Monthly pension update

OCTOBER 2018

DID YOU KNOW?

This month marks the largest monthly funded status decrease since January 2016, where the combination of falling rates and a 5% drop in the S&P500 decreased funded status levels by 3.8%.

FUNDED STATUS FAST FACTS

86.5%
FUNDED STATUS **FELL 2.5%** THIS MONTH

+1.2% YTD
FUNDED STATUS INCREASE

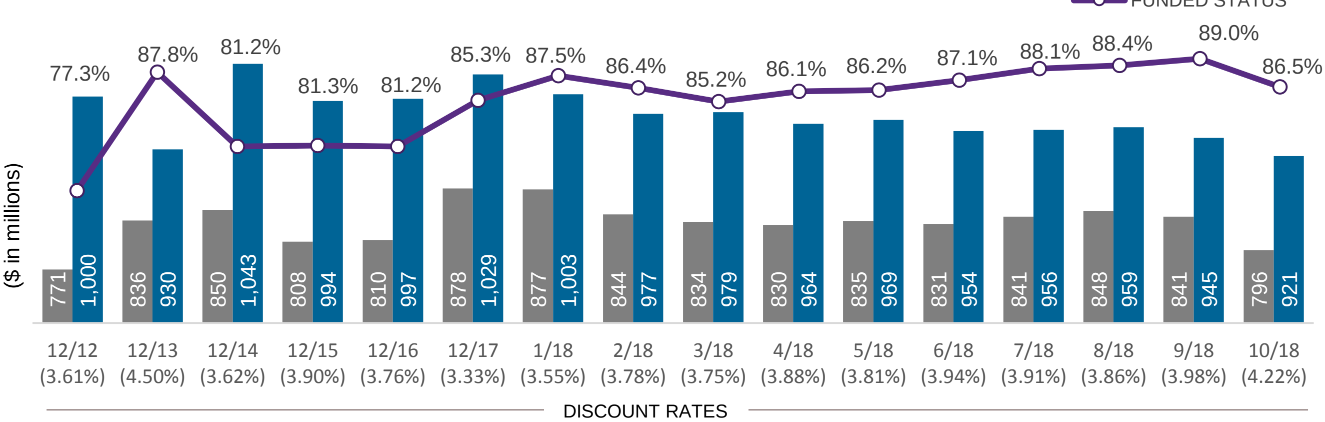
+89BPS
DISCOUNT RATE YEAR TO DATE CHANGE

MONTHLY CONTRIBUTORS OF FUNDED STATUS CHANGE: **CREDIT SPREADS AND TREASURY RATES**

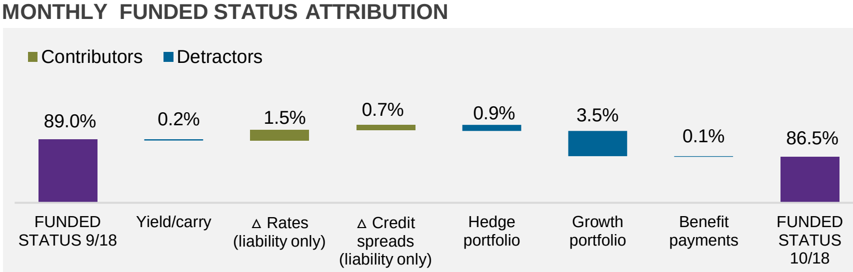
MONTHLY DETRACTORS OF FUNDED STATUS CHANGE: **GROWTH ASSETS**

HISTORICAL FUNDED STATUS

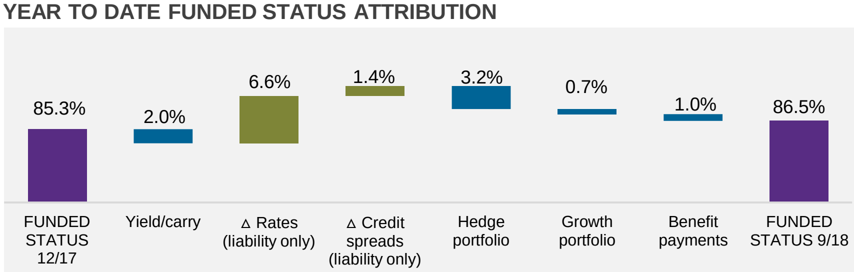
Performance of average defined benefit pension plan since 12/31/12



MONTHLY FUNDED STATUS ATTRIBUTION



YEAR TO DATE FUNDED STATUS ATTRIBUTION



Changes	Month	Year
Funded Status %	▼ (2.5%)	▲ 1.2%
Discount Rate (bps)	▲ 23	▲ 89
Treasury Rates(bps)	▲ 16	▲ 72
Credit Spreads (bps)	▲ 8	▲ 17
Liabilities (mm)	▲ ($24.5)	▲ ($108.6)
Assets (mm)	▼ ($44.7)	▼ ($82.1)
Funded Status (mm)	▼ ($20.2)	▲ $26.5

Note: Arrow indicates effect on funded status.

