MILLIMAN WHITE PAPER

2023 Corporate Pension Funding Study

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The 2023 edition of the Milliman Corporate Pension Funding Study (PFS) is our 23rd annual analysis of the financial disclosures of the 100 U.S. public companies sponsoring the largest defined benefit (DB) pension plans. These 100 companies are ranked highest to lowest by the value of their pension assets as of the end of fiscal year (FY) 2022. These values have been reported to the public, to shareholders, and to the U.S. federal agencies with an interest in such disclosures.

Key results for 2022

- The funded percentage increased from 96.3% to 99.3%
- The pension deficit decreased from $67.9 billion to $8.7 billion
- The average return on investments was -18.6%
- The average discount rate increased from 2.73% to 5.18%

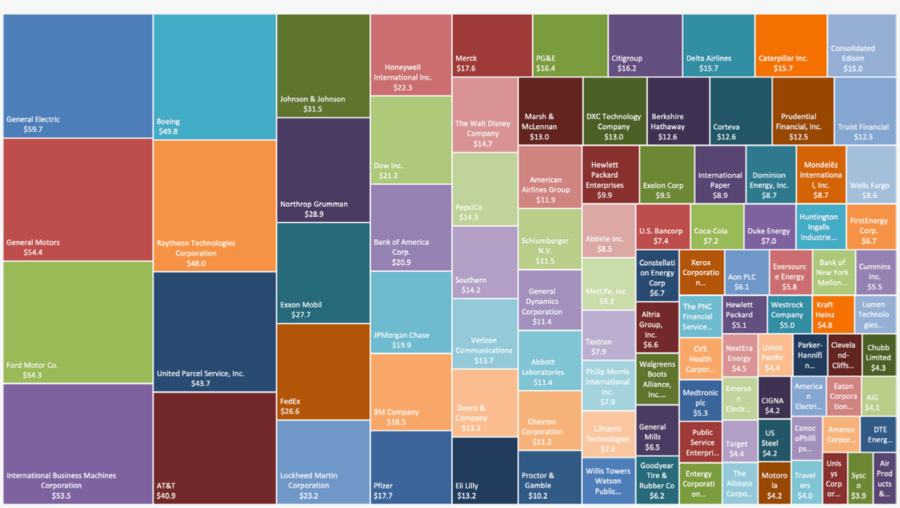
FIGURE 1: HIGHLIGHTS (IN $ BILLIONS)

	FISCAL YEAR ENDING		
	2021	2022	CHANGE
Funded Percentage	**96.3%**	**99.3%**	**3.0%**
Market Value of Assets	$1,780.3	$1,318.8	($461.5)
Projected Benefit Obligation	$1,848.3	$1,327.5	($520.8)
Funded Status	($67.9)	($8.7)	$59.2
Actual Rate of Return	8.4%	-18.6%	-27.0%
Discount Rate	2.73%	5.18%	2.45%
Net Pension Income/(Cost)	$20.0	$6.3	($13.7)
Employer Contributions	$23.1	$19.8	($3.3)

Pension funding overview

In a remarkable year noted by the Federal Reserve raising interest rates more than 400 basis points to battle inflation, the funded ratio of the Milliman 100 pension plans increased during FY2022 to 99.3% from 96.3% at the end of FY2021. The 245 basis point increase in liability discount rates was sufficient to overcome the plans' average -18.6% investment return, allowing the private single-employer DB plans of the Milliman 100 companies to reduce the multibillion-dollar pension deficits for the second straight year, falling just short of full funding in 2022.

FIGURE 2: TOTAL MARKET VALUE OF ASSETS ($ BILLIONS)



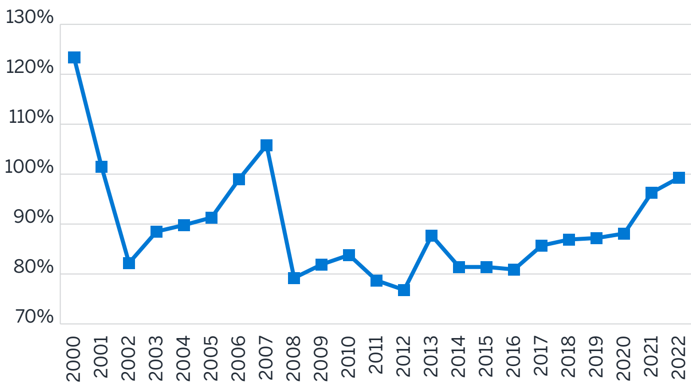
Who are the Milliman 100 companies?

The Milliman 100 companies are the 100 U.S. public companies with the largest DB pension plan assets for which a 2022 annual report was released by March 10, 2023.

The plans in this study represent employers across multiple business sectors, including communications, healthcare, financial services, industrials, energy, technology, utilities, and others. The total value of the pension plan assets of the Milliman 100 companies was $1.32 trillion at the end of FY2022.

Figure 3 shows how the aggregate funded ratio has changed since 2000.

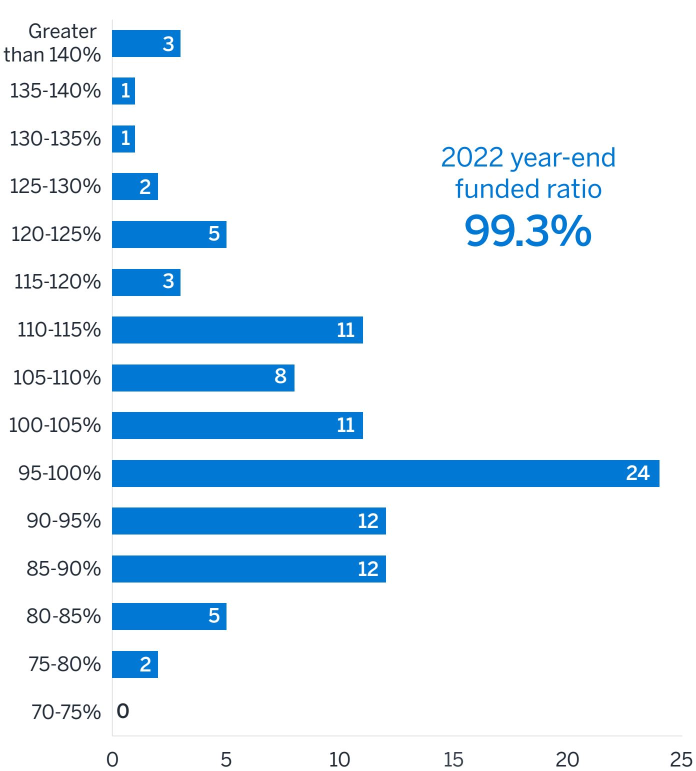
FIGURE 3: FUNDED RATIO, ASSETS/PROJECTED BENEFIT OBLIGATION



The 3.0% increase in the FY2022 funded ratio added to the improvement seen over the prior five years. Note that there has not been a funding surplus at fiscal year-end since the 105.8% funded ratio in FY2007.

