REDUCING PENSION RISK:

THE FIVE MYTHS HOLDING BACK PLAN SPONSORS

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PENSION RISK TRANSFER PRUDENTIAL RETIREMENT
CONTENTS

Introduction ................................................................................................................. 2

MYTH #1
Partial LDI strategies have significantly reduced DB risk........................................... 6

MYTH #2
Companies are better off delaying the implementation of DB
risk management solutions to benefit from further improvements
in the financial markets............................................................................................. 8

MYTH #3
Risk transfer solutions can only be executed once a company reaches,
or exceeds, full funding............................................................................................ 11

MYTH #4
Transferring DB risk to an insurer is too expensive.................................................. 14

MYTH #5
Reducing DB risk, though prudent, reduces shareholder value ......................... 16

Conclusion..................................................................................................................... 19
INTRODUCTION

Pension plans are subject to significant volatility, and by and large, history has not been kind to U.S. plan sponsors. In fact, twice since 2000, America’s corporate defined benefit (DB) plan sponsors have seen their plans’ funded status\(^1\) deteriorate over 30% in market downturns.\(^2\)

These dramatic declines have strained plan sponsors’ finances, raised awareness of pension risk and compelled the 100 largest U.S. corporate pension plans to make more than $315 billion in pension contributions between 2009 and 2014.\(^3\)

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\(1\)Ratio of Projected Benefit Obligations to Market Value of Plan Assets.

\(2\)Milliman 100 Pension Funding Index.

\(3\)Milliman 2015 Pension Funding Study.
Given the rising cost of maintaining DB plans, many companies have taken steps to reduce pension benefits. According to a 2014 report, nearly 40% of open U.S. corporate DB plans surveyed plan to close, freeze or terminate.\(^4\)

Many companies say that, in addition to curtailing pension benefits, they are focused on managing the risks posed by their DB plans, with the primary aim of reducing the volatility of funded status and the level of required contributions. This trend is being driven in large part by accounting and regulatory changes. The issuance of Financial Accounting Standards 158 increased the transparency of companies’ pension obligations on their financial statements, while the passage of the Pension Protection Act (PPA) in 2006 accelerated the time frames in which companies must address funding gaps. In 2012, plan sponsors received temporary relief from addressing funding gaps with the enactment of a pension stabilization law (the Moving Ahead for Progress in the 21st Century Act, or MAP-21). This temporary relief has since been extended two times (Highway and Transportation Funding Act of 2014 or HATFA, and the Bipartisan Budget Act of 2015). But, in the absence of a continued rise in interest rates, plan contributions will return to pre-stabilization levels in the future. As a result, companies have significant incentive to reduce funded status volatility, because an increase in a funding deficit caused by movements in interest rates or equity markets will ultimately result in higher required cash contributions to the plan.

In addition, awareness of longevity risk appears to be on the rise. Just as increasing life expectancy trends have made longevity risk an urgent and decisive issue for pension plan sponsors in the United Kingdom, recent mortality updates are bringing similar pressures to the United States.\(^5\)

In October 2014, the Society of Actuaries (SOA) released new mortality tables (RP-2014) which proposed a new basis for mortality assumptions for U.S. pension plans.\(^6\) In addition, the SOA’s Retirement Plans Experience Committee (RPEC) also released the final report for a new mortality improvement scale (MP-2014) along with a subsequent update (MP-2015) that includes more recent data. The primary focus of this study was to provide a comprehensive review of recent mortality experience of uninsured private retirement plans in the U.S.

The RP-2014 mortality tables and the mortality improvement scale MP-2015 form a new basis for the measurement of retirement program obligations in the U.S. These new tables are the standard for valuation of pension liabilities and will impact minimum funding requirements, Pension Benefit Guaranty Corporation (PBGC) variable premiums and lump sum calculations. For accounting purposes, many plan sponsors have recently updated their mortality assumption to either the RP-2014 tables or to an industry or plan-specific mortality table.

