Risk Budgeting and Longevity Hedging: Sustaining Defined Benefit Pension Funds

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Head of Longevity Risk Transfer
Prudential Retirement®
TODAY’S GENERATION IS LIVING 7 YEARS LONGER THAN THE PREVIOUS ONE.

Let’s Prepare for a Longer Retirement
Retired Lifetimes Have Increased Significantly

Male Period Life Expectancy from age 65
(1970–2014)

Source: OECD (2016), Life expectancy at 65 (indicator). doi: 10.1787/0e9a3f00-en (Accessed on 19 September 2016)
We innovate for the best possible reason—to prepare for the greying of our society

Old-age dependency ratios (%)
The number of people aged 65 and over as % of workforce; forecasts

In these countries, men expect to spend on average 18-20 years in retirement…women even longer

Source: OECD. Data extracted on 22 Sep 2016.
We innovate for the best possible reason—to prepare for the greying of our society

Net Pension Replacement Rates

% Working Age Population Covered By Workplace Pension Plans

We have a lot of work to do.

2 Source: OECD 2013. Estimates from Global Pension Statistics and OECD calculations using survey data. Percentage of working-age population 15-64 years. Data for Canada does not include participants covered in CPP.
What Are the Key Areas of Risk?

1. **Investment Risk**
   Risk that asset performance falls short of expectations

2. **Longevity Risk**
   Risk that annuitants and beneficiaries live longer than expected

3. **Inter-generational Risk**
   Risk that we pay the benefits of today’s elderly at the expense of securing the benefits of younger annuitants

Failure to manage these risks is behind today’s growing funding gap for pension funds, and creates challenges for annuity providers.
What Are the Key Areas of Risk?

1. Investment Risk
   Risk that asset performance falls short of expectations
   Management
   • Asset/liability matching
   • Long duration fixed income (liquid and illiquid)
   • Inflation linked assets

2. Longevity Risk
   Risk that annuitants and beneficiaries live longer than expected
   Management
   • Retirement age increases with healthy life expectancy; safety net for disabled workers
   • Insure remaining longevity risk

3. Inter-generational Risk
   Risk that we pay the benefits of today’s elderly at the expense of securing the benefits of younger annuitants
   Management
   • Protect annuitants through prudent investment and longevity risk management
   • Increase retirement age with healthy life expectancy
   • Live within a budget for overall risk
The DB Sustainability Model

The Defined Benefit Sustainability Model will help pension funds regain and maintain a path toward a stable and sustainable future.

Investment Risk Management
- Asset/liability matching
- Long duration fixed income (liquid and illiquid)
- Inflation linked assets

Longevity Risk Management
- Retirement age increases with healthy life expectancy; safety net for disabled workers
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Inter-generational Risk Management
- Protect annuitants through prudent investment and longevity risk management
- Increase retirement age with healthy life expectancy
- Live within a budget for overall risk
Pension plan sponsors are surrounded by risk.
Corporate Funded Status Volatility Has Been Excruciating and Very Expensive

Twice since 2000, U.S. sponsors of defined benefit plans have lost over 30% funded status in market downturns.

Source: Milliman 100 Pension Funding Index; the 100 largest U.S. corporate pension plans, September 30, 2017.
Corporate Funded Status Volatility Has Been Excruciating and Very Expensive

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$385 billion in contributions from 2009 through 2016

Source: Milliman 100 Pension Funding Index; the 100 largest U.S. corporate pension plans, September 30, 2017.
Corporate Funded Status Volatility Has Been Excruciating and Very Expensive

U.K. plans have been consistently more stable and better funded, and have rebounded well post Brexit.

Source: Milliman 100 Pension Funding Index; the 100 largest U.S. corporate pension plans, September 30, 2017.

For U.S. Corporate Plan Sponsors, Risk Taking is Still the Norm

Scenario: Real life
July 1, 2011 to August 19, 2011

- Rates fall by 115 bps
- Equities fall by 16%

12% funded status decline in less than 2 months

12%
78%
90%
8/19/2011
7/1/2011
Funded Status
Assets
Liabilities

For U.S. Corporate Plan Sponsors, Risk Taking is Still the Norm

Scenario: Real life
July 1, 2011 to August 19, 2011

- Rates fall by 115 bps
- Equities fall by 16%

82% funded status at end of 2011
increase of only 4%

Longevity Risk Should Be Part of the Pension Risk Equation Because Longer Life Increases Other Risks