Figure 4 breaks down the 2022 year-end funded ratio for all the plans in the study.

FIGURE 4: DISTRIBUTION BY FUNDED RATIO



The PFS FY2022 funded ratio of 99.3% was lower than what we projected in the January 2023 edition of the Milliman 100 Pension Funding Index (PFI). The primary reasons for the lower actual funded ratio at the end of FY2022 include:

- Larger actual asset losses for the Milliman 100 companies than projected. The allocation to longer-duration investments within the fixed-income asset category was greater than anticipated, conveying an even greater focus on liability-driven investments.
- Significant pension risk transfer activity resulting in a worsening of pension funded status as generally more assets are released than liabilities in these transactions. The Milliman 100 PFI does not make any interim adjustments for pension risk transfer activity until the end of the fiscal year.

There are also differences in methodology between the results reported in our annual study versus our projected monthly index, so a match is not expected. The annual PFS funded ratio is aggregating plans with different fiscal year ending dates and different discount rates, whereas the monthly PFI makes normalizing adjustments to approximate the values of all 100 companies as of the same measurement date using the same average discount rate.

Pension funds in 2022 saw significant investment losses, returning -18.6%, when the expectation was a FY2022 investment return of 5.8% (based on the companies' long-term investment return assumptions). As a result, plan assets decreased in 2022 by $323 billion instead of an expected increase of $92 billion, leading to a net investment loss of $416 billion. This is the second-worst investment performance in the history of the study, only topped by the -19.4% seen in 2008 during the global financial crisis. Investment losses caused assets of the Milliman 100 plans to decrease from the all-time high of $1.78 trillion in 2021 to $1.32 trillion in 2022, their lowest value since 2012.

However, this drop in assets was more than offset by a drop in liability values as the average discount rate increased a staggering 245 basis points in 2022, to 5.18% from 2.73%. This is by far the largest one-year change in discount rate in the history of this study (the next closest was the 89-basis point decrease in 2019). Rising discount rates drove the pension benefit obligation (PBO) of the Milliman 100 plans down to $1.33 trillion from $1.85 trillion. This is the lowest PBO total since 2009.

During FY2022, pension settlements or pension risk transfer (PRT) programs continued to be used as financial cost management tools by plan sponsors. The primary types of PRT used were annuity purchases and lump-sum windows, but these figures may also include other settlements such as ongoing lump-sum payments from plans. Among the Milliman 100 pension plans, settlement payouts totaled an estimated $35.5 billion in FY2022, up from the $27.9 billion in FY2021.

Total plan sponsor contributions of $19.8 billion in 2022 were lower than 2021 contributions of $23.1 billion. These pale in comparison to 2017 and 2018, when plan sponsor contributions hit record highs of $60.9 billion and $58.0 billion, respectively.

Pension expense (the charge to the income statement under Accounting Standards Codification Subtopic 715) remained an income statement credit (boost to company earnings) in 2022 but decreased in magnitude with pension income of $6.3 billion in FY2022, down from $20.0 billion in FY2021. Pension income for years prior to FY2021 was a rarity and, given how FY2022 ended, we are likely to see a return to pension expense for FY2023, as discussed later in the study.

The year-over-year movement in the average expected investment return from FY2021 to FY2022 was somewhat muted, perhaps conveying a limiting point in asset allocations across the Milliman 100 plans. The average expected investment return declined to 5.8% for FY2022 from 5.9% for FY2021. The expected investment return assumption is well below the average of 8.0% seen back in FY2010.

In addition to DB pension plans, the PFS tracks the actuarial obligations of postretirement healthcare benefits. Accumulated postretirement benefit obligations (APBOs) have been trending downward for the past couple of decades as plan sponsors divest their other postemployment benefits (OPEB) liabilities. In FY2022, this trend accelerated due to the large rise in discount rates, causing APBOs to decrease by $42.1 billion to $113.3 billion from their FY2021 level of $155.4 billion.

Detailed comments and illustrations follow in the remainder of the 2023 PFS. Various tables with historical values can be found in the Appendix.

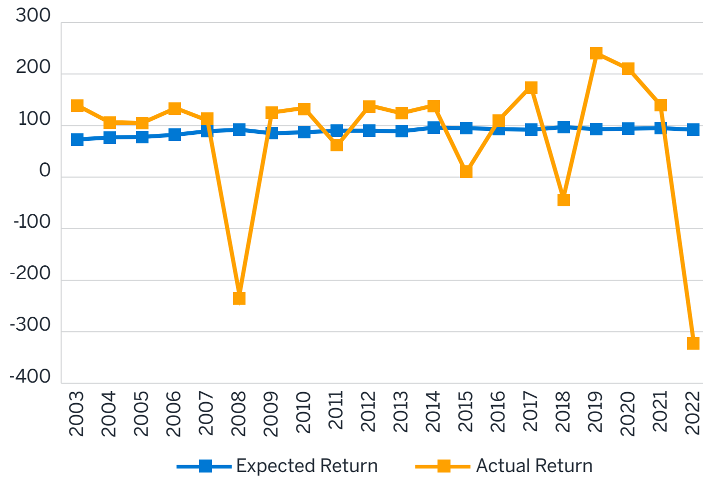
Equity and fixed income markets around the globe suffered significant losses in 2022

With both equities and fixed-income assets performing poorly in 2022, none of the Milliman 100 plans were safe from negative portfolio returns in 2022. The weighted average investment return on pension assets for the 2022 fiscal years of the Milliman 100 companies was -18.6%, which was below their average expected rates of return of 5.8%. None of the Milliman 100 companies exceeded their expected returns in 2022.

At the end of FY2022, total asset levels were $1.319 trillion. This is $84 billion above the value of $1.235 trillion at the end of FY2007, prior to the collapse of the global financial markets.

Figure 5 shows the investment return on plan assets for the Milliman 100 plans since 2003.

FIGURE 5: INVESTMENT RETURN AMOUNTS ON PLAN ASSETS ($ BILLIONS)



During FY2022, investment losses, annuity purchases, lump-sum settlements, and regular benefit payments were partially offset by contributions, decreasing the market value of assets by $461.5 billion. The Milliman 100 companies' estimated investment return for FY2022 was -$323 billion compared with the expected return of positive $92 billion. For the five-year period ending in 2022, investment performance has averaged 2.5% compounded annually (only considering plans with calendar-year fiscal years). There have only been three years of negative investment returns over the past 20 years (2008, 2018, and 2022), contributing to an annualized investment return of 7.0% over that period (again, only considering plans with calendar-year fiscal years).

