Pension Pulse

SPRING 2014

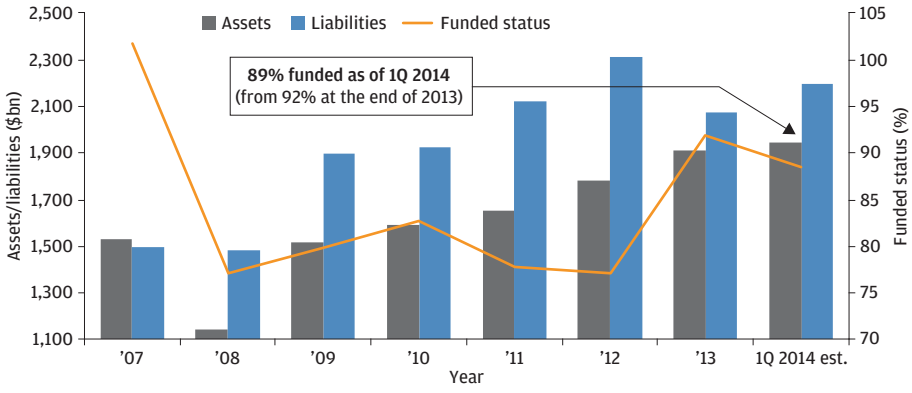
IN THIS ISSUE

Where to next for funded status?

After a large increase in 2013, the funded status of "Corporate America" fell back 3% in the first quarter of 2014, landing at 89% (**Exhibit 1**).[1] Aggregate liabilities of the Russell 3000 companies have increased by 6% year-to-date as a result of a 36-basis-point reduction in rates. By the end of the first quarter, 10% of U.S. plans were in surplus, with an average funded status of 112%. The remaining 90% have an 81% average funded status (**Exhibit 2**, next page).

This issue of Pension Pulse focuses on how fully funded plans got to where they are and discusses illiquid strategies for their growth portfolios. For plans that are still underfunded, we look at the impact of a large increase in PBGC variable premiums on their incentive to fund the deficit, and we offer early comments on a new type of contribution, AT&T's $9 billion issuance of preferred equity shares to its pension fund. We also introduce a new section focusing on landmark research pension professionals should be aware of.

EXHIBIT 1: CORPORATE AMERICA: PENSION ASSETS VS. LIABILITIES, 2007–1Q 2014

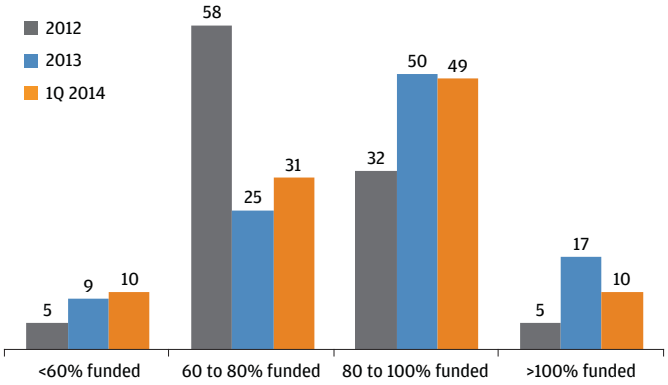


Source: J.P. Morgan, Bloomberg, Russell 3000 corporate 10-Ks; data as of March 31, 2014.
1Q 2014 estimates are based on market moves only and do not include contributions, benefit payments and service costs.

[1] Note: Due to data availability as of March 31, 2014, estimates in this issue of Pension Pulse are based on scaled data. Estimate based on 60% of companies reported in Bloomberg, capturing 83% of the assets.

J.P.Morgan
Asset Management

EXHIBIT 2: FUNDED STATUS, 2012–1Q 2014



Source: J.P. Morgan, Bloomberg; data as of March 31, 2014.

Overfunded vs. underfunded: Asset allocation is not the differentiator

What did today's overfunded plans do differently from underfunded plans between 2008 and 2013? The surprising answer is not much. Their investment allocations and returns were similar to those of the currently underfunded plans. Underfunded plans actually contributed a bit less than their peers and did not significantly alter their asset allocations over the period.