Deterministic Stress on Liabilities
(Impact of a 1% Decline in Rates and a 1% Increase in Mortality Improvements)

- If people **live longer** than expected, the **liability will grow**
- The larger liability will have a **longer duration**
- As a result, the pension fund will face **more interest rate risk** and **more duration risk**
- Pension funds with cost of living adjustments in the benefits have nearly double the exposure

Source: Pacific Global Advisors. For illustration only.
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• If people *live longer* than expected, the liability will grow
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Longevity Risk Should Be Part of the Pension Risk Equation Because Longer Life Increases Other Risks

Deterministic Stress on Liabilities
(Impact of a 1% Decline in Rates and a 1% Increase in Mortality Improvements)

Source: Pacific Global Advisors. For illustration only.
Interest rate risk, longevity risk, and inflation risk compound each other in the pension liability

therefore

leaving longevity risk out of the analysis will underestimate total risk

especially in regard to

inflation linked liabilities and deferred liabilities, because their longer durations make them significantly more sensitive to adverse outcomes
What Was the Conventional Role of Risk for Pension Funds?

Maximize
Diversification Benefit

Minimize
OVERALL Contributions

Retain
Liquidity Premium

Earn
Risk Premia
In the Future, How Can Pension Funds Manage and Budget Total Risk?

It is important to ensure that the potential losses are budgeted so their impact on required pension contributions in the medium term is affordable for the plan sponsor.
Allocating the Risk Budget—Sustainability Model

Closed Plan

3/4 Bonds and Cash

1/4 Absolute Return or Equities

Longevity risk is insured or hedged

Risk budgeting is used to gauge whether potential losses are affordable

Open Plan

1/3 Equities

1/3 Bonds and Cash

1/3 Absolute Return

Longevity risk is insured or hedged

Risk budgeting is used to gauge whether potential losses are affordable

Source: Prudential. For illustration only.
Longevity Risk Can Be Reinsured
Longevity Reinsurance Converts an Unknown Future Liability Into a Fixed Payment Over Time

Net Payments – Reinsurer to Insurer
(Floating Benefits > Fixed Premiums + Fees)

Net Payments – Insurer to Reinsurer
(Floating Benefits < Fixed Premiums + Fees)

Not yet used by U.S. pension plans. It has come to Canada!

Source: Prudential. For illustration only.
Over $320 Billion in Pension Liabilities Have Been Transferred Since 2007

Data in USD. Sources: LIMRA, Hymans Robertson, LCP and Prudential analysis, as of June 30, 2017.
Companies Choose an Insurance Solution Based on Their Needs

**Buy-out**
Complete settlement of plan liability
- ✓ Longevity Risk
- ✓ Investment Risk

**Buy-in**
Plan investment that perfectly matches liability
- ✓ Longevity Risk
- ✓ Investment Risk

**Longevity Risk Transfer**
Converts unknown future liability into a fixed payment over time
- ✓ Longevity Risk

Data in USD. Sources: LIMRA, Hymans Robertson, LCP and Prudential analysis, as of June 30, 2017.
How Do U.K. Pension Plan Sponsors Choose?

Pension plan sponsors who prefer

<table>
<thead>
<tr>
<th>LONGEVITY RISK TRANSFER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large scale</td>
</tr>
<tr>
<td>High fixed income allocation</td>
</tr>
<tr>
<td>High funded status</td>
</tr>
<tr>
<td>Prefer to retain risk</td>
</tr>
<tr>
<td>Prefer to pay over time</td>
</tr>
</tbody>
</table>

Those who do not fit these criteria generally prefer a buy-in or buy-out.

In the United States, longevity risk transfer is less advantageous because it does not eliminate PBGC premiums.
Despite a 15-year Pension Storm, the Number of Pension Funds De-risking Globally Continues to Grow

Persistently Low Long-Term Interest Rates

Source: Barclay's Live and S&P Capital IQ, as of September 29, 2017
Capital Markets Alone Are Not Likely to Close Funding Gaps

Beginning at 80% funded, how likely is a plan to achieve a certain funded status at the end of 5 years?