For calendar-year fiscal year plans, the average discount rate rose by 252 basis points during 2022. We estimate that their pension liabilities decreased approximately 23% on an economic basis (due to the passage of time and changes to discount rates, ignoring benefit payments and accruals). Plans with significant allocations to fixed income as part of a liability-driven investment (LDI) strategy typically have allocations to long-duration high-quality bonds. During 2022 these bonds saw asset losses of about 27%, tracking the decrease in pension liabilities.

For the 84 companies sponsoring pension plans with calendar-year fiscal years, rates of return in 2022 ranged from -29.0% to -4.2%, with an average of -19.1%. Generally, plans with greater allocations to asset classes other than fixed income or equities (e.g., real estate and private equity) suffered less severe losses in 2022. The nine plans with these "other" allocations of at least 35% earned an average return of -16.3%, while the 27 plans with other allocations below 15% earned an average return of -21.0%. Delta Airlines, which had the highest allocation to other (80.9%) of any of the companies in the study, earned a rate of return of -13.3%. The next three figures show the 2022 rates of return by plans' allocation to each category of asset classes.

FIGURE 6: 2022 RATES OF RETURN BY ALLOCATION TO EQUITIES (CALENDAR-YEAR FISCAL YEARS ONLY)

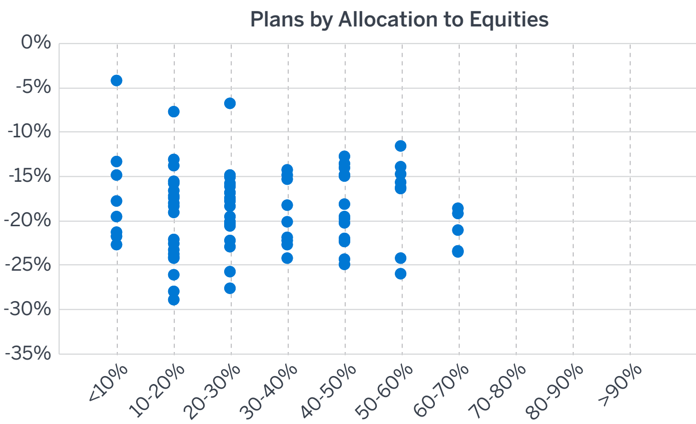


FIGURE 7: 2022 RATES OF RETURN BY ALLOCATION TO FIXED INCOME (CALENDAR-YEAR FISCAL YEARS ONLY)

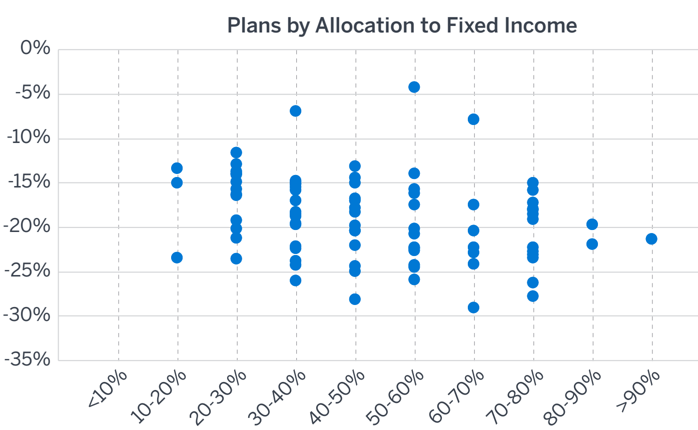
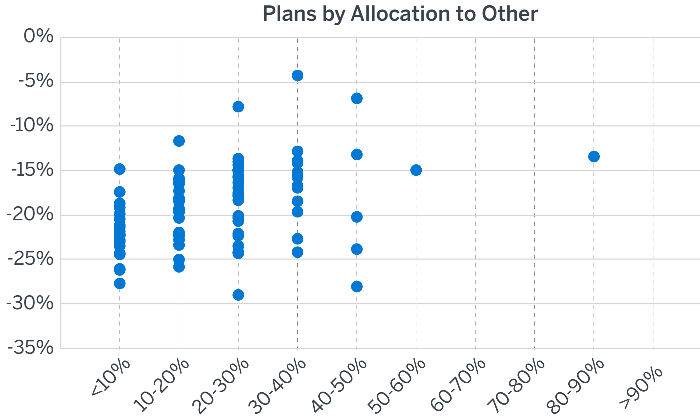


FIGURE 8: 2022 RATES OF RETURN BY ALLOCATION TO OTHER ASSET CLASSES (CALENDAR-YEAR FISCAL YEARS ONLY)



In prior years, investment allocations made by plan sponsors showed a trend toward implementing LDI strategies. Generally, this involves shifting more assets into fixed-income securities. This trend appears to have continued in 2022. The fixed-income allocations in the pension portfolios increased slightly to an average of 51.4% at the end of FY2022, up from 50.9% at the end of FY2021. Considering the significant losses to fixed-income investments in 2022, the allocation at the close of 2022 is especially notable. The percentage of pension fund assets allocated to equities, fixed income, and other investments was 25.0%, 51.4%, and 23.6%, respectively, at the end of FY2022, compared with 29.4%, 50.9%, and 19.8%, respectively, at the end of FY2021.

Plans with higher allocations to fixed income underperformed the other plans in FY2022 (plans with at least 50% allocation to fixed income earned an average return of -20.2% compared with -19.2% overall).

Over the last five years, the plans with consistently high allocations to fixed income have slightly underperformed the other plans while also experiencing lower funded ratio volatility. Among the 84 companies in the Milliman PFS with calendar-year fiscal years, 26 pension plans had fixed-income allocations greater than 40.0% at the end of FY2017 and maintained an allocation above 40.0% through FY2022. Over this five-year period, these 26 plans experienced lower funded ratio volatility than the other 58 plans (an average funded ratio volatility of 4.8% versus 6.5% for the other 58 plans) while earning a slightly lower five-year annualized rate of return (an average of 1.6% versus 3.0%). Plans with at least 50% allocation to fixed income have underperformed other plans in four of the last five years.

FIGURE 9: FIXED-INCOME ALLOCATION 50% OR HIGHER (CALENDAR-YEAR FISCAL YEARS ONLY)

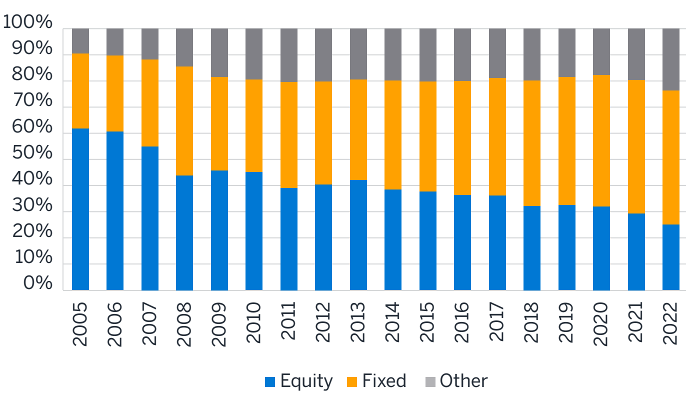
	FIXED INCOME ALLOCATION 50% OR HIGHER		ALL OTHERS	
FISCAL YEAR	NUMBER OF COMPANIES	AVERAGE INVESTMENT RETURN	NUMBER OF COMPANIES	AVERAGE INVESTMENT RETURN
2022	36	-20.17%	48	-18.16%
2021	34	4.75%	50	10.51%
2020	29	12.51%	55	14.60%
2019	29	16.59%	55	18.75%
2018	22	-2.42%	62	-4.06%

Since 2005, pension plan asset allocations to equities have decreased to about 25.0%, from about 61.8%, while fixed income allocation has increased to about 51.4% from about 28.7%.