We find three main reasons that explain their current surplus (**Exhibit 3**):

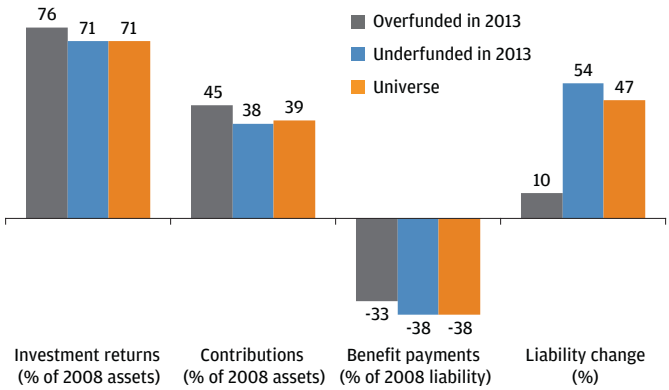
1. **Higher starting point:** Today's overfunded plans had an average funded status of 87% in 2008, compared with 75% for underfunded plans. That means even though they had similar investment returns over the last five years, the underfunded plans fell behind because they had a larger gap to fill. Had they also started at 87%, they would have been 98% funded by the end of 2013.

2. **Lower benefits:** Benefit payments over the period represented 33% of overfunded plans' 2008 liabilities vs. 38% for the underfunded plans.

3. **Fewer liabilities:** Declining interest rates since 2008 increased liabilities on average by 47% (net of service cost, interest cost and benefit payments). The liability increase for overfunded plans was one-fifth that of the underfunded plans. While plan history (the plan's age, benefit formula, etc.) partly explains the difference, it could also be related to decisions taken to restructure benefits over the period.

On the asset side, we find that neither investment gains nor sponsor contributions explain plan overfunding. Overfunded plan assets have returned 76% since 2008, only 5% more than underfunded plan assets. The similar investment returns reflect similar asset allocations. The average fixed income allocation for both under- and overfunded plans has ranged between 33% and 37% over the last five years.

EXHIBIT 3: KEY RATIOS: 2008–2013



Source: J.P. Morgan, Bloomberg; data as of March 31, 2014.

Overfunded vs. underfunded: Who has more in fixed income?

The plans with a better funded status do not seem to have more in fixed income. To be sure, the big plans in the Russell 3000 universe have tilted toward fixed income. In 2008, 6% of the larger companies had more than 60% of their assets in fixed income.[2] Today, twice as many do, but their average funding is similar. In fact, the funded status of plans with a high exposure to fixed income improved less than that of plans with a high exposure to growth assets in the bull market year of 2013 (**Exhibit 4**, next page).

If funded status doesn't set the high fixed income group apart, other features do. We found that the projected benefit obligation (PBO) for "high fixed income" plans averages 19% of the sponsor's market capitalization, compared with 14% for the plans with lower fixed income allocations. The higher allocation reflects a relative derisking of liabilities—high fixed income plans' service cost, at 0.8% of liabilities in 2013, is lower than the remaining plans' average of 2.0%. We might infer that the

[2] Companies with over $500 million in pension assets in the Russell 3000.

risk plan liabilities pose to a sponsor is a determining factor in the decision to derisk its plan, through an increase in fixed income allocation and a closure and/or freeze of the plan.

Although so far the funded status has not been a sufficient trigger to significantly increase fixed income, now that 10% of plans are overfunded the question becomes whether fully funded plans will change their fixed income allocations given that their risk appetite has fundamentally changed.

EXHIBIT 4: RATIOS FOR PLANS WITH DIFFERING ALLOCATIONS TO FIXED INCOME

%	Contribution to assets 2013	Service cost to PBO 2013	PBO to market cap 2013	Funding ratio 2012	Funding ratio 2013
Median of those with >60% FI allocation	2.6	0.8	19	83	91
Median of those with <60% FI allocation	3.5	2.0	14	75	88

Source: J.P. Morgan, Bloomberg; data as of March 31, 2014.

