

Required return

A framework for setting and achieving pension objectives

May 2019

IN BRIEF

Pension plans relying on their portfolios to attain surplus funding targets are likely to face an intensifying challenge, given an environment of depressed interest rates, inflated plan liability values and increased market volatility.

We believe the first step toward success in managing pension portfolios is to clearly identify the plan's ultimate objective (e.g., managing the plan in perpetuity, or partial or full termination) and to translate that objective into a measurable goal—namely, reaching a specified funded status within a desired time frame and with an acceptable level of risk.

We lay out a required return and surplus volatility framework that can assist plan sponsors in shaping their asset allocations to help them achieve plan objectives.

The result is neither a one-size-fits-all nor an immutable solution but, rather, one that recognizes the unique characteristics of each pension plan and has the flexibility to adapt to evolving market and interest rate conditions, shifting actuarial assumptions and a changing regulatory environment.

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The S&P 500 bottomed in March 2009, during the most severe U.S. economic recession since the Great Depression. The period following the global financial crisis has been challenging for pension plans despite 13.0% annualized global equity returns from March 2009 through April 2019.¹ Falling interest rates and tightening credit spreads have driven discount rates lower and inflated plan liabilities. Rising liabilities, despite strong asset gains, have left the average corporate pension plan 87.2% funded as of December 31, 2018.² Looking ahead, given increasing market volatility and depressed long-term interest rates, it will become more difficult for pension plans to rely on their portfolios to reach a surplus funding level. While each pension plan and its plan sponsor face unique challenges and constraints, we believe the first step in any investment program should be to define plan objectives and associated funding goals.

DEFINING OBJECTIVES AND DETERMINING “SUCCESS”

Many pensions share similar features or characteristics; however, it is our experience that any adjoined plan and plan sponsor are unique in their combined goals and constraints. This precludes a one-size-fits-all approach to defining plan objectives and ultimately building pension portfolios. Each of the considerations in **EXHIBIT 1** can significantly influence a plan's risk tolerance and long-term objectives.

¹ J.P. Morgan Asset Management. Return data for MSCI ACWI Net from March 1, 2009–April 30, 2019.

² J.P. Morgan Asset Management, Corporate Pension Peer Analysis 2018, GAAP funded status.

Each pension plan represents a unique combination of characteristics, goals and constraints

EXHIBIT 1: PENSION PLAN AND PLAN SPONSOR CHARACTERISTICS

PENSION PLAN	PLAN SPONSOR
<ul style="list-style-type: none"> • Current funding levels (accounting, funding, settlement, etc.) • Plan design (final average pay, cash balance, COLA, etc.) • Participation (open or closed to new entrants) and accrual status (partial or full freeze) • Plan demographics and participant behavior • PPA minimum required contributions • PBGC premiums and other administrative costs 	<ul style="list-style-type: none"> • Materiality of plan to plan sponsor (balance sheet, income statement, rating agency, analyst coverage, etc.) • Contribution tolerance and alternate uses of balance sheet capacity (M&A, buybacks, dividends, etc.) • Pension plan’s role in overall employee benefits program • Competing uses of discretionary cash across the organization

Source: J.P. Morgan Asset Management.