Overall, allocations to equities decreased during FY2022, resulting in an average allocation of 25.0%. Only one of the Milliman 100 companies had increases to equity allocations of more than 10.0% in FY2022. Seventeen companies decreased their equity allocations by more than 10.0% in FY2022.

Overall allocations to fixed income increased slightly in FY2022, resulting in an average allocation of 51.4%. Two companies had decreases of more than 10.0% to their fixed-income allocations. Eight companies increased their fixed-income allocations by more than 10.0% in FY2022.

FIGURE 10: ASSET ALLOCATION OVER TIME



The trend in investment allocations made by plan sponsors toward implementing LDI strategies continued in 2022. Generally, this involves shifting more assets into fixed-income securities.

Other asset classes include real estate, private equity, hedge funds, commodities, and cash equivalents. Specific details on how investments are allocated to the other categories are generally not available in the U.S. Securities and Exchange Commission (SEC) filings of the companies.

Overall, allocations to other asset classes increased in FY2022, resulting in an average allocation of 23.6%. A total of 31 companies increased their allocations by 5.0% or more to other asset classes during FY2022, while two companies decreased their allocations by 5.0% or more.

Increasing discount rates offset investment losses to reduce the pension deficit

Discount rates used to measure plan obligations, determined by reference to high-quality corporate bonds, increased during 2022, thereby decreasing liabilities. The average discount rate increased to 5.18% at the end of FY2022 from 2.73% at the end of FY2021. This was a sharp reversal of the trend of declining discount rates throughout most of the last decade.

The steep decrease in the PBO due to the higher discount rates was sufficient to offset the investment returns of -18.6%, so the funded ratio improved from 96.3% to 99.3% in FY2022. Likewise, the funded deficit decreased in FY2022 from $67.9 billion to $8.7 billion.

FIGURE 11: PENSION SURPLUS/(DEFICIT)

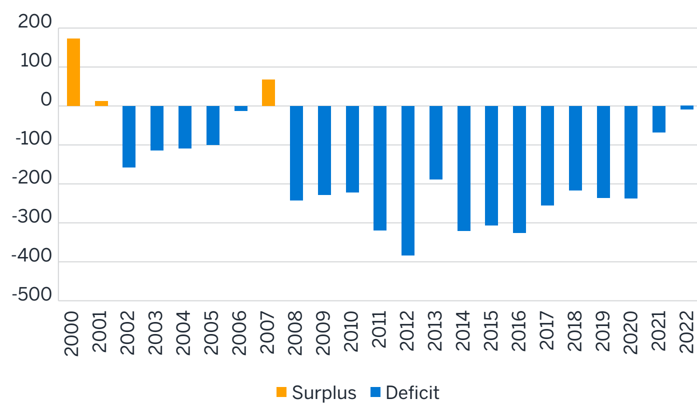
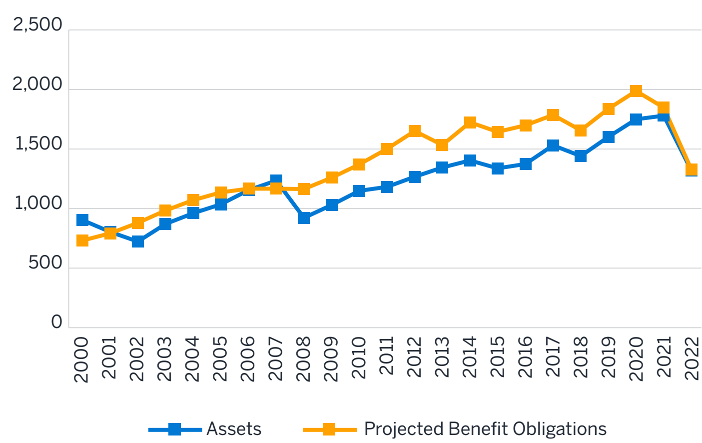
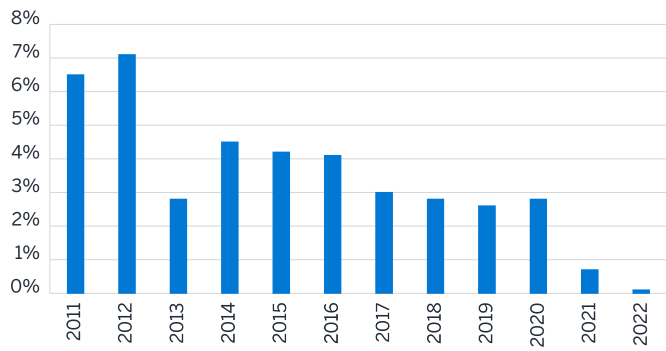


FIGURE 12: PENSION SURPLUS/(DEFICIT): ASSETS AND PBO



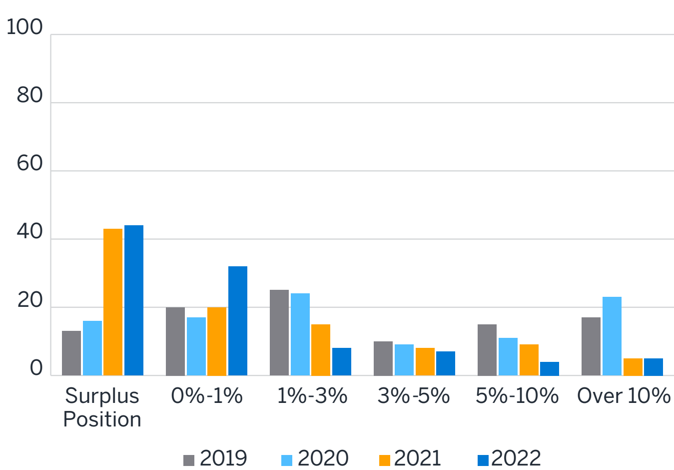
The total market capitalization for the Milliman 100 companies decreased by 1.5%. The total pension deficit decreased by 87.2%, so the net result was a decrease in the unfunded pension liability as a percentage of market capitalization to 0.1% at the end of FY2022 compared with 0.7% at the end of FY2021 and 2.9% at the end of FY2020. Pension deficits represented more than 10.0% of market capitalization for five of the Milliman 100 companies in FY2022 (there were also five companies in FY2021). This is a substantial decrease from FY2012, when 39 of the companies had deficits that were more than 10.0% of their market capitalizations.

