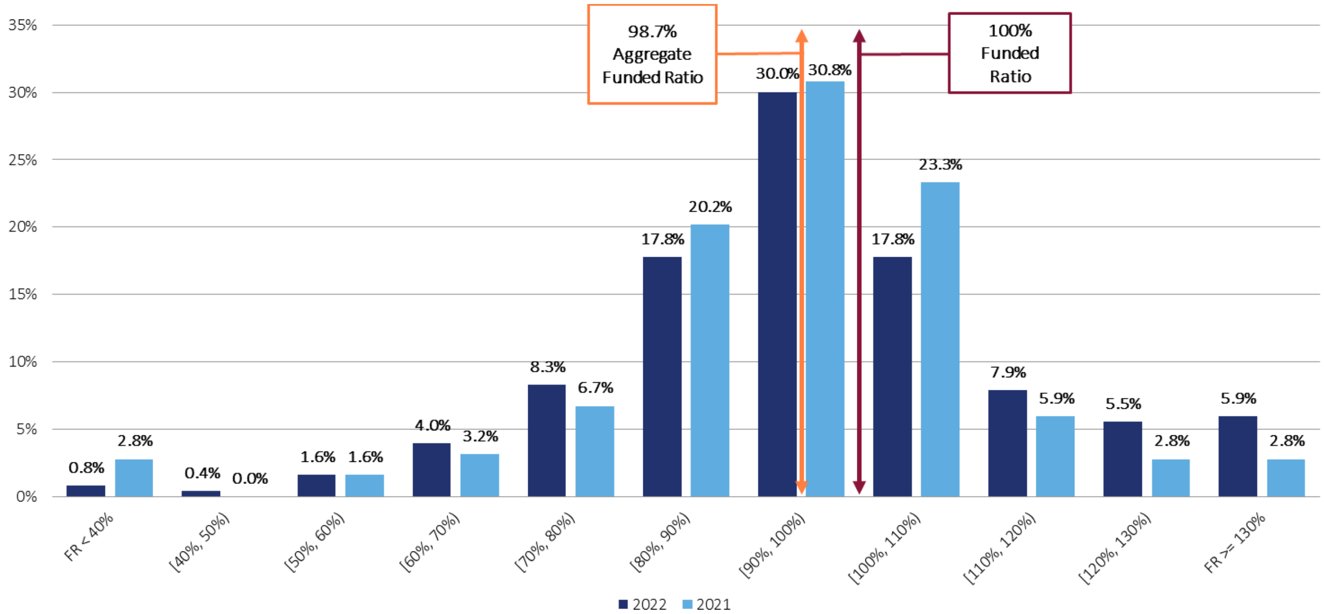
*Other refers to any other asset class – for example, commodities or cash.

Year-over-year, there were minimal changes to the aggregate asset allocation. However, over the past ten years, the total allocation to equity has declined by more than 13%, whereas the total allocation to fixed income has increased by more than 17%.

We conclude the report with Exhibit 9, which shows the distribution of funded ratios over the past two years. Within each 10% funded ratio bucket, the distribution of plans with funded ratios above 110% increased year-over-year, while those between 80% and 110% decreased.

Similar to the aggregate funded ratio, the year-over-year distribution of funded ratios did not change materially at the median.

Exhibit 9: Distribution of Funded Ratios*



*The total may not sum to 100% due to rounding.

Year-over-year, the number of plans that reported pension assets that equal or exceed liabilities increased by 6 to 94, or 37.2% of the plans as of FYE 2022, compared to 88, or 34.8%, at FYE 2021.

FYE 2007, five years into a recovery from the 2000-2002 bear market – and one year prior to the global recession of 2008 and early 2009 – marked a high point in the percentage of plans that reported a fully funded or surplus status at 42%.

Appendix: Corporate Pension Plan Funding Rules Overview

The Pension Protection Act of 2006 (PPA) radically changed the funding methodologies for cash requirements; it was first effective for the 2008 plan year. There have been incremental changes to these rules since 2008. A material change in 2012 was part of the Moving Ahead for Progress in the 21st Century (MAP-21) law. MAP-21 delayed recognition of the current low interest rate environment by introducing a 25-year smoothing of interest rates. MAP-21 was designed to have the largest impact for 2012 plan years with the impact shrinking over a few subsequent years. Further funding relief was passed in 2014 as a part of the Highway and Transportation Funding Act of 2014 (HATFA-2014). HATFA-2014 extended the pension plan funding stabilization provisions included in MAP-21 for an additional five years. Additional funding relief was passed in 2015 as a part of the Bipartisan Budget Act of 2015 (BBA). BBA extended the pension plan funding stabilization provisions included in HATFA-2014 for an additional three years. The most recent funding relief, the American Rescue Plan Act (ARPA 2021), was signed into law in 2021. ARPA-2021 increased the allowable discount rates used to calculate liability values and extended the shortfall amortization period from 7 to 15 years. These laws are effectively saying that rates are historically low and companies will be provided with funding relief for a several more years. On March 16, 2022, the Federal Open Market Committee enacted the first of what would be eight interest rate increases and given the rapid increase in yields, it results in a lower calculated liability value.

One of the goals of the PPA was to fund shortfalls over a seven-year period. That generally requires faster funding than existed in previous laws.

One final complicating factor when comparing cash contributions to the cash flows reported for accounting purposes is that the minimum required cash contribution for a plan year may be paid as late as 8.5 months after the end of the plan year (fiscal year). Thus, cash contributions dramatically increased in 2009 to reflect the impact of PPA first effective in 2008. Cash contributions decreased in 2013, 2014 and 2015, partially reflecting the reduction in cash requirements afforded by MAP-21 and HATFA-2014 first effective for the 2012 and 2014 plan years, respectively.

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