Creative ways of getting to fully funded: the example of AT&T

AT&T made pension history in 2013 by contributing $9 billion into its plan as a preferred equity interest in a subsidiary. This contribution did not require any up-front cash outlay; the cash expense will occur gradually, as AT&T's coupon payments on the preferred issue increase pension assets, with a final liquidation of the equity interest after a five-year period.[3] The transaction gives the plan sponsor three main benefits:

- Tax deductibility of contributions
- Reduction of PBGC premiums
- Easing of regulatory pressure to contribute into the plan

However, the $9 billion contribution is not included in AT&T pension assets in the 2013 10-K and has no impact on the plan's 83% funded status because "the preferred equity interest is not unconditionally transferable to an unrelated party."[4]

[3] Both call and put option are included in the transaction. Call option: AT&T can purchase these equity interests if 1) the plan is fully funded, 2) there is a change in control of the subsidiary, or 3) five years have passed since the contribution. Put option: the plan may require AT&T to purchase the equity interests if 1) the debt-to-total-capitalization ratio of the subsidiary exceeds that of AT&T, 2) AT&T is rated below investment grade, or 3) the subsidiary experiences a change of control.

[4] AT&T 2013 annual report, Note 12.

The AT&T contribution was the first of its kind in the U.S., but is similar to the concept of "contingent funding" adopted in the UK. Since 2006, about 25 such transactions have taken place, representing combined contributions of £3.5 billion ($5.8 billion).[5] The assets contributed have ranged from property (Marks and Spencer plc) to intangible assets, such as intellectual property (GKN plc), and even whisky barrels (Diageo plc). Over time, pension schemes receive a regular income (such as rent or license fees) for the use of the asset by the sponsor.

As with AT&T, incentives include reducing the need for further contributions, with no immediate cash drain, and tax benefits—at the cost of a recurring and predictable cash outlay over time. The transactions offer another advantage. They mitigate the risk of contributing too much; usually, if and when plans become overfunded, regulation prevents sponsors from accessing the surplus pension assets. With the contingent funding transactions in the UK, however, sponsors can call back contributed assets in excess of full funding after a predetermined period. As is the case with AT&T, these contributions are only viewed as pension assets for funding purposes, and are not included in accounting calculations.

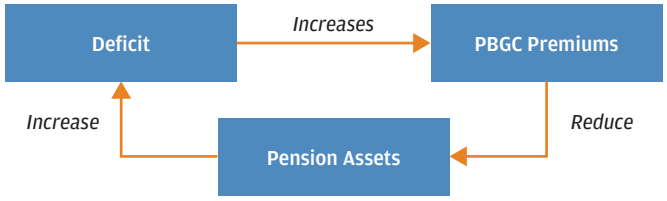
The PBGC premiums increase: one more straw on the camel's back?

In December 2013, Pension Benefit Guaranty Corporation (PBGC) premiums increased significantly—by 31% for the 2016 flat-rate premium (calculated on a per participant basis irrespective of funded status) and by 53% for the 2016 variable-rate premium (calculated as a percentage of the funding deficit increasing with wage inflation—a plan in surplus is theoretically exempt from paying the variable-rate premium). In 2016, the variable premium is set at 2.9% of the 2016 deficit (vs. 1.9% previously).[6] The higher premiums could have a negative compounding effect: Increasing them will reduce plan assets and widen a funding deficit, which, in turn, would further increase premiums (**Exhibit 5**, next page).

[5] "Pension scheme funding: the asset-backed approach," *PLC Magazine* (October 2012), page 1.

[6] The 2016 PBGC variable-rate premium rate is $5 above the 2015 rate ($24 per $1,000 deficit) plus wage indexing, making 2.9% a minimum value for the 2016 rate.

EXHIBIT 5: PBGC VARIABLE-RATE PREMIUM STRUCTURE



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

The hike in premiums raises a fundamental question: Should a sponsor fund the plan immediately or run a deficit?

Can a plan sponsor save money by plugging the deficit?