FIGURE 13: UNDERFUNDED PENSION LIABILITY AS A PERCENTAGE OF MARKET CAPITALIZATION, 2011-2022



Since FY2011, we have had investment gains exceeding expectations in eight out of 11 years, which could have contributed to elevated levels of market capitalization. In FY2022, one company's plan deficits exceeded 50.0% of market capitalization (Unisys Corporation). This is down from nine in FY2011, the year we first started tracking this figure.

FIGURE 14: UNDERFUNDED PENSION LIABILITY AS A PERCENTAGE OF MARKET CAPITALIZATION, 2019-2022



Pension risk transfer activities continue

Plan sponsors continued to execute PRT activities in FY2022 as a way of divesting pension obligations from their DB plans and corporate balance sheets, with the volume for the Milliman 100 companies up relative to FY2021. Large-scale pension buyout programs or lump-sum windows (with at least $1 billion in settled assets) were transacted for eight of the Milliman 100 companies as pension assets and liabilities were either transferred to insurance companies or paid out to participants. In addition, some companies who were in the Milliman 100 in a prior year will fall out of the top 100 due to settlement activity, and thus not be included in the statistics reported in our study. This year there was one example of this: Alcoa Corporation had $1.1 billion in settlements in FY2022, causing its pension assets to shrink below the 100th largest company.

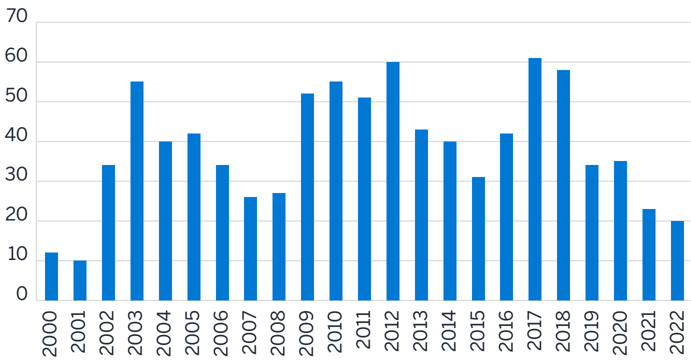
The 2022 PRT market increased when compared with the 2021 market. For the 2022 PFS we estimate the dollar volume of PRT activities based on Form 10-K disclosures for the 2022 fiscal year to be $35.5 billion, which primarily consisted of annuity purchases and lump-sum windows. International Business Machines (IBM) Corporation had a noteworthy $17.0 billion pension buyout causing them to fall three places in our study from number one to number four, as measured by plan asset size. The estimated FY2022 dollar amount represents an increase of $7.6 billion compared to the FY2021 reported dollar volume of $27.9 billion.

PRTs in the form of buyout programs are deemed by plan sponsors to be an effective way to reduce a pension plan's balance sheet footprint, but generally they have an adverse effect on the plan's funded status, as assets paid to transfer accrued pension liabilities are higher than the corresponding actuarial liabilities that are extinguished from plans. Much of this incongruity stems from Financial Accounting Standards Board (FASB) pension plan valuation rules, which differ from an insurance company's underwriting assessment of the same liabilities.

Contribution income at its lowest point since 2001

The aggregate 2022 cash contributions by plan sponsors of the Milliman 100 companies were $19.8 billion, a decrease of $3.3 billion from the $23.1 billion contributed in 2021. The temporary decrease can be tied to the deferred application of funding relief under the American Rescue Plan Act of 2021. We expect cash contributions will increase in 2023, given the large investment losses suffered by the Milliman 100 plans during 2022.

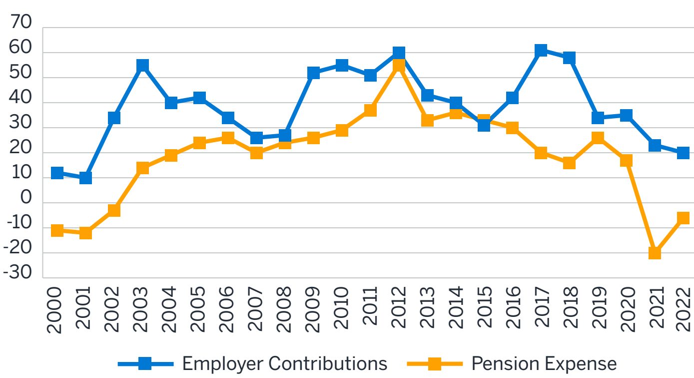
FIGURE 15: EMPLOYER CONTRIBUTIONS BY YEAR



FY2022 pension income decrease

The FY2022 pension income decreased to $6.3 billion compared to $20.0 billion for FY2021 but remained as a credit compared to the pension expense seen in prior years. This is well below the $54.6 billion expense peak level in FY2012. Fifty-six companies recorded FY2022 pension income (i.e., a credit to earnings).

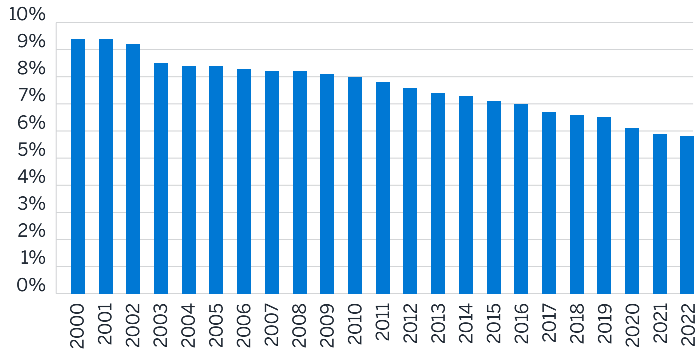
FIGURE 16: PENSION EXPENSE (INCOME) AND CONTRIBUTIONS