80% funded

- 85% probability of reaching 85% funded
- 51% probability of reaching 90% funded
- 34% probability of reaching 95% funded
- 23% probability of reaching 100% funded
- 15% probability of reaching 100% funded

Notes:
1. Plan asset allocation assumed to be 60% equities and 40% fixed income
2. No contributions were made in this analysis
3. Retiree population of 65% M and 35% F, Average age of 74
4. Analysis based on 1,000 Monte Carlo simulations over a 5-year period. Barrie and Hibbert economic scenario generator used to determine the scenarios. Source: Prudential calculations.
What can a pension fund do today?
For Sponsors on the Road to a Lower-risk Future, Cash Flow Driven Investing is the Best Place to Start

- Moves away from growth oriented and liability hedging assets to a long-term strategy of buy and maintain a corporate bond portfolio to match well-defined liability cash flows
- The cash flow matched portfolio results in a less volatile funded status

### Strategies for U.K. Pension Schemes

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Liquidity</th>
<th>Duration</th>
<th>Yield</th>
<th>Inflation Protected</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.K. Government Bonds</td>
<td></td>
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<td></td>
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<tr>
<td>U.K. Inflation Linked Government Bonds</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Rail Bonds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Covered Bonds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporate Bonds</td>
<td></td>
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<tr>
<td>CLOs</td>
<td></td>
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</tr>
<tr>
<td>University Housing and Social Housing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial Mortgages</td>
<td></td>
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<tr>
<td>Private Placement Loans</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Infrastructure Loans</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation Linked Ground Leases</td>
<td></td>
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</tr>
</tbody>
</table>

Having 70-80% of assets in cash flow driven investing strategies can maintain the diversification benefit of some risky assets
With rates remaining relatively low, we have seen a fivefold increase in plan contributions funded by debt issuance in the U.S.

Debt Issuance and Related Plan Contributions (USD billions)

Borrowing to fund makes sense in the low rate environment and lowers current corporate taxes and PBGC premiums

Companies Engaged in Borrow to Fund Are Household Names and Proceeds Can Be Used for Pension Risk Transfer

<table>
<thead>
<tr>
<th>U.S. Companies</th>
<th>Issue Date</th>
<th>Amount Issued</th>
<th>Related Plan Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Motors Company(1)</td>
<td>8/2017</td>
<td>$3,000</td>
<td>$3,000</td>
</tr>
<tr>
<td>International Paper</td>
<td>8/9/2017</td>
<td>$1,000</td>
<td>$1,250</td>
</tr>
<tr>
<td>Valvoline Inc.</td>
<td>8/8/2017</td>
<td>$400</td>
<td>$395</td>
</tr>
<tr>
<td>The Kroger Co.</td>
<td>7/24/2017</td>
<td>$1,500</td>
<td>$1,000</td>
</tr>
<tr>
<td>E. I. du Pont de Nemours and Company</td>
<td>5/1/2017</td>
<td>$2,000</td>
<td>$2,000</td>
</tr>
<tr>
<td>Verizon Communications</td>
<td>3/16/2017</td>
<td>$6,500</td>
<td>$3,400</td>
</tr>
<tr>
<td>Delta Air Lines</td>
<td>3/14/2017</td>
<td>$2,000</td>
<td>$2,000</td>
</tr>
<tr>
<td>FedEx Corp.</td>
<td>1/6/2017</td>
<td>$1,200</td>
<td>$1,000</td>
</tr>
<tr>
<td>Northrop Grumman Corp.</td>
<td>12/1/2016</td>
<td>$750</td>
<td>$20</td>
</tr>
<tr>
<td>CSX Corp.</td>
<td>10/18/2016</td>
<td>$2,200</td>
<td>$220</td>
</tr>
<tr>
<td>Altria Group, Inc.</td>
<td>9/16/2016</td>
<td>$2,000</td>
<td>$500</td>
</tr>
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<tbody>
<tr>
<td>Cox Communications, Inc.</td>
<td>9/13/2016</td>
<td>$1,000</td>
<td>$1,000</td>
</tr>
<tr>
<td>Premier Health Partners</td>
<td>8/31/2016</td>
<td>$300</td>
<td>$217</td>
</tr>
<tr>
<td>International Paper</td>
<td>8/11/2016</td>
<td>$2,300</td>
<td>$500</td>
</tr>
<tr>
<td>General Motors Company</td>
<td>2/23/2016</td>
<td>$2,000</td>
<td>$2,000</td>
</tr>
<tr>
<td>International Paper</td>
<td>5/26/2015</td>
<td>$2,000</td>
<td>$750</td>
</tr>
<tr>
<td>Kimberly-Clark Corporation</td>
<td>2/27/2015</td>
<td>$500</td>
<td>$410</td>
</tr>
<tr>
<td>Northrop Grumman Corp.</td>
<td>2/6/2015</td>
<td>$600</td>
<td>$500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-U.S. Companies</th>
<th>Issue Date</th>
<th>Amount Issued</th>
<th>Related Plan Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deutsche Post AG</td>
<td>12/11/2012</td>
<td>€1,000</td>
<td>€1,000</td>
</tr>
</tbody>
</table>