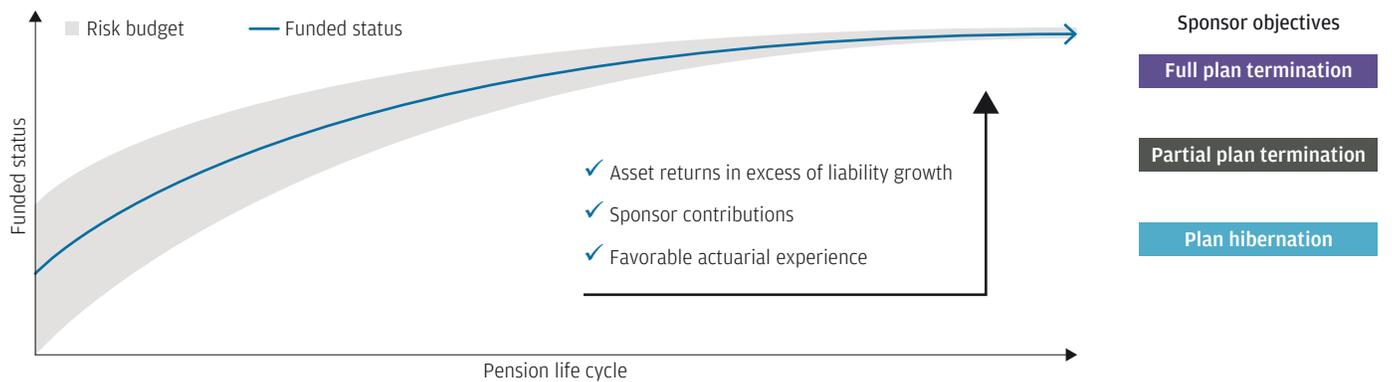
Taken together, these criteria can help a plan sponsor define what “success” means and how much risk can be underwritten in the process of achieving its endgame. The goal of some plan sponsors is to manage the plan in perpetuity, while others may seek to strategically reduce the liability over time or, in some cases, fully terminate the plan. Still others may have a desire to grow surplus beyond what is needed to fund current plan participants. Whatever the endgame, clearly identifying sponsor objectives is an essential first step in defining plan success measures and shaping a strategy for reaching those goals across the pension life cycle.

objectives. Over time, asset returns in excess of liability growth, along with plan contributions and favorable actuarial experiences, can improve funded status and move plans closer to their desired endgame. As a plan moves closer to its established objectives, it is prudent to reduce the risk profile of the plan via its asset allocation, with an eye toward stabilizing the funded status of the plan, regardless of adverse market movements or sponsor-related headwinds. While conversations around success for plan sponsors can often seem abstract, we believe having a sense of the long-term goals of the plan can lead to a better strategy for building pension portfolios to support the ultimate objective.

EXHIBIT 2 illustrates the interplay among plan objectives, funded status, risk and the time horizon for achieving plan

Sponsors should aim to reduce the risk profile of the plan as they make progress in reaching their objectives

EXHIBIT 2: ACHIEVING PLAN OBJECTIVES OVER THE PENSION LIFE CYCLE



Source: J.P. Morgan Asset Management. For illustrative purposes only.

BUILDING A BLUEPRINT: REQUIRED RETURN AND SURPLUS VOLATILITY

In the common case of a funded status target objective, we believe the pathway to success can be translated into an investment proposition. The two key tenets in this investment proposition for defined benefit plans are required return and surplus volatility. Required return is the annualized compound return needed to reach a predetermined funding level over a specified time horizon. Surplus volatility is the variability of the difference between plan assets and plan liabilities; this serves as a key measure of pension risk and a proxy for the risk of unexpected required contributions.

To illustrate these concepts, we take a sample plan that is 85% funded with annual service cost accruals of 1.5% of the PBO and quantify the required return to achieve a 110% target GAAP funded status, varying the time horizon and sponsor contribution per annum (**EXHIBIT 3**). As an example, assuming no plan contributions and a 10-year time horizon, the required return for the sample plan to reach 110% funded status is 6.6%, net of fees. In many cases, plans will target a funded status in excess of 100% to build in a buffer for changing liability assumptions, pension risk transfer strategies and/or full plan terminations.