Expected rates of return

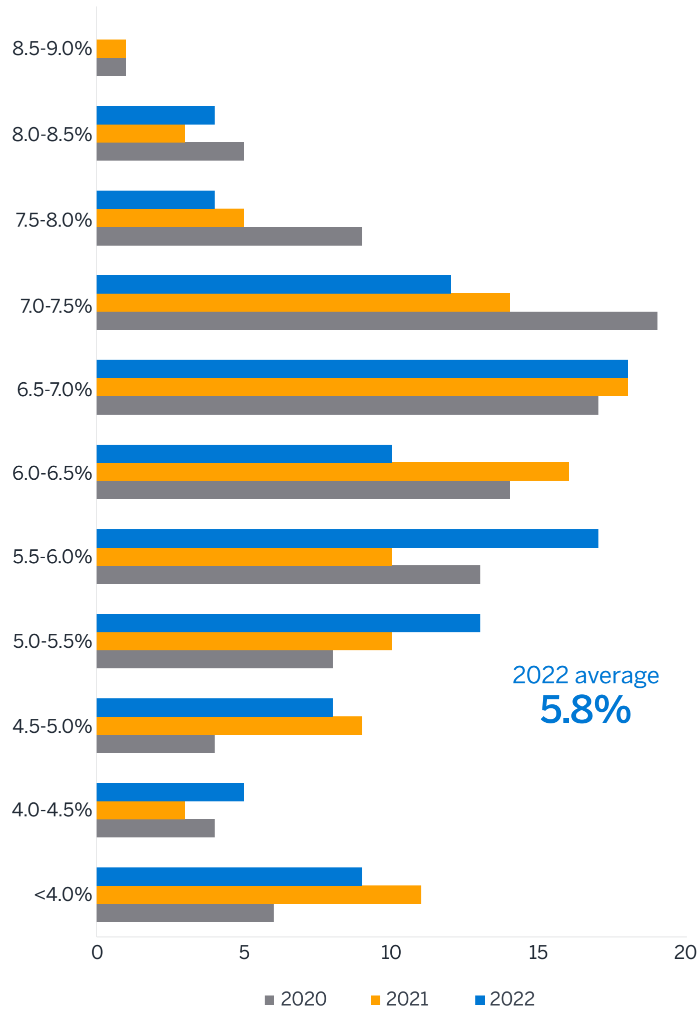
Companies continued to lower their expected rates of return on plan assets to an average of 5.8% for FY2022, as compared with 5.9% for FY2021. This represents a significant drop from the average expected rate of return of 9.4% back in FY2000.

FIGURE 17: EXPECTED RATE OF RETURN BY YEAR



Four of the Milliman 100 companies utilized an expected rate of return for FY2022 of at least 8.0%. This differs drastically from FY2000, in which all but two companies were above 8.0% (the highest was 10.90%).

FIGURE 18: SPONSOR-REPORTED ASSUMED RATE OF RETURN ON INVESTMENTS (2020-2022)



Pension funding in 2023 and beyond

Thus far, 2023 has been marked by continued uncertainty, both economically and politically, from the ongoing war in Ukraine to the Federal Reserve's continued efforts to control inflation by boosting interest rates and the resulting concerns over bank instability. Our expectations for pension funding in the coming year include:

- Increases in plan sponsor contributions given the significant investment losses suffered during 2022.
- Companies may flip the script from pension income to pension expense, as there will be a higher hit to earnings in FY2023 relative to FY2022. The expected increase in pension expense is due to the investment losses experienced during 2022 as well as the significant increases in discount rates. Higher discount rates result in lower pension liabilities, but when computing the interest charge on those liabilities, we expect to see a net increase relative to 2022 levels, given that discount rates have essentially doubled in magnitude over the course of 2022. There could be offsetting amortization effects but these likely will not move the needle as much.
- As the Federal Reserve contemplates additional interest rate increases to combat persistently high inflation levels, it is also keeping an eye on banking developments and recessionary impacts. There are expectations of rates starting to come down more meaningfully in the second half of the year, which could have an impact on funded status and balance sheets by year-end.
- With the positive first-quarter returns seen in 2023 along with muted discount rate movements, the Milliman 100 companies are likely to be at an overall funding surplus. But with economic and politically uncertainty lingering, we wouldn't be surprised to see funded status oscillation throughout the year.
- With lower equity prices and higher bond yields at the end of 2022, we are likely to see plan sponsors increase their expected return on asset assumptions for the first time in the 23-year history of the Milliman PFS. The higher expected return assumptions should help to somewhat soften the blow of higher anticipated pension expense in 2023.
- We may see plan sponsors reassessing their investment glide path strategies to implement re-risking in 2023, given the depressed equity levels at the end of 2022. Over the course of the last decade, there has been a clear trend of investment de-risking as plan sponsors pursue less risky investment strategies shifting from equities to fixed income; however, we may have reached a tipping point.
- As funded status did improve during 2022, we may see some plan sponsors with surplus pensions pursue pension risk transfer activities such as pension buyouts in 2023—that is, while interest rates are still relatively high.
- We could also see renewed plan sponsor interest in lump-sum windows during 2023, especially later in the year, should they believe that interest rates may come down from their current high levels.
- SECURE 2.0 institutes a cap on future mortality improvement rates, which will reduce life expectancies and lower liabilities. In addition, the new law terminates the indexing on the PBGC variable rate premium, which will reduce plan expenses for many underfunded plans. However, these changes are effective beginning with the 2024 plan year and are not reflected in the results of this report.

Appendix

HISTORICAL VALUES (All dollar amounts in millions. Numbers may not add up correctly due to rounding.)

FIGURE 19: FUNDED STATUS

FISCAL YEAR	MARKET VALUE OF PLAN ASSETS	CHANGE FROM PRIOR YEAR	PROJECTED BENEFIT OBLIGATION	CHANGE FROM PRIOR YEAR	FUNDED RATIO	CHANGE FROM PRIOR YEAR	FUNDED STATUS	CHANGE FROM PRIOR YEAR
2022	$1,318,816	($461,513)	$1,327,495	($520,772)	99.3%	3.0%	($8,679)	$59,258
2021	$1,780,329	$30,299	$1,848,267	($138,937)	96.3%	8.2%	($67,938)	$169,235
2020	$1,750,030	$148,065	$1,987,203	$149,271	88.1%	0.9%	($237,173)	($1,206)
2019	$1,601,965	$161,002	$1,837,932	$180,634	87.2%	0.3%	($235,967)	($19,632)
2018	$1,440,964	($90,310)	$1,657,298	($129,137)	86.9%	1.2%	($216,334)	$38,827
2017	$1,531,274	$157,346	$1,786,435	$87,349	85.7%	4.8%	($255,161)	$69,998
2016	$1,373,927	$36,106	$1,699,086	$55,514	80.9%	-0.5%	($325,159)	($19,408)
2015	$1,337,822	($66,418)	$1,643,572	($80,585)	81.4%	0.0%	($305,751)	$14,167
2014	$1,404,240	$58,913	$1,724,157	$190,341	81.4%	-6.3%	($319,918)	($131,428)
2013	$1,345,327	$77,828	$1,533,816	($116,940)	87.7%	10.9%	($188,489)	$194,768
2012	$1,267,499	$85,929	$1,650,756	$150,057	76.8%	-1.9%	($383,257)	($64,129)
2011	$1,181,570	$32,294	$1,500,698	$129,868	78.7%	-5.1%	($319,128)	($97,574)
2010	$1,149,276	$118,847	$1,370,830	$112,069	83.8%	1.9%	($221,554)	$6,778
2009	$1,030,430	$108,774	$1,258,761	$95,018	81.9%	2.7%	($228,332)	$13,756
2008	$921,655	($313,026)	$1,163,743	($3,242)	79.2%	-26.6%	($242,088)	($309,784)
2007	$1,234,681	$79,797	$1,166,985	$129	105.8%	6.8%	$67,696	$79,668
2006	$1,154,884	$118,473	$1,166,856	$31,323	99.0%	7.7%	($11,973)	$87,150
2005	$1,036,411	$74,967	$1,135,533	$64,842	91.3%	1.5%	($99,122)	$10,125
2004	$961,444	$90,818	$1,070,691	$86,427	89.8%	1.3%	($109,247)	$4,391
2003	$870,627	$147,240	$984,264	$104,144	88.5%	6.3%	($113,638)	$43,096
2002	$723,386	($80,723)	$880,120	$88,155	82.2%	-19.3%	($156,734)	($168,878)
2001	$804,109	($99,338)	$791,965	$60,110	101.5%	-21.9%	$12,144	($159,448)
2000	$903,447	n/a	$731,855	n/a	123.4%	n/a	$171,592	n/a