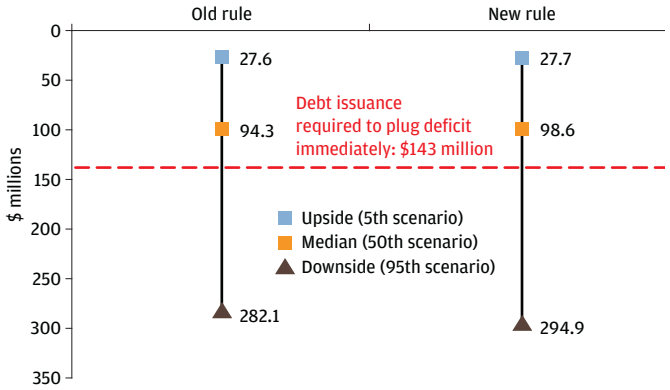
The answer to this question is complex and highly dependent on the specifics of each plan and each plan sponsor's situation. Our Monte Carlo simulations for a typical plan (**Exhibit 6**) show that it may be less expensive to wait for investment returns and liability shrinkage to close the gap than to raise debt to fund the shortfall immediately. **Exhibit 7** presents the output of our model. In the median case, the plan would need $98.6 million in contributions during the next 10 years to end the period with a funded status of 104%. Should this typical sponsor decide to fund the deficit immediately, it would need to raise $143 million (assuming enough profits to benefit from the full tax deductibility of the contributions). **By this calculation, immediate funding would cost 45% more in the long run than simply paying the higher premium and carrying the deficit.**

EXHIBIT 6:

"Typical" plan model

- 2013 assets: $800 million
- 2013 PBO: $1 billion
- Asset allocation: 60% long duration, 40% equity
- Service cost: 0%
- Sponsor tax rate: 40%
- Assumes Pension Protection Act segment curve valuation of liabilities

EXHIBIT 7: PRESENT VALUE OF CONTRIBUTIONS OVER 10-YEAR PERIOD



Source: J.P. Morgan. For illustrative purpose only.

That being said, the risk-averse sponsor may still want to fund the deficit. The amount of debt issuance required to plug it ($143 million) is far less than the required contributions we model in the worst-case scenarios. In our example, there is a 5% probability that contributions will be more than twice as large ($295 million). All told, there is a 28% probability that the sponsor will end up paying more in the form of contributions than the $143 million required to plug the deficit today.

Beyond the sponsor's tolerance for risk, other factors can affect the results of this analysis:

- **Impact of the increased PBGC premiums**–For the typical plan, the additional premiums will increase minimum required contributions by 5%—probably not enough to fundamentally change the funding incentive.
- **Credit rating of the plan sponsor**–The lower the rating of the sponsor, the less incentive the sponsor has to raise debt to finance a liability that is discounted at the AA yield.
- **Plan sponsor's tax situation**–If the sponsor does not have enough profit to benefit from the tax deductibility of contributions, it would require as much as 40% more to immediately plug the deficit.

Most likely, the additional costs incurred due to the new premiums are relatively modest. However, our recent conversations indicate the higher premiums may push conservative sponsors to increase their contributions.

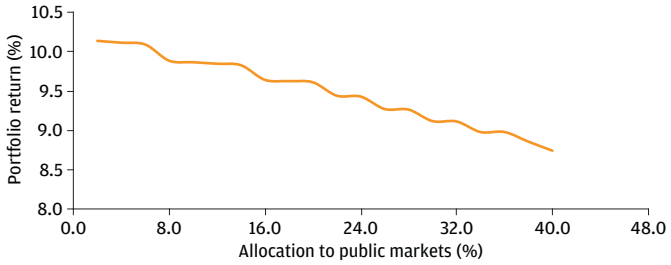
Overfunded? Take advantage of increased illiquidity capacity

The funded status improvements of 2013 have put growth allocations under a magnifying glass in 2014, especially among plans that have reached fully funded status. For plans thinking of exiting growth assets altogether—and the volatility associated with them—we would note that there may still be a need to maintain a growth allocation—to allow for future service costs, the possibility of increased PBGC premiums and longevity risk, and conceivably, for achieving a surplus capable of funding a future buyout transaction. In confronting that need, fully funded plans face a paradox: Because their allocation to growth is likely to be proportionally lower than underfunded plans', their growth assets have to work harder.