A number of respondents to a recent survey sponsored by Prudential and conducted by CFO Research said that obligations from their companies’ DB plans are placing constraints on their companies’ performance.\(^7\) In fact, the survey found that:

- 43% of finance executives are concerned that obligations from their companies’ DB plans constrain cash flow
- 39% feel pension obligations restrict their ability to invest in growth opportunities

U.S. Pension Plan Sponsors Face Increasing Longevity Risk
Increase in Liability Due to Mortality Table Updates

65-Year-Old Male Life Expectancy

<table>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15.1 years</td>
<td>16.7 years</td>
<td>17.6 years</td>
<td>19.7 years</td>
<td>21.3 years</td>
</tr>
<tr>
<td>Liability Increase</td>
<td>7.5%</td>
<td>4.1%</td>
<td>7.7%</td>
<td>3.9%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Prudential calculations.

Intensifying interest in pension risk management solutions

U.S. companies’ interest in reducing DB risk is also made evident by the survey, which found that:\(^8\)

- 71% of executives confirm that their companies have some portion of their DB assets currently invested in liability-driven investing (LDI) strategies, which reduce a plan’s exposure to interest rate risk. Implementing LDI typically results in a higher allocation to fixed income within a plan’s portfolio so that the value of the plan’s assets and liabilities will be similarly impacted by changes in interest rates.

- 55% of executives say that their companies are somewhat likely to transfer or are very likely to transfer DB risk to an insurer in the next two years. Transferring DB risk enables a firm to eliminate its exposure to the risks posed by DB plans, including interest rate, investment and longevity risk. Risk transfer can be accomplished through transactions such as purchasing a buy-out annuity for a portion of a plan’s participants, typically its retirees.

In 2012, a defining moment occurred for the U.S. risk transfer market when General Motors reached an agreement to transfer certain salaried retiree benefit obligations to Prudential as part of a plan to reduce pension obligations by approximately $26 billion. Verizon Communications quickly followed that groundbreaking transaction by completing their own buy-out transaction with Prudential, settling approximately $7.5 billion in pension liabilities. In addition, companies invoked other measures (lump sum offers to former vested participants and retirees) to reduce the size of their plan obligations. In aggregate, group annuity risk transfer sales in the U.S. over the past five years have totaled more than $60 billion.\(^9\)

Clearly, the risk transfer standard had been set, and the U.S. marketplace appears primed for a groundswell of de-risking.

\(^8\)Prudential and CFO Research, “Closing the Gap in DB Plans,” April 2016, and survey of senior finance executives, August 2015.

\(^9\)LIMRA Group Annuity Risk Transfer Survey, 4Q 2015.
To what extent do the obligations from your company’s DB plan constrain your company’s financial performance in the following areas?

<table>
<thead>
<tr>
<th>Area</th>
<th>Significant Constraint</th>
<th>Moderate Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>7%</td>
<td>36%</td>
</tr>
<tr>
<td>Ability to increase balance sheet leverage</td>
<td>7%</td>
<td>37%</td>
</tr>
<tr>
<td>Earnings impact due to volatility of plan assets</td>
<td>6%</td>
<td>44%</td>
</tr>
<tr>
<td>Ability to invest in growth opportunities</td>
<td>7%</td>
<td>32%</td>
</tr>
<tr>
<td>Credit ratings</td>
<td>6%</td>
<td>31%</td>
</tr>
<tr>
<td>Stock price performance</td>
<td>9%</td>
<td>26%</td>
</tr>
<tr>
<td>Ability to access capital</td>
<td>6%</td>
<td>26%</td>
</tr>
</tbody>
</table>


Disproving the myths of pension de-risking

Despite an increasing interest in and awareness of risk management alternatives, the market has yet to see more large companies implement de-risking, and in particular, risk transfer solutions. While several plan sponsors are currently evaluating their de-risking options, a gap clearly exists between the intentions and actions of some companies with respect to DB risk reduction. The following are five misconceptions, or myths, that are contributing to this gap:

1. **Partial LDI strategies have significantly reduced DB risk.**
2. **Companies are better off delaying the implementation of DB risk management solutions to benefit from further improvements in the financial markets.**
3. **Risk transfer solutions can only be executed once a DB plan reaches, or exceeds, full funding.**
4. **Transferring DB risk to an insurer is too expensive.**
5. **Reducing DB risk, though prudent, reduces shareholder value.**

The objective of this white paper is to explore these myths in greater detail and to demonstrate why each is false. Disproving these five myths can help expand the range of risk reduction measures that DB plan sponsors are willing to evaluate and implement.
Although many corporate DB plan sponsors say that they intend to adopt LDI strategies, the implementation of these techniques remains modest. A 2015 survey found that 36% of DB plan sponsors have adjusted plan investments to better match the plan’s liabilities, and 31% of the remaining group are very likely to change within the year.10