FIGURE 20: RETURN ON ASSETS

FISCAL YEAR	EXPECTED RATE OF RETURN	ACTUAL RATE OF RETURN (ESTIMATED)		EXPECTED RETURN (ALL PLANS)	ACTUAL RETURN (ALL PLANS)	DIFFERENCE
		ALL PLANS	CALENDAR FISCAL YEARS			
2022	5.8%	-18.6%	-19.2%	$92,312	($323,203)	$415,516
2021	5.9%	8.4%	7.9%	$95,243	$139,703	($44,461)
2020	6.1%	13.4%	13.8%	$94,233	$210,423	($116,191)
2019	6.5%	17.2%	17.9%	$93,106	$240,439	($147,333)
2018	6.6%	-2.8%	-3.5%	$96,576	($43,840)	$140,416
2017	6.7%	12.8%	13.0%	$91,634	$173,718	($82,084)
2016	7.0%	8.4%	8.6%	$93,149	$110,084	($16,935)
2015	7.1%	0.8%	0.3%	$94,932	$11,175	$83,757
2014	7.3%	10.7%	10.5%	$95,921	$138,343	($42,422)
2013	7.4%	10.2%	10.1%	$89,433	$124,430	($34,996)
2012	7.6%	11.8%	12.0%	$89,579	$137,088	($47,509)
2011	7.8%	5.6%	5.3%	$89,771	$61,750	$28,021
2010	8.0%	12.8%	12.7%	$87,207	$131,729	($44,522)
2009	8.1%	14.2%	15.3%	$85,034	$124,724	($39,691)

HISTORICAL VALUES (All dollar amounts in millions. Numbers may not add up correctly due to rounding.)

FIGURE 20: RETURN ON ASSETS (CONTINUED)

FISCAL YEAR	EXPECTED RATE OF RETURN	ACTUAL RATE OF RETURN (ESTIMATED)		EXPECTED RETURN (ALL PLANS)	ACTUAL RETURN (ALL PLANS)	DIFFERENCE
		ALL PLANS	CALENDAR FISCAL YEARS			
2008	8.2%	-19.4%	-19.9%	$92,350	($235,241)	$327,591
2007	8.2%	9.9%	9.7%	$89,121	$112,575	($23,454)
2006	8.3%	12.9%	12.9%	$82,052	$132,608	($50,556)
2005	8.4%	11.2%	11.1%	$78,255	$105,407	($27,152)
2004	8.4%	12.4%	12.2%	$77,163	$106,270	($29,107)
2003	8.5%	19.2%	20.0%	n/a	n/a	n/a
2002	9.2%	-8.6%	-8.6%	n/a	n/a	n/a
2001	9.4%	-6.0%	-6.2%	n/a	n/a	n/a
2000	9.4%	3.9%	3.3%	n/a	n/a	n/a

FIGURE 21: PENSION COST

FISCAL YEAR	PENSION INCOME/(EXPENSE)	CHANGE FROM PRIOR YEAR	EMPLOYER CONTRIBUTION	CHANGE FROM PRIOR YEAR	DISCOUNT RATE
2022	$6,269	$13,761	$19,836	$3,266	5.18%
2021	$20,030	($37,475)	$23,102	$11,665	2.73%
2020	($17,445)	($8,510)	$34,767	($1,102)	2.42%
2019	($25,955)	$5,506	$33,666	$27,193	3.10%
2018	($15,873)	($14,531)	$57,996	($15,935)	3.99%
2017	($20,449)	($12,746)	$60,859	($30,295)	3.48%
2016	($30,405)	($2,790)	$42,061	($11,497)	3.87%
2015	($33,195)	($2,434)	$30,564	$9,590	4.23%
2014	($35,630)	$2,157	$40,154	$3,219	3.98%
2013	($33,473)	($21,086)	$43,373	$16,894	4.75%
2012	($54,558)	$17,136	$60,266	($8,902)	4.06%
2011	($37,423)	$7,938	$51,364	$3,984	4.85%
2010	($29,485)	$3,286	$55,348	($3,550)	5.43%
2009	($26,199)	$2,218	$51,797	($24,504)	5.94%
2008	($23,980)	$4,478	$27,293	($1,614)	6.42%
2007	($19,503)	($6,754)	$25,679	$8,037	6.18%
2006	($26,257)	$1,822	$33,715	$8,646	5.78%
2005	($24,435)	$4,973	$42,362	($1,965)	5.52%
2004	($19,462)	$5,007	$40,397	$14,722	5.80%
2003	($14,455)	$17,694	$55,119	($21,269)	n/a
2002	$3,238	$9,070	$33,850	($24,214)	n/a
2001	$12,308	($1,376)	$9,636	$1,923	n/a
2000	$10,932	($10,932)	$11,559	n/a	n/a

HISTORICAL VALUES (All dollar amounts in millions. Numbers may not add up correctly due to rounding.)