Required return to reach a target funded status decreases as sponsor contributions and the time horizon increase

EXHIBIT 3: REQUIRED RETURN FOR AN 85% FUNDED PLAN TO ACHIEVE 110% GAAP FUNDED STATUS, VARYING CONTRIBUTION RATE AND TIME HORIZON

		Contribution per annum until fully funded (% of liability)				
		None	1.5%	3.0%	4.5%	6.0%
Years to reach 110% GAAP funded status	1	33.2%	31.4%	29.7%	27.9%	26.1%
	2	17.6%	15.9%	14.2%	12.5%	10.8%
	3	12.8%	11.1%	9.4%	7.7%	6.0%
	4	10.5%	8.8%	7.0%	5.3%	3.6%
	5	9.1%	7.4%	5.6%	3.9%	2.1%
	6	8.3%	6.5%	4.7%	2.9%	1.1%
	7	7.6%	5.8%	4.0%	2.1%	0.3%
	8	7.2%	5.3%	3.4%	1.6%	0.0%
	9	6.8%	4.9%	3.0%	1.1%	0.0%
	10	6.6%	4.6%	2.7%	0.7%	0.0%
15	5.8%	3.7%	1.4%	0.0%	0.0%	
20	5.5%	3.1%	0.5%	0.0%	0.0%	

Source: J.P. Morgan Asset Management.
Calculations assume annual service cost accruals are 1.5% of PBO.

Several implications can be drawn from the required return analysis framework:

- **The longer the time horizon, the lower the required return.** For example, plans with shorter time horizons often need to supplement portfolio returns with plan contributions in order to reach a target funding level.
- **The larger the sponsor contribution commitment, the lower the required return.** When a plan sponsor is cash flow constrained or has a high cost of capital, voluntary pension contributions can be difficult to justify. This often puts the onus on portfolio returns to close the gap between current and desired funding levels.
- **Higher funded status targets will require higher returns.** While not explicitly illustrated in Exhibit 3, this is axiomatic. Uncertainty in pension liability cash flows, whether due to plan demographics or plan provisions and embedded optionality, can be expressed as a higher funded status target, leading to higher required returns to close the gap. Said another way, the greater the uncertainty around plan liabilities, the higher the funded status target.
- **Required returns range from virtually unachievable (>12%) to risk free (<2%).³** In order to reach funding targets on an accelerated basis, contributions may be required (although not necessarily in the statutory sense). This has important implications for a plan's strategic asset allocation, as contributions will influence the need for returns from plan assets.

Shifting from return calibration to risk calibration, we focus on surplus volatility to quantify the level of funded status risk a plan must take in order to build a portfolio aligned with the required return and ultimately the sponsor's objectives. As the tracking error of plan assets to plan liabilities, surplus volatility can be conceptualized as how assets move relative to liabilities subject to the same market experience. Thus, the largest risks embedded in pension liabilities (mainly interest rate and spread duration) and plan assets (mainly public equity risk) tend to be the largest drivers of surplus volatility, as well as the main levers for controlling it.

³ J.P. Morgan Asset Management 2019 Long-Term Capital Market Assumptions estimate a 2.0% compound return for U.S. cash, which serves as our risk-free asset (not to be confused with the minimum surplus volatility asset). Emerging market equity is the highest expected return asset, with a compound return estimate of 8.5%.

Practical implications

Much of the work we undertake in partnership with plan sponsors involves constructing portfolios tailored to each plan’s unique objectives and constraints. To demonstrate this concept, we often start with an efficient frontier to illustrate a series of portfolios that minimize surplus risk at varying return target levels. The outputs of these exercises are quite similar across plans and typically show that there are practical asset allocation changes that can be implemented to enhance risk-adjusted returns (**EXHIBIT 4**). This can be achieved by reducing risk at the same level of return (Portfolio A), boosting return at the same level of risk (Portfolio C) or some combination of the two (Portfolio B, for example).

Looking back to our earlier example in Exhibit 3, the sample plan had a required return of 6.6% net, assuming no sponsor contributions. As shown in Exhibit 4, there is a series of asset allocation changes that can drive the return profile of the portfolio toward that required return without a commensurate increase in funded status risk. This is illustrated by Portfolio C, which provides a 100 basis point (bps) improvement in the plan’s expected return at the same level of surplus volatility. Similarly, the same sponsor may prefer to make voluntary contributions, lowering the required return objective and corresponding risk needed to achieve it. This objective can be achieved with Portfolio A, which holds return constant while reducing funded status risk by 400bps.