Illiquid investments seem well suited to aid in solving the growth asset paradox. The embedded liquidity premium usually implies a higher Sharpe ratio—illiquid assets work harder per unit of risk. We show how this might work in **Exhibit 8**. Holding annualized volatility constant at 10%, we projected expected growth portfolio returns for a mix of private and public investments. As the mix tilts toward public investments, the expected returns steadily decrease. Ironically, the higher expected returns for private investments underscore one of the arguments used against alternatives for overfunded plans: Allocations will gradually overweight illiquid assets since such assets tend to grow faster and are less likely to be used for benefit payments and rebalancing than liquid ones. While the argument is valid, our model and experience tell us that constant monitoring and frequent rebalancing can mitigate concentration as well as liquidity risk.

A more serious objection is that an increased allocation to alternatives could amplify a plan's liquidity risk. In liquidity squeezes and other stress events, illiquid investments, lacking access to deep and efficient markets, may be especially vulnerable. But fully funded plans might have an implicit advantage here. Their characteristically heavy allocation to hedge assets—government securities and investment-grade corporate bonds—can serve as a liquidity buffer.

EXHIBIT 8: EXPECTED GROWTH PORTFOLIO RETURNS FOR DIFFERENT BLENDS OF PRIVATE AND PUBLIC INVESTMENTS

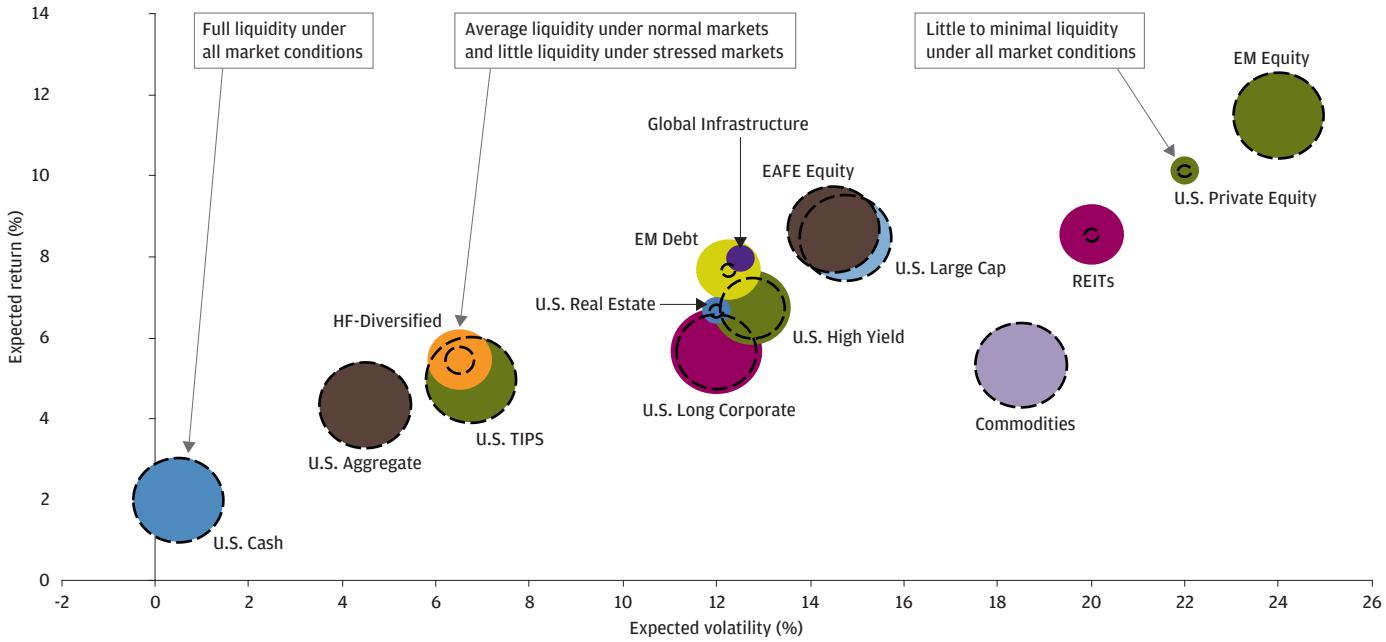


Source: J.P. Morgan. For illustrative purposes only. The return is based on a combination of J.P. Morgan Long Term Capital Market Assumptions and a range of alpha assumptions.