An LDI strategy only results in meaningful risk reduction if a significant portion of a DB plan’s assets is allocated to fixed income. The following is one approach to developing a robust LDI strategy:

• First, a plan sponsor can address the interest rate risk posed by the liabilities associated with their plan’s retirees. These liabilities represent a set of fixed cash outflows that, for the most part, will vary based on the longevity of the retirees and their spouses. As a result, fixed-income securities are an effective investment option to match the duration and magnitude of the projected cash outflows associated with a plan’s retirees. Insurers have long utilized a very similar strategy to invest assets used to support fixed annuity payments.

• Second, a plan sponsor can then choose to address all, or a portion, of the interest rate risk associated with the plan’s non-retiree liabilities depending on factors such as the current funded status of the plan. The rationale for not addressing all of the interest rate risk posed by a plan’s non-retiree liabilities is that a plan is exposed to other risks, such as the risk of future benefit costs rising due to inflation, within its non-retiree liabilities. Investing in equities and other asset classes such as real estate can help address these risks.

The following case study demonstrates the risks of executing a “partial” LDI strategy. A partial LDI strategy involves asset rebalancing to increase fixed income asset allocation to 45% (from 30%) with a duration that matches the liability duration, and to reduce equity allocation to 50% (from 65%).11

This case study is based on the hypothetical DB plan described in Exhibit 4. Fifteen percent of plan assets are reallocated to duration-matched fixed income (from equities). The analysis is based on 1,000 Monte Carlo simulations of equity returns and interest rates to determine how the plan’s funded status would change in 10 years. Lower end (10th percentile of plan contributions) captures scenarios in which a rise

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11 This definition of partial LDI is somewhat consistent with asset allocations reported in Milliman’s 2015 pension study (Milliman “2015 Pension Funding Study,” page 2). Per the study, the largest plans have increased their allocation to fixed income from 28% of assets in 2005 to 42.7% in 2014 and have either attained their desired allocation or have not reached the next trigger point along their glide path to further de-risking.
in equity markets and high interest rates positively impact funded status and lower contribution requirements. The upper end (or 95th percentile of plan contributions) reflects the bad outcomes (or tail risk) in which a significant decline in equity markets and fall in rates negatively impacts funded status and contribution requirements.

The results illustrate that this partial LDI strategy only partially reduces pension risk. In a best-case scenario, for a plan with an initial funding status of 95%, the projected range of plan contributions at the lower end does not change because the plan is almost fully funded, while the upper end of projected range decreases by $287 million. Since the plan continues to have significant allocation to equities, risk reduction is modest.

In addition, LDI strategies leave sponsors exposed to longevity risk—or the risk that a plan’s participants will live longer than expected—resulting in higher benefits payments. While most plan sponsors have become more attuned to the investment risk that is inherent in their pension plans, longevity risk is a significant yet often ignored risk that cannot be addressed through investment strategy alone.

One solution for plan sponsors seeking to further reduce risk is to combine an LDI strategy with the purchase of longevity insurance from an insurer, a solution that is popular in the U.K. Plan sponsors there have been de-risking their defined benefit pension plans for several years. Incentives are aligned for plan sponsors to proactively manage their risk. These include strict funding regulations, increased accounting transparency, heightened risk awareness and a multitude of strategies to manage and transfer pension risk. As a result, plan sponsors have been motivated to change their risk profile, which has led many companies to de-risk their plans. Over nearly a five-year period from 2011 to 3Q 2015, there were a total of GBP 37.4 billion buy-in and buy-out transactions and a total of GBP 49.3 billion longevity swaps.12

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MYTH #2
COMPANIES ARE BETTER OFF DELAYING THE IMPLEMENTATION OF DB RISK MANAGEMENT SOLUTIONS TO BENEFIT FROM FURTHER IMPROVEMENTS IN THE FINANCIAL MARKETS