Source: J.P. Morgan, Citigroup Discount Curve, Bloomberg. As of October 31, 2018. For illustrative purposes only. Past performance is not indicative of future results.

J.P.Morgan Asset Management

MACROECONOMIC TRENDS IMPACTING PENSION PLANS

A breakdown of what you need to watch this month as you consider investment implications for your plan

GROWTH

The global economy continues to expand at a pace slightly above its underlying potential. U.S. growth should remain solid due to fiscal stimulus and a healthy consumer, although investment spending is looking softer than it did earlier in the year. Furthermore, the outcome of the midterm elections was in line with our expectations, and a divided Congress makes another bout of fiscal stimulus seems unlikely. Growth in Europe could improve as industrial production rebounds into the end of the year, and Japan should see stronger growth in 4Q as well. Ideally, health in developed markets, coupled with stimulus out of China, should provide support for the emerging world, but uncertainty around trade continues to act as a drag.

INFLATION

Inflation is rising globally. Tighter labor markets and rising wages continue to push prices higher across the developed world, while weaker currencies and higher commodity prices have lifted inflation in the emerging markets. As output gaps continue to close, we expect that inflation will grind higher, but we do not believe that a spike in inflation is lurking around the corner. Furthermore, as fiscal stimulus in the U.S. runs its course next year, inflation may begin to soften. If that coincides with a rebalancing of global growth, the dollar could weaken, creating a headwind to higher inflation for the rest of the world.

RATES

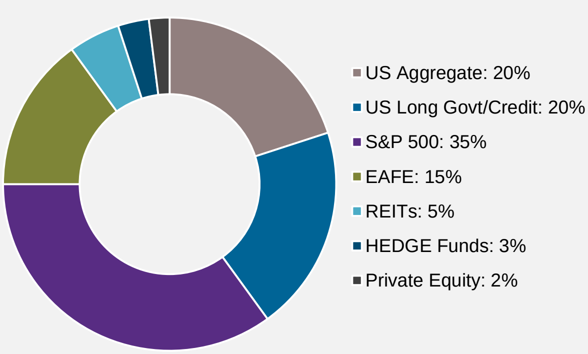
The Federal Reserve left interest rates unchanged at its November meeting; we continue to expect the Fed to hike rates when it convenes in December, followed by another two hikes next year. Given that near-term Fed expectations are almost fully priced into the market, all eyes will be on the ECB as 2018 comes to a close. It remains unclear whether the ECB will end or extend its asset purchase program, and an extension would like push the first rate hike further into 2019. Globally, however, we believe the path of least resistance for interest rates remains higher.

RETURNS

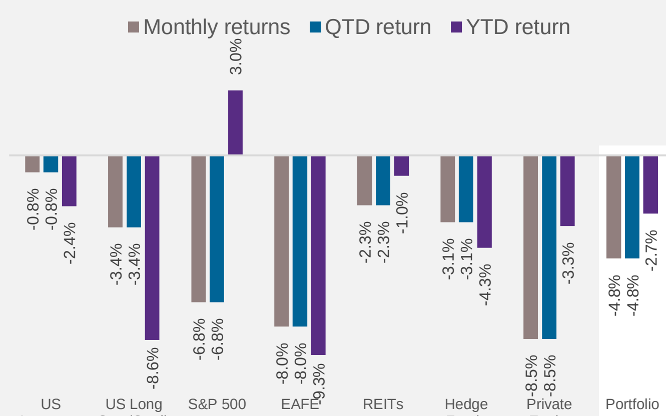
Market volatility in October led to a significant re-rating in equity valuations, which has slightly improved the outlook for long-term returns. That said, valuations remain close to average, and the return environment during the coming years will be more challenging than it has been up to this point in the cycle. The big question has to do with equilibrium valuations in an environment of rising interest rates; we continue to believe higher rates will be a headwind to multiple expansion, leaving earnings as the main driver of equity market returns.