In USD millions; Debt issuance detail and related plan contribution information from company SEC filings, plan DOL 5500 filings, company press releases, Bloomberg, and Prudential estimates. (1) Issued $3B in senior unsecured notes used to repay a corresponding $3B drawn on unsecured revolving credit facility which was used to fund payments to PSA Group related to underfunded pension liabilities assumed in the Opel/Vauxhall Business sale. (2) Intended use of proceeds from Fitch and Moody's reports dated 9/8/16. Related plan contribution from the Cox Enterprises, Inc. Pension Plan 2015 DOL Form 5500 filing dated 10/16/16. (3) Intended use of proceeds from Fitch report dated 8/10/16. Related plan contribution from the Premier Health Partners Employee Retirement Plan 2015 DOL Form 5500 filing dated 10/11/16.
Why Borrow to Fund Pension Deficits?

- Issue debt at attractive rates

- Replace volatile pension debt with contractual debt
  - This is likely to be viewed as credit neutral or positive

- Accelerate tax deductions on pension contributions

- Reduce PBGC or PPF premiums
PBGC Premiums in the U.S. Are Skyrocketing, Especially For Underfunded Plans

Source: Prudential. Plan with liability of $1B and 11,000 employees. Liabilities are $1B for 2013 and 2017 and $1.05B for 2019.

*Source: SOA. Due to changing longevity assumptions there will be a 5% increase in liabilities in 2018 and therefore all other things being equal, funded status will fall by 5%.

The rise in PBGC premiums continue to drive the cost of maintaining a U.S. plan higher
U.S. Pension Risk Transfer is NPV Positive

- Savings primarily generated by insurance company scale and PBGC fixed and variable expense savings
- Savings would be materially higher if the obligations were discounted at the risk free rate for M&A or divestiture activity

<table>
<thead>
<tr>
<th>Percentage of GAAP Obligation</th>
<th>GAAP Retiree Liability</th>
<th>Administrative and PBGC Expenses</th>
<th>Investment Management Fees</th>
<th>Credit Defaults &amp; Downgrades</th>
<th>GAAP Liability + PV of Projected Cost</th>
<th>Savings</th>
<th>Buy-out Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>4.2%</td>
<td>4.5%</td>
<td>0.6%</td>
<td>109.3%</td>
<td>(4.3%)</td>
<td>105%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Prudential analysis. Assumes 100% funded plan. GAAP retiree liability reflects RP-2014 mortality table with MP-2016 and Citi Pension Discount Curve. Costs not included in the GAAP retiree obligation include per person administrative expenses of $40 per year and PBGC per person expenses of $69 in 2017, both indexed for inflation (2%). GAAP obligations are discounted using rates unadjusted for investment management fees and the risk of credit defaults and migrations. These are estimated at 30 and 24 basis points per annum, respectively. Expenses are discounted using the risk free rate. Economic Value reflects the incremental GAAP liability from discounting at the risk free rate to reflect the certainty of honoring pension obligations.
A Retiree Small Benefit Pension Buy-out is an Efficient Way to Address Rising PBGC Premiums in the U.S.

GAAP and economic liabilities reflect RP-2014 mortality table with MP-2016. GAAP liability is calculated by discounting projected cash flows using spot rates along the Citi pension discount curve. Economic liability is calculated by discounting projected cash flows using spot rates along the Citigroup yield curve adjusted for investment management fees and the risk of credit defaults and migrations. These are estimated at 30 and 24 basis points, respectively. Economic liability is calculated assuming per person administrative expenses of $40 per year and PBGC expenses per person of $69 in 2017, $74 in 2018, $80 in 2019, and indexed thereafter, plus PBGC variable rate premiums of 3.40% of unfunded vested benefits in 2017, 3.80% in 2018 and 4.20% in 2019, and indexed with inflation thereafter, capped at $517 per person in 2017 and indexed with inflation thereafter. Funded Status for variable rate premium assumed to be 90%. Values are indicative and provided for discussion purposes only. Results are subject to change per market conditions and specific client demographic information.
Insurance Solutions Provide Risk Reduction Under Tail Risk Scenarios