Some plan sponsors may not recognize the pressing need to de-risk their DB plans. And still others may acknowledge the importance of pension de-risking, but choose to defer the process for a variety of reasons. Perhaps the most frequently cited rationale for delaying de-risking is the desire to wait for an equity market rebound to improve plan funded status. However, in 2015, average funded status remained largely unchanged as assets under-performed expectations. Clearly, the potential risk of financial-market uncertainty doesn’t resonate with these plan sponsors, and their optimism continues to run high. For example, in a recent survey of U.S. corporate pension executives, just 16% of plan sponsors indicated that financial-market volatility is their top concern regarding their investment portfolio.13

These sponsors may be misjudging the risk they are taking, because specific market conditions must exist for plans to experience further funded status improvement. An interest rate increase for long-duration, investment-grade corporate bonds would benefit plan sponsors more than an increase for shorter-duration bonds. This is because DB plans must discount future liabilities based on the prevailing rates on investment-grade corporate bonds that match the duration of their plans’ liabilities. Moreover, a rise in interest rates for these bonds would not benefit the typical plan sponsor if it were accompanied by an equity market decline.

Over the four-month period of April to July 2013, equity markets rallied;14 however, because of the surge in interest rates, the market value of pension assets declined.15 Liabilities also declined, contributing to an 8.5% improvement in funded status. However, relying on continuing improvements in market conditions to close funding gaps is a risky venture, because equity markets and interest rates can be volatile and are unpredictable.

Source: Milliman Pension Funding Index, October 2011.
Milliman Pension Funding Index, July 2013. The percentage of pension fund assets allocated to equities, fixed income and other investments in the Milliman 100 Companies was 38%, 41% and 21% respectively at the end of 2012 and 2011, Milliman 2013 Pension Funding Study.

14Total Return for S&P 500 Index between April and July 2013 was 8.6%.
15Asset allocation for companies that comprise Milliman 100 Index was: Equities 38%, Fixed Income 41% and Other 21% (Milliman 2013 Pension Funding Study).
As Exhibit 6 illustrates, an opposite phenomenon occurred in 2011 when, in a four-month span, liabilities increased 13.1% while market value of assets fell 5.3%, eroding 14.2% in funded status.\textsuperscript{16}

The risk of relying on improved market conditions to further enhance funded status can be evaluated by measuring how likely a plan’s funded status is to improve over time solely through changes in the financial markets. Using the hypothetical DB plan introduced earlier in this paper, Prudential conducted 1,000 Monte Carlo simulations of how this plan’s funded status would change over 10 years, assuming no incremental contributions are made to the plan (yet benefit payments are made from plan assets). Financial market conditions, including interest rates and equity markets performance, vary in each simulation. The results of this analysis are provided in Exhibit 7.

As shown in Exhibit 7, there is an approximately 48% probability that the plan’s funded status will deteriorate at the end of 10 years. Moreover, there is an approximately 30% probability that the plan’s funded status will deteriorate by 25% or more. For a well-funded plan, these findings illustrate the significant risk of funded status deterioration from current levels.

Of course, some plan sponsors may still be willing to take the chance that future market conditions may (or may not) improve funded status. However, sponsors of well-funded plans (average funding was 81.8% at December 31, 2015\textsuperscript{17}) are poorly compensated for bearing this risk. Once a plan’s desired funding level is reached—such as 105 to 110% of plan liabilities, particularly for frozen plans—the plan sponsor receives little economic benefit from a further improvement in funded status, as excess funds in the plan cannot be used for other business purposes. Therefore, as a plan

<table>
<thead>
<tr>
<th>Funded Status</th>
<th>Percent Increase or Decrease in Funded Status from Current 95% Funded Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;24%</td>
<td>3.6%</td>
</tr>
<tr>
<td>&lt;48%</td>
<td>12.6%</td>
</tr>
<tr>
<td>&lt;71%</td>
<td>29.9%</td>
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<td>&lt;86%</td>
<td>41.3%</td>
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<td>&lt;95%</td>
<td>47.8%</td>
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<td>&gt;95%</td>
<td>52.2%</td>
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<tr>
<td>&gt;105%</td>
<td>45.4%</td>
</tr>
<tr>
<td>&gt;119%</td>
<td>36.2%</td>
</tr>
<tr>
<td>&gt;143%</td>
<td>22.5%</td>
</tr>
<tr>
<td>&gt;166%</td>
<td>12.6%</td>
</tr>
</tbody>
</table>

Note:
1. Plan asset allocation at the beginning of the 10 years is 65% equities, 30% fixed income and 5% cash.
2. Plan assets are re-balanced annually to match the starting asset allocation of the plan.
3. No incremental plan contributions are made during the 10 years.
4. Analysis based on 1,000 Monte Carlo simulations of the DB plan over 10 years. Barrie & Hibbert Economic Scenario Generator assumptions used in Monte Carlo analysis.
approaches fully funded status, the plan sponsor’s upside is capped, as represented by the three bars on the right in Exhibit 7, while its downside is not.