To gauge this buffer and measure a plan's true liquidity risk, J.P. Morgan has developed a cash flow model that considers randomized asset returns, a number of rebalancing rules and each asset's liquidity profile under different market environments. **Exhibit 9** (next page) shows different asset classes' expected return (vertical axis), volatility (horizontal axis)—as drawn from the firm's 2014 capital market return assumptions—and liquidity profiles under normal environments (solid bubble) and stressed market conditions (dotted ring). Growth assets, such as hedge funds, have a high expected return per unit of risk but suffer reduced liquidity in extraordinary circumstances—the exact environment in which components of the liability hedging portfolio hold up best.

Each fully funded plan has different payout obligations and its own set of objectives, so of course we would not presume to make a blanket recommendation in favor of increasing alternatives. We would, however, encourage plan sponsors to analyze their true liquidity exposure, and needs and calculate how these might change when they allocate more to alternatives. Fully funded plans are particularly well positioned to consider illiquid assets as viable "alternatives" in order to generate the returns to sustain their well-funded status.

EXHIBIT 9: ASSET CLASSES' PROJECTED RISK, RETURN AND LIQUIDITY PROFILE



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

Return and volatility assumptions from J.P. Morgan's 2014 Capital Market Return Assumptions. The relative size of each bubble represents our estimate of the portion of assets that can be cashed out under normal scenarios, and the relative size of each dotted circle represents the portion of assets that can be cashed out under stress scenarios.

Landmark pension research (the first of a series)

What is the link between the risk of a company's pension fund and the sponsor's return to equity? Nobel laureate Robert Merton and co-authors Zvi Bodie and Li Jin examine the question, vital for those who have oversight of both a pension fund's risks and a plan sponsor's balance sheet, in their seminal paper, "Do a Firm's Equity Returns Reflect the Risk of Its Pension Plan?"[1] If the beta of the firm's equity does not account for the risk in its pension plan, the research suggests that the market may be underestimating the overall riskiness of the firm. This can lead to systematic overvaluation. Conversely, if the equity beta accurately reflects pension risk, it has important implications for a firm's cost of capital calculations.

Despite the relative complexity of pension accounting rules and the segregated nature of pension assets and liabilities, the paper's findings, which derive from an analysis of company information between 1993 and 1998, suggest that equity beta is broadly reflective of pension risk. That has important implications for capital budgeting. The standard calculation of the cost of capital relies on the weighted average of the cost of equity and the cost of debt, net of tax, ignoring the differing risk characteristics of pension assets. In failing to distinguish the risks in pension assets from those in operating assets, standard calculations introduce bias into projected discount rates. The authors' empirical measurement of this bias for a sample of known U.S. companies shows that it is considerable and can result in the systematic rejection of projects that have a positive net present value.

This paper has been followed by several analyses for companies in the U.S. and other countries. The subsequent studies suggest that a link between a company's pension risk and its return to equity is broadly evident across developed markets. Further studies have also investigated the link between a company's credit risk and its pension risk. The strength of evidence of the link between credit and pension risk differs from market to market. It has had a pronounced impact in the U.S. and Germany, a pronounced but less strong effect in the UK and is relatively insignificant in France and the Netherlands.[2]

[1] Robert Merton, Li Jin and Zvi Bodie, "Do a firm's equity returns reflect the risk of its pension plan?," *Journal of Financial Economics*, 81(2006), pages 1 through 26. (http://www.people.hbs.edu/rmerton/doafirmsequityJFE.pdf)

[2] See: Ronan Gallagher and Donal McKillop, *Unfunded pension liabilities and sponsoring firm credit risk: An international analysis of corporate bond spreads*; D McKillop, M Pogue, *The influence of pension plan risk on equity risk and credit ratings: a study of FTSE100 companies*.