ASSET ALLOCATION & MARKET SNAPSHOT (As of 10/31/18)

PLAN ASSET ALLOCATION

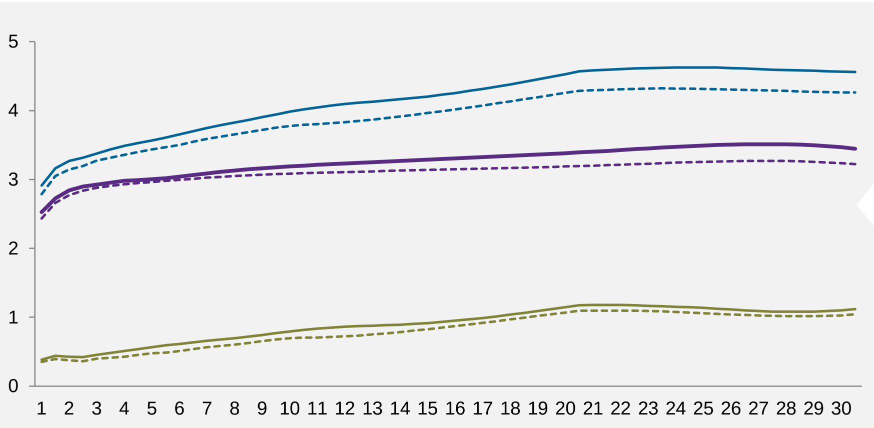


ASSET AND PORTFOLIO RETURNS



Source: J.P. Morgan, Citigroup Discount Curve, Bloomberg. As of October 31, 2018. For illustrative purposes only.
Past performance is not indicative of future results. For more information on our fixed income outlook, please visit our blog: http://blog.jpmorganinstitutional.com

YIELD CURVE CHANGES

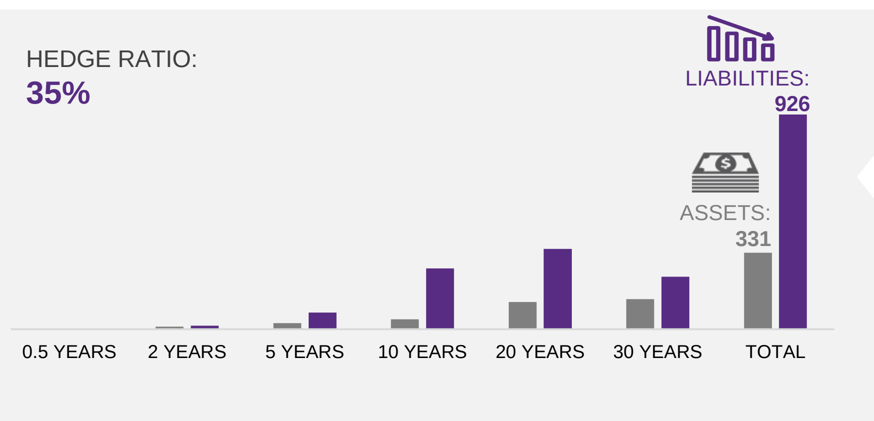


Over the month the treasury curve steepened while credit spreads widened, sending discount rates up 23bps for the month.

INTERESTED IN A DEEPER DIVE ON FIXED INCOME?

Click here for all the charts you need to understand what is happening in the fixed income markets.

PLAN RISK ANALYTICS



DURATION SENSITIVITY

The overall hedge ratio is defined as the ratio of asset dollar duration to liability dollar duration.

We estimate that this is approximately 35%.

We note that a higher hedge ratio, constructed with better key rate duration (KRD) matching along the curve would reduce funded status volatility. Matching the dollar duration of assets and liabilities across the curve structure would better insulate the plan against non-parallel yield curve movements.

Change in Interest Rates	*Change in Growth Portfolio*								
	-20%	-15%	-10%	-5%	-	+5%	+10%	+15%	+20%
+100bps	79.6%	82.8%	85.9%	89.0%	92.2%	95.3%	98.5%	101.6%	104.7%
+75bps	78.4%	81.5%	84.5%	87.6%	90.6%	93.7%	96.7%	99.8%	102.8%
+50bps	77.3%	80.3%	83.2%	86.2%	89.2%	92.2%	95.1%	98.1%	101.1%
+25bps	76.2%	79.1%	82.0%	84.9%	87.8%	90.7%	93.6%	96.5%	99.4%
-	75.2%	78.0%	80.8%	83.7%	86.5%	89.3%	92.1%	94.9%	97.8%
-25bps	74.2%	77.0%	79.7%	82.5%	85.2%	88.0%	90.7%	93.5%	96.2%
-50bps	73.3%	76.0%	78.7%	81.3%	84.0%	86.7%	89.4%	92.1%	94.8%
-75bps	72.4%	75.0%	77.7%	80.3%	82.9%	85.5%	88.1%	90.8%	93.4%
-100bps	71.6%	74.1%	76.7%	79.3%	81.8%	84.4%	86.9%	89.5%	92.1%

SCENARIO ANALYSIS

The heat map shows the change in funded status under different instantaneous interest rate and growth portfolio movements.

We note that reducing the allocation to equities and increasing the hedge ratio will likely narrow the change of possible outcomes and help limit downside funded status scenarios.

Source: J.P. Morgan, Citigroup Discount Curve, Bloomberg. As of October 31, 2018. For illustrative purposes only. Past performance is not indicative of future results.

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