In certain circumstances, delaying the implementation of risk management strategies while, for example, waiting for interest rates to rise will have no discernible impact. For plans with already meaningful positions in fixed income that “well match” the retiree portion of their liability, there may actually be advantages to transferring risk now.

Since these plans are partially immunized against interest rate movements for a given portion of their liability, risk of funded status deterioration due to adverse movements in rates may not be a significant issue. However, the plan continues to own the longevity risk, as well as the cost of plan administration and PBGC premiums. Legislative changes since 2013 have resulted in significant increases in the flat-rate and variable-rate premiums charged by the PBGC, making them now an even larger component of overall plan costs. The increased burden will be greater for plans that are currently in deficit than for plans that are fully funded, at least until the deficit is closed.

Currently, there is ample capacity for transferring risk to insurers. And although capacity is likely to be available in the future through traditional and/or new sources, the cost may rise as the supply-demand dynamic for long-dated corporate bonds changes. Furthermore, the business mix of insurers may shift as their own exposure to longevity risk increases, causing capital to become less abundant.

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18 PBGC Premium Increases in the Bipartisan Budget Act of 2015: Strategic Implications for Pension Plan Sponsors,” December 2015, Aon Hewitt. PBGC flat-rate premiums are $64 per participant per year in 2016, increasing to $69 in 2017, $74 in 2018, and $80 in 2019. Variable-rate premiums are $30 per $1,000 of unfunded vested benefits in 2016, increasing to $33 in 2017, and $41 in 2019. Variable numbers are subject to indexation.
MYTH #3
RISK TRANSFER SOLUTIONS CAN ONLY BE EXECUTED ONCE A COMPANY REACHES, OR EXCEEDS, FULL FUNDING

A recent survey indicated that 59% of pension plan sponsors believe that risk transfer is only possible when their plans approach fully funded status.\(^{19}\) This belief is likely based on the awareness of the challenges underfunded plans face in executing the most prevalent risk transfer transaction—the pension buy-out.

A pension buy-out enables plan sponsors to fully transfer risk—including investment, longevity and benefit-option risk—to an insurer. A buy-out also completely removes administrative, actuarial and investment management expenses, as well as eliminating PBGC premiums, for participants whose risks are transferred. A buy-out purges pension liabilities from the balance sheet, guarantees payments to plan participants, and diminishes both accounting and funding volatility. However, a buy-out poses two challenges to plan sponsors, particularly sponsors of underfunded plans.

- A buy-out lowers the overall funding ratio of an underfunded plan. For example, a plan with $100 million in liabilities and $75 million in assets has a funding ratio of 75%. If this plan executes a buy-out by paying a $25 million premium to an insurer to transfer $25 million in liabilities, the plan would be left with $75 million in liabilities and $50 million in assets.\(^{20}\) As a result, the plan’s funding ratio would decline from 75 to 67%. A lower funding ratio can have negative implications for a DB plan, including an acceleration of required plan contributions.

- A buy-out triggers settlement accounting, because the sponsor is fully transferring the liability to an insurer. Under settlement accounting, the sponsor must accelerate recognition of any deferred losses or gains within its DB plan. However, evidence shows that markets reward companies for de-risking and liability reduction actions, even if they use cash, are earnings-per-share dilutive or incur a one-time charge.\(^{21}\) However, there are solutions that enable sponsors to transfer risk even if their plans are not fully funded—most notably, the pension buy-in, and a robust LDI strategy along with longevity insurance.

A buy-in is an insurance contract that enables sponsors to transfer longevity, investment and interest rate risk to an insurer for a subset of a plan’s participants. A buy-in differs from a buy-out in that the contract is retained as a plan asset. Furthermore, a buy-in leaves the plan ultimately responsible for providing pension benefits. These distinguishing features enable buy-ins to overcome some plan specific issues associated with executing buy-outs.