Rating Migration By Credit Quality Following Two Most Recent Recessions

Trailing 12-Month Migration Rates

Sources: Moody’s and Prudential Fixed Income. As of March 31, 2015. Shown for illustrative purposes only.
Credit Migration Has A Fat Downside Tail

Estimated Annual Cost of Credit Migration (1993-2015)
Barclays U.S. Corporates AA 10+ Years

The worst outcomes happened ~11 times more frequently than the normal distribution*

Source: Barclays POINT, Prudential Fixed Income. As of December 31, 2015.
*Normal distribution with same mean and standard deviation as the annual estimated cost of credit migration.
# Stock Performance Relative to Market

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Announcement Date</th>
<th>Transaction Size (currency in millions)</th>
<th>Transaction Type</th>
<th>PBO ÷ Market Cap prior to transaction</th>
<th>Performance Relative to Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Motors</td>
<td>6/1/2012</td>
<td>$25,000</td>
<td>Buy-out</td>
<td>386%</td>
<td>1.61%</td>
</tr>
<tr>
<td>Verizon Communications, Inc.</td>
<td>10/18/2012</td>
<td>$8,000</td>
<td>Buy-out</td>
<td>24%</td>
<td>2.61%</td>
</tr>
<tr>
<td>Motorola Solutions, Inc.</td>
<td>9/25/2014</td>
<td>$3,100</td>
<td>Buy-out</td>
<td>59%</td>
<td>2.33%</td>
</tr>
<tr>
<td>WestRock Company</td>
<td>9/9/2016</td>
<td>$2,500</td>
<td>Buy-out</td>
<td>58%</td>
<td>-1.08%</td>
</tr>
<tr>
<td>Kimberly-Clark</td>
<td>2/23/2015</td>
<td>$2,500</td>
<td>Buy-out</td>
<td>17%</td>
<td>0.06%</td>
</tr>
<tr>
<td>The Hartford</td>
<td>6/26/2017</td>
<td>$1,600</td>
<td>Buy-out</td>
<td>30%</td>
<td>1.08%</td>
</tr>
<tr>
<td>PPG Industries</td>
<td>6/28/2016</td>
<td>$1,600</td>
<td>Buy-out</td>
<td>20%</td>
<td>0.12%</td>
</tr>
<tr>
<td>Bristol-Myers Squibb</td>
<td>10/1/2014</td>
<td>$1,400</td>
<td>Buy-out</td>
<td>9%</td>
<td>0.75%</td>
</tr>
<tr>
<td>International Paper</td>
<td>10/2/2017</td>
<td>$1,300</td>
<td>Buy-out</td>
<td>59%</td>
<td>0.60%</td>
</tr>
<tr>
<td>Philips</td>
<td>10/1/2015</td>
<td>$1,100</td>
<td>Buy-out</td>
<td>9%</td>
<td>1.22%</td>
</tr>
<tr>
<td>J.C. Penney</td>
<td>10/2/2015</td>
<td>$840</td>
<td>Buy-out</td>
<td>166%</td>
<td>5.58%</td>
</tr>
<tr>
<td>NCR</td>
<td>11/20/2013</td>
<td>£670</td>
<td>Buy-in</td>
<td>104%</td>
<td>0.59%</td>
</tr>
</tbody>
</table>

Source: Capital IQ. Returns are adjusted for dividends. In USD millions; Announcement day returns relative to relevant market index. Pension overhang defined as PBO ÷ Market Capitalization.
# Recent Transactions: Performance Relative to Market