While defining the appropriate portfolio will involve a continually underwritten process with the plan’s stakeholders, we believe this objective-oriented framework can serve as a guide for both setting a plan’s strategic asset allocation and assessing tactical tilts. For most plans, the asset allocation can be a function of the plan’s required return, which, in turn, is derived from the plan sponsor’s objectives. We find that this framework can be helpful even in cases where there are GAAP accounting constraints on expected returns.⁴ Another benefit of this framework is its inherent adaptability to evolving market conditions and changing inputs. Forward-looking return expectations are not stable, nor are the actuarial assumptions and actual experience around pension liabilities. This instability exposes a flaw of overly prescriptive glide paths—mainly their lack of flexibility. Changing markets, regulatory environments and plan design necessitate an adaptive pension strategy over time.

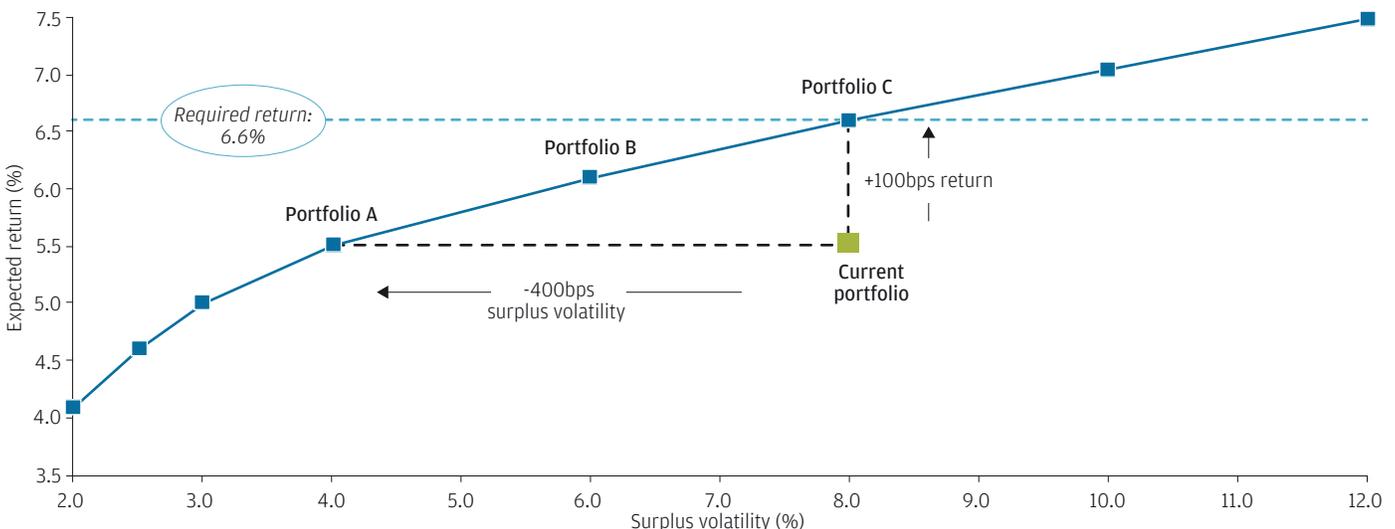
How are plans actually positioned relative to required returns?

Now that we’ve conceptually laid out a structured process for determining return requirements, let’s take a look at the universe of the 100 largest corporate plans and compare what they expect to earn with estimates of what they might need to earn in order to reach full funding in 10 years without sponsor contributions (**EXHIBIT 5**).

⁴ We acknowledge there are practical GAAP earnings considerations when changing portfolios and return expectations. However, this framework can also be applied by starting with a predetermined return target and solving for implied funded status levels over various time horizons.