The pension buy-in
First, a buy-in will not materially impact the overall funding ratio of the plan since a buy-in contract remains a plan asset. Second, a buy-in does not trigger settlement accounting, as the plan remains the benefit obligor and, in turn, collects benefit obligations from the insurer. A buy-in also provides plan sponsors with a phased approach to transferring DB risk, as sponsors can eventually convert to a buy-out. After execution, the value of the buy-in contract is expected to closely track the value of the plan’s liabilities addressed by the contract.

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\(^{19}\)“Pension Plan De-risking, North America,” by Clear Path Analysis, May 2016.

\(^{20}\)The premium cost above the value of the liabilities being transferred has not been shown to simplify the numeric example. Assumes no incremental contribution is made to the DB plan before the execution of the buy-out.

Range of required plan contributions over 10 years
$=millions

**CURRENT STRATEGY**
- Additional longevity risk (not modeled)
- No additional longevity risk for retiree liability

**BUY-IN**
- Retiree liability buy-in
- Remaining assets (non-retiree) invested 65% in equities/35% in fixed income (Barclays Aggregate Index)

**Lower End**
- $24
- $39

**Upper End**
- $1,275
- $728

Exhibit 8: Impact of a Buy-in Solution

Notes: Analysis based on 1,000 Monte Carlo simulations of equity returns and interest rates to determine how the plan’s funded status would change in 10 years. Lower end (10th percentile of plan contributions) captures scenarios where a rise in equity markets and high interest rates positively impact funded status and lower contributions requirements. Our upper end (or 95th percentile of plan contributions) reflects bad outcomes (or tail risk) where significant decline in equity markets and fall in rates negatively impacts funded status and contribution requirements. Source: Prudential analysis.

Similar to a buy-out, a buy-in significantly narrows the projected range of future contributions a plan sponsor will have to make, because the insurer providing the buy-in assumes the risks associated with the plan’s liabilities. Although common in the U.K., with nearly $35 billion in such transactions being executed between 2011 and 3Q 2015,22 the first U.S. pension buy-in did not occur until 2011, when Prudential completed a $75 million agreement with Hickory Springs Manufacturing Company.

Exhibit 8 illustrates the impact a buy-in would have on covering the retirees of the hypothetical DB plan introduced earlier in this paper.

As shown in Exhibit 8, executing a buy-in increases the lower end of the projected range of plan contributions by approximately $15 million. This is due to the costs associated with completing the buy-in transaction (including recognition of revised longevity assumptions implicit in pricing) and the reduction in the plan’s equity exposure.

Conversely, the upper end of the projected range of contributions decreases by approximately $547 million because of the risks assumed by the insurer, and the replacement of a significant portion of the plan’s equities. The significant downside protection with modest loss of upside highlights that the buy-in is a very attractive de-risking option for well-funded plans in current market conditions. The buy-in contract is retained as a plan asset and its value closely tracks the value of the plan liabilities covered by the contract.

It should be noted that the ranges illustrated above do not consider any impact of potential longevity “shocks,” which would appear over time in cash flows or in accelerated funding requirements as the plan’s mortality basis assumption is modified. A buy-in or a buy-out contract transfers that risk to an insurance company.

### LDI plus longevity insurance

As discussed earlier, a robust LDI strategy can significantly reduce DB risk by ensuring that a plan’s assets and liabilities respond similarly to changes in interest rates. However, LDI strategies still leave sponsors exposed to longevity risk—the risk that a plan’s participants will live longer than expected—resulting in higher benefits payments. One way for sponsors to enhance an LDI strategy is to complement it with longevity insurance, thereby achieving certainty as to the amount they will have to pay each plan participant.23

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23Longevity insurance can also protect against the risk of a participant’s joint annuitant living longer than expected.
Exhibit 9 illustrates the benefits this solution offers the hypothetical DB plan sponsor introduced earlier in this paper. As Exhibit 9 indicates, the LDI-plus-longevity insurance solution increases the lower end of the projected range of plan contributions by $7 million, but lowers the upper end by approximately $541 million. The upper end decreases significantly due to the replacement of a portion of the plan’s equities exposure with fixed income assets that match the plan’s liabilities. These results highlight the significant benefits of de-risking for a well-funded plan.