Generally well received, particularly for sponsors with a large pension overhang

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<tr>
<th>Company Name</th>
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<th>PBO ÷ Market Cap prior to transaction</th>
<th>Performance Relative to Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Airways</td>
<td>9/15/2017</td>
<td>£1,600</td>
<td>Longevity Swap and Reinsurance</td>
<td>237%</td>
<td>0.42%</td>
</tr>
<tr>
<td>Pearson</td>
<td>10/17/2017</td>
<td>£1,200</td>
<td>Buy-in</td>
<td>67%</td>
<td>7.46%</td>
</tr>
<tr>
<td>Kingfisher</td>
<td>3/24/2016</td>
<td>£230</td>
<td>Buy-in</td>
<td>32%</td>
<td>1.96%</td>
</tr>
<tr>
<td>BT</td>
<td>7/4/2014</td>
<td>£16,000</td>
<td>Longevity Insurance</td>
<td>156%</td>
<td>-0.24%</td>
</tr>
<tr>
<td>AstraZeneca(1)</td>
<td>12/17/2013</td>
<td>£2,500</td>
<td>Longevity Insurance</td>
<td>23%</td>
<td>0.24%</td>
</tr>
<tr>
<td>BAE Systems(2)</td>
<td>2/21/2013</td>
<td>£3,200</td>
<td>Longevity Insurance</td>
<td>233%</td>
<td>5.75%</td>
</tr>
<tr>
<td>Rolls-Royce</td>
<td>11/28/2011</td>
<td>£3,500</td>
<td>Longevity Swap</td>
<td>64%</td>
<td>0.16%</td>
</tr>
<tr>
<td>GlaxoSmithKline</td>
<td>12/1/2010</td>
<td>£890</td>
<td>Buy-in</td>
<td>20%</td>
<td>-0.50%</td>
</tr>
<tr>
<td>Cable &amp; Wireless (LBTY)(3)</td>
<td>9/3/2008</td>
<td>£1,000</td>
<td>Buy-out</td>
<td>10%</td>
<td>1.36%</td>
</tr>
<tr>
<td>Philips UK</td>
<td>11/5/2015</td>
<td>£2,400</td>
<td>Buy-out</td>
<td>119%</td>
<td>1.62%</td>
</tr>
<tr>
<td>AkzoNobel / ICI</td>
<td>3/26/2014</td>
<td>£3,600</td>
<td>Buy-in</td>
<td>107%</td>
<td>-0.61%</td>
</tr>
<tr>
<td>AkzoNobel</td>
<td>12/18/2013</td>
<td>$655</td>
<td>Buy-in</td>
<td>128%</td>
<td>0.15%</td>
</tr>
<tr>
<td>AkzoNobel</td>
<td>5/24/2012</td>
<td>£1,400</td>
<td>Longevity Insurance</td>
<td>172%</td>
<td>-0.96%</td>
</tr>
<tr>
<td>Bell Canada</td>
<td>3/3/2015</td>
<td>$5,000</td>
<td>Longevity Insurance</td>
<td>46%</td>
<td>0.49%</td>
</tr>
<tr>
<td>Total S.A.</td>
<td>6/9/2014</td>
<td>£1,600</td>
<td>Buy-in</td>
<td>12%</td>
<td>0.04%</td>
</tr>
<tr>
<td>BMW</td>
<td>2/22/2010</td>
<td>£3,000</td>
<td>Longevity Insurance</td>
<td>56%</td>
<td>0.24%</td>
</tr>
</tbody>
</table>

Notes:
1. Reflects Fiscal YE 2010 PBO due to data limitations.
2. Share buyback of £1B announced same day.
3. Reflects PBO of Cable & Wireless subsidiary.
Key Tax and Regulatory Reform Proposals in the U.S. and Implications

- **Reduced corporate tax rate**  
  35% U.S. rate may be lowered to 20%

- **Fewer tax deductions**  
  Deductibility of interest expense may be limited

- **Repatriation**  
  One-time tax on accumulated deferred foreign earnings  
  Territorial tax system may exempt foreign earnings of U.S. companies

- **Accelerate funding and reconsider debt to equity mix**  
  Increase pension contributions before corporate tax rate is reduced  
  Reconsider capital structure, and reduce reliance on debt

- **Use repatriated cash**  
  Pension contributions can be sourced from repatriated earnings

- **Increased M&A activity**  
  Growth focus, rising equity valuation, and availability of overseas cash could drive M&A

- **Accelerate de-risking plans**  
  Demand for high-quality debt will increase for pension de-risking while new issuance will decline

Source: Description of the Chairman’s Mark of the “Tax Cuts and Jobs Act,” November 9, 2017.  
Economic Benefit of Funding Today

A sponsor with a $1 billion plan that is 85% funded could generate a $48.7 million NPV benefit by fully funding its plan today, versus funding the plan deficit over a 10-year period.

<table>
<thead>
<tr>
<th>Funded Status</th>
<th>15%</th>
<th>20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>75%</td>
<td>$81.1</td>
<td>$68.1</td>
</tr>
<tr>
<td>80%</td>
<td>$64.9</td>
<td>$54.5</td>
</tr>
<tr>
<td>85%</td>
<td>$48.7</td>
<td>$40.9</td>
</tr>
<tr>
<td>90%</td>
<td>$32.5</td>
<td>$27.3</td>
</tr>
<tr>
<td>95%</td>
<td>$16.2</td>
<td>$13.6</td>
</tr>
</tbody>
</table>

In USD billions; Debt issuance detail and related plan contributions using company SEC filings, plan DOL 5500 filings, company press releases, Bloomberg and Prudential estimates.
If tax reform is enacted that lowers U.S. corporate tax rates…

40%

are very likely to use the tax savings to increase funding of their pension plans and execute either a full or partial liability transfer.