Funded status outlook from Global Markets Strategist Michael Hood

- U.S. Treasury yields have fallen sharply thus far in 2014, with the 10-year moving from roughly 3% at the start of the year to a range between 2.65% and 2.80% in recent weeks. The drop in yields primarily reflects weaker U.S. data around the turn of the year. The market has shifted the expected timing of the Fed's first rate hike slightly into the future, and the term premium, which jumped in 2013 as the Federal Reserve began reducing asset purchases, also appears to have declined.

- Our forecast expects these factors to prove temporary. Bond yields will likely resume their climb fairly soon. The U.S. economy appears poised for acceleration during the course of 2014, as much less contractionary fiscal policy interacts with a healthy private sector to spur increased domestic demand. Bad winter weather likely accounts for some of the early 2014 weakness, as does payback for one-off factors that boosted reported GDP growth late last year. While the economy appears to have expanded at a modest 2% clip in 1Q2014, growth will likely pick up toward 3% in the second half of the year. Moreover, FOMC speakers have indicated reluctance to alter their current course, and the Fed thus should continue tapering its bond purchases gradually. The 10-year yield could move to about 3.35% by the end of 2014. Last year's surge in yields, which owed in large part to the normalization of an extremely compressed term premium, seems unlikely to repeat itself, with upward pressure from here mostly reflecting the steady crawl toward rate hikes. We look for the fed funds rate to begin rising in late 2015.

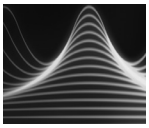
- The Fed's success in anchoring expectations for short-term rates means that most of the action in the yield curve has been in the intermediate to long sectors. The curve, already historically steep, will likely steepen further this year as long-term yields continue their gradual normalization. By 2015, the approach of rate hikes should promote flattening.

- As expected, equity markets have not repeated their 2013 surge so far this year, though they have generally shrugged off weaker economic data. Price/earnings multiples (P/Es) jumped last year to levels slightly above longer-term norms, leaving less room for large increases in 2014. Still, equities have not yet arrived in genuinely overpriced territory, and what looks like a reasonably favorable environment for corporate earnings growth should allow for upper single-digit gains in stocks even if multiples hold steady. And the low-volatility, low-inflation environment could support modest additional increases in P/Es.

- Investment-grade corporate bond spreads show very low volatility, as has been the case for the past year. They rallied in December, in what has become an increasingly prominent seasonal pattern, and have held broadly steady in the first months of 2014. Strong demand from insurance companies and pension funds has provided ongoing support. Spreads now lie on the expensive side of their long-term average, but not dramatically so (by about 0.3 standard deviations). They will likely tighten gradually over the next few years as the credit cycle unfolds. Financial spreads are trading flat to non-financials and may outperform as banks re-lever more timidly than other corporations. Spread tightening seems unlikely to compensate for rising risk-free yields, and the overall discount rate therefore should move higher.

- The combination of moderate gains in equities and an ongoing, if small, rise in the discount rate should boost funded status again this year, though improvement will likely pale in comparison with 2013.

- Our market expectations rest on the premise that the U.S. is in the early to middle stages of the current business cycle and that the economy possesses considerable room to run before bumping into resource constraints. The rapid decline in the unemployment rate represents a challenge to that view. The possibility that the business cycle is more advanced than currently believed poses the most significant risk to our views, which would change dramatically if the Fed needs to begin raising short-term interest rates earlier than we now expect.



ABOUT STRATEGY

The Strategy Group partners with clients to develop objective, thoughtful solutions to the broad investment policy issues faced by corporate and public defined benefit pension plans, insurance companies, endowments and foundations. Our global network of investment professionals is one of J.P. Morgan Asset Management's primary centers of investment insight and innovation as well as advisory services for institutional clients in the areas of asset allocation, pension finance and risk management.

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