In addition, longevity insurance protects the plan sponsor from a longevity shock, a scenario in which actual lifespan of a participant is different (higher or lower) than expected. Prudential uses up-to-date mortality tables when calculating pension liability and required contributions. Thus, a longevity shock would result if actual lifespan exceeds the estimate described above, and would adversely impact liability valuation, funded status and required contributions. As shown in Exhibit 9, if the plan sponsor executes its current investment strategy, the sponsor remains exposed to the possibility of a longevity shock and the higher plan contributions this would demand—even beyond the forecasted upper end of the range of projected plan contributions. However, with longevity insurance, the plan sponsor mitigates this risk exposure.

Our analysis shows that both a buy-in solution and LDI along with longevity insurance are effective strategies for significantly reducing risk without negative accounting or funded status implications. However, the buy-in solution could offer some advantages over LDI, in particular for smaller plans that lack the ability or desire to implement and monitor sophisticated asset/ liability management strategies. LDI strategies can be difficult to implement, and investment basis risk often remains, because it is extremely difficult to create an asset portfolio that perfectly matches the movement of the GAAP liability. In contrast, a buy-in presents no residual risk, and can be converted to a buy-out at any time. A buy-in allows plan sponsors to lock in insurance capacity today while it is readily available.
MYTH #4
TRANSFERRING DB RISK TO AN INSURER IS TOO EXPENSIVE

For some plan sponsors, the prospect of engaging in a pension risk transfer agreement in a buy-out may seem cost-prohibitive.

When finance executives were surveyed, 68% said transferring DB risk to an insurer was too expensive.\(^2\)

In actuality, the economic cost of transferring risk is lower than what many sponsors and analysts perceive, because the cost of transferring risk includes many expenses that sponsors will incur even if they don’t transfer risk. A disaggregation of the costs of a retiree buy-out is illustrated in Exhibit 10.

In Exhibit 10, the total cost of the retiree buy-out is 104% of the DB plan’s Generally Accepted Accounting Principles (GAAP) liability for its retirees. The buy-out premium includes a capitalization of the following costs that would be borne by the plan sponsor over time regardless of whether or not they transferred risk via a buy-out:

- **Administrative expenses and PBGC premiums.**
  Plan sponsors incur annual expenses related to participant servicing and plan administration. These costs are estimated to be $40 per participant each year. PBGC premiums are $64 in 2016, increasing to $69 in 2017, $74 in 2018 and $80 in 2019 with indexing thereafter.\(^2\)\(^5\)

- **Investment management fees.** Plan sponsors incur investment management expenses related to managing the assets within a DB plan. The analysis presented in Exhibit 10 assumes investment management expenses of 30 basis points per annum.

- **Credit defaults and downgrades.** As an alternative to transferring risk, plan sponsors can execute an LDI strategy that closely matches the plan’s assets to its liabilities. Executing such a strategy would require a significant allocation to fixed-income securities, in particular long-duration AA corporate bonds. However, sponsors employing this strategy will incur ongoing costs within the bond portfolio related to credit defaults and downgrades. The analysis presented in Exhibit 10 assumes that the cost of defaults and downgrades is 24 basis points per annum.\(^2\)\(^6\)

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\(^2\)“Pension Plan De-risking, North America,” by Clear Path Analysis, May 2016.
\(^2\)\(^6\)Prudential analysis of credit default and downgrade costs for a typical AA corporate bond portfolio.
Since the buy-out premium is a one-time payment to the insurer, the premium must account for all similar future costs that the insurer will now bear over time. Of course, executing a buy-out also means that sponsors are paying for these costs in advance via a single payment, rather than gradually over time.

Many plan sponsors could issue debt to fund a pension deficit, and this may be particularly attractive in a low interest rate environment. By doing so, they replace volatile pension debt with contractual, fixed debt obligations. Morgan Stanley found that investors view pension deficits as riskier than corporate debt because when interest rates fall and pension liabilities grow, the pension implicitly claims a greater portion of a company's total assets—to the detriment of its other creditors and shareholders.27 For further insights into the potential benefits of a borrow-to-fund solution, please read our latest research, “Borrowing to Fund Pensions Could Enhance Shareholder Value.”