What step will you take next to reduce your pension risk?
Case Study
General Motors

**WHAT?**
Buy-out

**HOW BIG?**
$25.1 B

**WHY?**
- Reduce the size of the plan
- Focus more on making cars than managing pensions

**ANALYST REACTION**
Neutral to positive

“As GM continues to fund and de-risk its pension, investors should develop increased confidence that incremental cash flows will accrue to them, and not the pension. As this happens, GM’s multiple should expand.”


**UNIQUE FEATURES**
- Largest pension buy-out worldwide
- Simultaneous lump sum offer by GM
- First U.S. in-kind asset transfer

Analyst reactions illustrate the impact of the transaction on perceptions, are not meant to imply endorsement of specific analysts’ views, and do not necessarily represent the views of all analysts.
Case Study

Verizon

WHAT?

• Act from a position of strength
• Solidify financial results going forward

HOW BIG?

$7.5 B

BUY-OUT

WHY?

UNIQUE FEATURES

• Second-largest pension buy-out worldwide
• Illiquid alternative assets used for a portion of premium

ANALYST REACTION

Neutral

“While the cost is significant to transfer pension liabilities, we do recognize the benefit of reducing the company’s risk exposure to pension funding and volatility of pension expenses on its Income Statement.”

Case Study

Verizon

Used with permission.
Case Study
Philips

WHAT?

Buy-out

HOW BIG?

$4.8 B

WHY?

• Reduce size, mitigate financial exposure
• Manage ongoing volatility
• Greater security for retirees

COMPANY ANNOUNCEMENT

“The multi-insurer structure...will continue to protect and deliver their future retirement benefits. ...This transaction is in line with Philips’ objective to mitigate the company’s financial exposure to its defined benefit pension plans. The Legacy Pension Plan’s termination and annuity purchase reduces Philips’ pension risk and better manages the ongoing variations in pension cost.”

Source: “Philips signs agreements to transfer U.S. pension plan obligations for a large group of former employees to three insurance companies,” October 1, 2015.

UNIQUE FEATURES

• Global de-risker
• Split transaction between three insurers
• Deferred lives
Case Study

**AkzoNobel / ICI and other subsidiaries**

**WHAT?**
- £0.5 B ($0.7 B) buy-out for U.S. scheme (2013)
- £1.4 B ($1.8 B) longevity risk transfer (2012)

**WHY?**
- Several transactions as part of a global phased de-risking strategy
- Liabilities associated with an acquisition
- Manage future cash contributions

**UNIQUE FEATURES**
- Largest pension buy-in worldwide (£3.6 billion, 2014)
- Split transactions
- “Umbrella” contracts
- Almost 60% of longevity risk is covered by insurance contracts and hedging

**ANALYST REACTION**

**Positive**

“*Akzo has just announced a big pension buyout scheme with L&G and Prudential [plc]. This de-risks around 1/4 of their total group pension liability. This should be seen as a positive today...*”

Source: (Deutsche Bank) “De-risking pension; Akzo continues to become ‘investable.’” Used with permission.

“This transaction will improve the company's financial health by reducing the risk of a significant unexpected business expense due to the volatile nature of maintaining a defined benefit pension.”

“This transaction supports our ambition to de-risk our pension liabilities over time, at an attractive price without requiring additional funding from AkzoNobel... The contract will help protect AkzoNobel against the exposure of life expectancy risks.”

1 “AkzoNobel buys group annuity to reduce pension plan risk,” December 18, 2013. Keith Nichols, CFO.
BT Completed the Largest and Most Innovative Longevity Risk Transfer in the Market at £16 billion ($27.7 billion)

- The first to use an insurance captive owned by the pension fund
- Allows the scheme to immunize longevity risk, combining a fixed and known future liability with the scheme’s own world-class asset management
- Allows the scheme to pay for its de-risking over time and shed an unrewarded risk
- Provides a proven approach for the world’s largest pension funds to manage longevity risk in a cost-effective, efficient and scalable manner

In 2017, Mercer and MMC completed a £3.4 billion ($4.3 billion) captive longevity risk transfer, proving the attractiveness of this approach
Case Study — Motorola

WHAT?
Motorola

HOW BIG?
$3.1 B

WHAT?
Buy-out

ANALYST REACTION
Positive

“We believe this leaves the business in a stronger footing, reducing the pension funding overhang and freeing up cash for potential incremental share repurchases…the Enterprise sale and pension deficit reduction likely enable large buy-backs throughout 2015, supporting the shares.”