Practical asset allocation changes may improve risk-adjusted returns

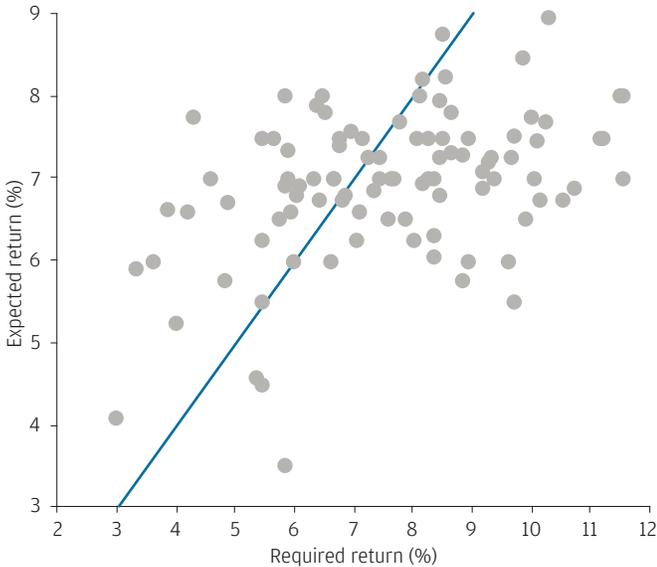
EXHIBIT 4: EFFICIENT FRONTIER IMPROVEMENTS



Source: J.P. Morgan Asset Management. For illustrative purposes only.

For many large corporate plans, expected returns may be insufficient to reach full funding over the next 10 years

EXHIBIT 5: REQUIRED RETURN TO REACH 100% FUNDED STATUS IN 10 YEARS VS. EXPECTED RETURN



Source: 10-K filings, J.P. Morgan Asset Management; data as of December 31, 2018.

We use the following definitions for this exercise:⁵

Required return (x-axis): We solve for the return required to achieve 100% GAAP funded status over the next 10 years with no contributions. This calculation incorporates current levels of interest cost, service cost and disclosed expected benefit payments over the next 10 years. For plans that are currently overfunded, we set the required return equal to the return needed to maintain funded status, roughly the service cost and interest cost, excluding any amortization of surplus.

Expected return (y-axis): This is the U.S. GAAP expected return on assets assumption. For this exercise, we’ve assumed that the expected return assumption for a portfolio is generally a good directional indicator of a portfolio’s forward-looking expected return (though actual returns will often vary).

Corporate pension plans for which *expected returns* are equal to *required returns* would fall along the upward-sloping line in Exhibit 5.

Observations

- Required returns in excess of 9.0% are *far* to the right of the dividing line, implying that the plans’ expected returns will be insufficient to close the funding gap without sponsor contributions. In the current market environment, it’s quite difficult to build a 9.0%+ expected return portfolio.
- Many expected returns are quite close to the required returns. About 40% of the observations are within 100bps (plus or minus) of the expected return assumption. These plans are roughly positioned to reach full funding over the next decade without relying on sponsor contributions.
- What about those far to the left of the line—for which expected returns appear to be more than sufficient to achieve 100% funding over the next 10 years? Perhaps, with good reason, they are shooting for a higher endgame funded status or their time horizons are much shorter than 10 years. However, some are likely taking uncompensated risk and could optimize their pension journey by revisiting their return needs and restructuring their portfolios accordingly.

CONCLUSION

It’s important not to be a reductionist about this exercise—planning the future in real life is not as easy as selecting a box on a grid. But we also don’t need to be overly precise. We can select a range of goals and approximate a return that generally falls roughly within it. A lot can change over the course of a 10-year plan: mortality assumptions, pension regulations and interest rates, to name a few. Rather than instilling a false sense of precision via prescriptive asset allocations, we believe plan sponsors should approach their asset allocation by driving toward clarity on plan objectives and translating those into investment propositions. While there are a number of alternative approaches to pension management and portfolio construction, we believe a required return and surplus volatility framework can benefit most plans by providing a road map with built-in flexibility for changing circumstances. In our view, once required return and surplus volatility targets have been defined, plans will be better equipped to take control of their pension journey.

⁵ For more details on the universe of the 100 largest corporate plans, refer to J.P. Morgan’s Corporate Pension Peer Analysis 2018.

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