FIGURE 22: ASSET ALLOCATIONS (BY PERCENTAGE)

FISCAL YEAR	EQUITY ALLOCATION	CHANGE FROM PRIOR YEAR	FIXED INCOME ALLOCATION	CHANGE FROM PRIOR YEAR	OTHER ALLOCATION	CHANGE FROM PRIOR YEAR
2022	25.00%	-14.81%	51.38%	0.96%	23.62%	19.54%
2021	29.35%	-8.11%	50.89%	1.22%	19.76%	11.25%
2020	31.94%	-1.68%	50.28%	2.47%	17.76%	-3.73%
2019	32.49%	1.03%	49.06%	2.42%	18.45%	-7.47%
2018	32.16%	-10.92%	47.90%	6.27%	19.94%	5.93%
2017	36.10%	-0.58%	45.08%	3.07%	18.82%	-5.68%
2016	36.31%	-3.50%	43.73%	3.63%	19.96%	-1.08%
2015	37.63%	-2.09%	42.20%	1.35%	20.17%	1.21%
2014	38.43%	-8.55%	41.64%	8.27%	19.93%	2.11%
2013	42.02%	3.96%	38.46%	-2.30%	19.52%	-3.44%
2012	40.42%	3.57%	39.36%	-2.80%	20.22%	-1.28%
2011	39.03%	-13.36%	40.49%	14.08%	20.48%	5.18%
2010	45.05%	-1.56%	35.50%	-0.74%	19.47%	5.08%
2009	45.76%	4.47%	35.76%	-14.30%	18.53%	28.03%
2008	43.80%	-20.27%	41.73%	25.58%	14.47%	22.24%
2007	54.93%	-9.35%	33.23%	13.94%	11.84%	15.63%
2006	60.60%	-1.86%	29.16%	1.75%	10.24%	6.74%
2005	61.75%	0.00%	28.66%	0.00%	9.59%	0.00%

FIGURE 23: PENSION PLAN INFORMATION BY BUSINESS SECTOR

SECTOR	COUNT	COUNT OF CALENDAR FY	MV PLAN ASSETS	PBO	FUNDED RATIO	EMPLOYER CONTRIBUTION	DISC. RATE	ERoR	ACT. RoR	EQUITY ALLOC.	FIXED INCOME ALLOC.	OTHER ALLOC.
Basic Materials	5	4	45,849	49,263	93%	346	5.34%	6.0%	-17.31%	20%	45%	35%
Communication Services	4	3	74,049	78,520	94%	149	5.35%	6.7%	-16.29%	32%	39%	29%
Consumer Cyclical	5	4	128,817	131,854	98%	1,460	5.30%	5.0%	-20.59%	8%	74%	18%
Consumer Defensive	10	6	74,526	75,192	99%	928	4.72%	5.6%	-15.97%	32%	56%	12%
Energy	4	4	54,554	59,926	91%	5,770	5.17%	4.3%	-23.02%	24%	63%	13%
Financial Services	18	18	173,301	151,838	114%	2,036	5.32%	5.3%	-19.70%	25%	56%	19%
Healthcare	10	8	121,284	117,055	104%	2,160	5.17%	6.3%	-19.59%	39%	39%	21%
Industrials	22	18	433,742	454,039	96%	4,404	5.26%	6.2%	-18.32%	24%	47%	29%
Technology	7	4	95,610	94,276	101%	642	4.51%	4.0%	-16.58%	14%	63%	23%
Utilities	15	15	117,083	115,531	101%	1,941	5.38%	6.9%	-17.95%	34%	41%	25%
Total	**100**	**84**	**1,318,816**	**1,327,495**	**99%**	**19,836**	**5.18%**	**5.8%**	**-18.59%**	**25%**	**51%**	**24%**

HISTORICAL VALUES (All dollar amounts in millions. Numbers may not add up correctly due to rounding.)

FIGURE 24: OPEB FUNDED STATUS

FISCAL YEAR	OPEB MV OF ASSETS	CHANGE FROM PRIOR YEAR	OPEB APBO	CHANGE FROM PRIOR YEAR	OPEB FUNDED STATUS	CHANGE FROM PRIOR YEAR	OPEB FUNDED RATIO	CHANGE FROM PRIOR YEAR
2022	$48,617	($14,407)	$113,261	($42,106)	($64,644)	$27,699	42.9%	2.3%
2021	$63,024	$1,584	$155,367	($15,949)	($92,343)	$17,533	40.6%	4.7%
2020	$61,440	$6,820	$171,316	$4,119	($109,876)	$2,701	35.9%	3.2%
2019	$54,620	$2,727	$167,197	$842	($112,577)	$1,885	32.7%	1.5%
2018	$51,893	($6,108)	$166,355	($24,314)	($114,462)	$18,205	31.2%	0.8%
2017	$58,001	$4,667	$190,669	($2,819)	($132,667)	$7,487	30.4%	2.8%
2016	$53,334	($616)	$193,488	($8,379)	($140,154)	$7,763	27.6%	0.9%
2015	$53,949	($4,025)	$201,867	($25,650)	($147,917)	$21,625	26.7%	1.2%
2014	$57,975	($1,420)	$227,517	$14,468	($169,542)	($15,888)	25.5%	-2.4%
2013	$59,394	$3,757	$213,049	($40,491)	($153,655)	$44,249	27.9%	6.0%
2012	$55,637	$4,021	$253,540	$12,884	($197,903)	($8,863)	21.9%	0.5%
2011	$51,616	($3,607)	$240,657	$3,206	($189,040)	($6,813)	21.4%	-1.9%
2010	$55,223	$5,751	$237,450	$9,271	($182,227)	($3,520)	23.3%	1.6%
2009	$49,472	($7,294)	$228,179	($42,843)	($178,707)	$35,549	21.7%	0.8%
2008	$56,767	($29,382)	$271,022	($41,586)	($214,256)	$12,205	20.9%	-6.7%
2007	$86,148	$4,476	$312,609	($10,412)	($226,461)	$14,888	27.6%	2.3%
2006	$81,672	$5,791	$323,021	($17,057)	($241,348)	$22,848	25.3%	3.0%
2005	$75,881	n/a	$340,077	n/a	($264,196)	n/a	22.3%	n/a

About the study

The results of the Milliman 2023 Pension Funding Study (PFS) are based on the pension plan accounting information disclosed in the footnotes to the companies' Form 10-K annual reports for the 2022 fiscal year and for previous fiscal years. These figures represent the GAAP accounting information that public companies are required to report under Financial Accounting Standards Board (FASB) Accounting Standards Codification Subtopics 715-20, 715-30, and 715-60. In addition to providing the financial information on the funded status of their U.S. qualified pension plans, these footnotes may also include figures for the companies' nonqualified and foreign plans, both of which are often unfunded or subject to different funding standards than those for U.S. qualified pension plans. These foreign and nonqualified plans are included in our study, so the information, data, and footnotes do not represent the funded status of only the companies' U.S. qualified pension plans under ERISA.

Sixteen of the companies in the 2023 Milliman Pension Funding Study had fiscal years other than the calendar year. The companies included in the study are affected by mergers, acquisitions, and other corporate transactions during FY2022. Figures quoted from 2022 and earlier years reflect the 2023 composition of Milliman 100 companies and may not necessarily match results published in the 2022 or prior Milliman PFS. Generally, the group of Milliman 100 companies selected remains consistent from year to year. Privately held companies and mutual insurance companies, were excluded from the study.

The results of the 2023 study will be used to update the Milliman 100 Pension Funding Index (PFI) as of December 31, 2022, the basis of which will be used for projections in 2023 and beyond. The Milliman 100 PFI is published monthly and reflects the effect of market returns and interest rate changes on pension funded status.

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