WHY?
• After divestiture, reduce size of plan
  • $6B of revenue and 15,000 employees
  • $9B pension liability with 95,000 participants pre buy-out

UNIQUE FEATURES
• Land speed record
• Third-largest pension buy-out in the U.S.
Case Study — Bristol-Myers Squibb (BMS)

WHAT? Buy-out

HOW BIG? $1.4 B

WHY?
- Plan in strong financial position
- Transaction required no cash contribution
- Manage ongoing volatility

UNIQUE FEATURES
- Simplified key transaction terms and processes

COMPANY ANNOUNCEMENT
“The transaction reduces risk in the Plan and better manages the ongoing variations in cost associated with its maintenance while entrusting current retirees and their beneficiaries’ pensions to a financial institution with expertise in the long-term management of retirement benefits.”

http://bms.newshq.businesswire.com
Case Study — Kimberly-Clark Corporation

Kimberly-Clark • WHAT? Buy-out

WHAT? $2.5 B

WHY?

• Reduce non-core financial risk
• Greater security for retirees
• Manage ongoing volatility

ANALYST REACTION

Neutral to Positive

“We view the proposed pension settlement and debt-financing as a modest credit positive since pension volatility will be reduced, notwithstanding the slight weakening in credit ratios.”

(S&P) Kimberly-Clark Corp. Ratings Unaffected By Pension Settlement (Feb. 2015). Used with permission.

UNIQUE FEATURES

• Split transaction between two insurers

Analyst reactions illustrate the impact of the transaction on perceptions, are not meant to imply endorsement of specific analysts’ views, and do not necessarily represent the views of all analysts.
Case Study — JCPenney

JCPenney

WHAT?

Buy-out

HOW BIG?

$800 M

WHY?

• Significantly reduce pension obligations
• Transaction required no cash contribution

UNIQUE FEATURES

• Flexible size transaction to maintain overfunded status

ANALYST REACTION

Positive

“JCP announced a series of moves that will reduce its pension costs—an intelligent decision in today's low interest rate backdrop. The move today is favorable in that it (1) reduces JCP's actual accounting expense, (2) lowers the pension volatility, and (3) removes 25-30% of the liability off its b-sheet. Net, the move is favorable development for JCP.”

(Sterne Agee) J.C. Penney - Pension Plan Move Delivers 3 Long-Term Positives (Oct 2015), Used with permission.
Case Study — TRW

Multiple buy-outs in 3 countries (Canada, U.K., U.S.)

WHY?
- Overall risk reduction strategy
- Secure benefits
- Improve balance sheet

UNIQUE FEATURES
- Global de-risker, transacted in three countries

CFO ANNOUNCEMENT
“The partial buyout significantly improved the company’s balance sheet, transferring the liabilities to L&G.”

Case Study — WestRock

**WestRock**

**WHAT?**

**Buy-out**

**HOW BIG?**

$2.5 B

**WHY?**

- Reduce pension obligations by 40%
- Protect all participants’ benefits

**UNIQUE FEATURES**

- Plan will remain overfunded

**CFO ANNOUNCEMENT**

“This transaction represents a further step towards managing future pension cost and risk, benefiting participants remaining in the Plan while entrusting certain retirees’ and their beneficiaries’ pensions to a financially strong and secure institution with expertise in the long-term management of retirement benefits.”

— Ward Dickson, CFO, WestRock

Case Study — United Technologies Corporation (UTC)

UTC | WHAT? | Buy-out | HOW BIG? | $775 M

**WHY?**
- Reduce pension risk and expense over the long term
- Protect participants’ benefits

**UNIQUE FEATURES**
- Lump sum offer for specified participants

**ANALYST REACTION**

Neutral to modest positive

“We note that these actions are not expected to change its pension funded status or materially impact future pension expenses, nor will it require additional contributions to the plans…Overall, this news should be mostly neutral to the stock; at most, it is a modest positive given the proactive measures the company is taking regarding its ongoing pension liabilities. We would not be surprised to see other Multi-Industry companies follow suit with similar actions to “de-risk” their pension plans.”

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