### Exhibit 10

**The Disaggregated Costs of a Retiree Buy-out with RP-2014 Base Table and MP-2015 Improvements**

Sample Plan Illustrative Retiree Buy-out Pricing

<table>
<thead>
<tr>
<th>Percentage of GAAP Obligation</th>
<th>$100M</th>
<th>$106M</th>
<th>$104M</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAAP Retiree Liability</td>
<td>100%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Credit Defaults and Downgrades</td>
<td>1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative and PBGC Expenses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investment Management Fees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic Value Difference</td>
<td></td>
<td>(2%)</td>
<td></td>
</tr>
<tr>
<td>Buy-out Valuation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pricing is indicative and provided for discussion purposes only. Percentages represent present value of estimated future costs. Pricing is subject to change per market conditions and specific client demographic information.

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MYTH #5
REDUCING DB RISK, THOUGH PRUDENT, REDUCES SHAREHOLDER VALUE

Some plan sponsors may be reluctant to adopt DB risk-reduction strategies out of a concern that these solutions may negatively impact key financial metrics, and hence lower firm valuation. Prudential believes that the cost of reducing DB risk should be evaluated against the potential benefit to shareholders.

First, reducing DB risk typically narrows the projected range of required plan contributions in the future. In particular, DB risk reduction reduces the likelihood of very high levels of plan contributions caused by factors such as poor equity market returns, persistently low interest rates and longer life spans. As a result, DB risk reduction can raise the lower end of the valuation range of a firm, assuming a valuation is derived by discounting the projected future cash flows of the company.

Second, DB risk reduction measures can positively impact a company’s valuation by lowering its weighted average cost of capital (WACC). This is because a firm’s stock beta typically reflects the riskiness of the company, including its DB plan. All else being equal, a company with a higher stock price beta will have a higher WACC. Jin, Merton and Bodie (2006) were the first to empirically demonstrate the relationship between the riskiness of a company’s DB plan and its equity risk.28 The riskiness of a DB plan is based on how the plan’s assets are invested and the composition of the plan’s liabilities.

This empirical finding makes intuitive sense, because a pension deficit is a form of leverage, and the more highly levered a company is via traditional forms such as corporate debt, the higher its stock beta. Building on prior research, Morgan Stanley recently analyzed the relationship between the DB plans of the companies in the S&P 500 and these firms’ equity betas and WACC.

Among the findings:

- The magnitude of a company’s pension obligations impacts equity beta. Stock prices of “pension-heavy” companies—those with pension liabilities in excess of 25% of market capitalization—tend to be more correlated with the equity markets, and hence have higher equity betas.29 A “pension-heavy” company that permanently settles even a portion of its DB obligations may be able to lower its stock beta.

- DB plans add about 73 basis points to the WACC of the S&P 500, for the median company.30

- Pension deficit is riskier than traditional corporate debt because of its volatility and the unpredictable contributions required to service the deficit.

The impact of pension risk reduction on the potential valuation of the DB plan sponsor introduced earlier in this paper is presented in Exhibit 11.

The left-hand side of this exhibit depicts the range of required contributions to the DB plan over the next 10 years for two scenarios, one in which the plan sponsor retains its current investment strategy, and another in which the sponsor executes a buy-in that covers the plan’s retirees. The buy-in strategy is not without costs; it increases the lower end of the projected range of required contributions by approximately $15 million, but lowers the upper end of projected contributions by approximately $547 million.

The right-hand side of this exhibit presents the impact of de-risking on the company’s stock price valuation from two perspectives.

- **No impact of the buy-in on the company’s equity beta.**
  The buy-in reduces the upper end of the company’s valuation range by only 10 cents per share, but increases the lower end of the company’s valuation by approximately $3.63 per share.

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30Ibid.
This reflects the fact that the buy-in significantly lowers the upper end of the projected range of plan contributions over 10 years, though with a modest increase in the lower end of the projected range of contributions.

- **Reduction in equity beta.** The buy-in is estimated to reduce the company’s equity beta from 1.35 to 1.16. The reduction in equity beta is driven by the decreased riskiness of the company’s DB plan as a result of the buy-in execution; this transaction lowers the beta of the plan’s assets from 0.70 to 0.37 by replacing a significant portion of the plan’s equities with the buy-in contract, whose value has a lower expected volatility than that of equities. The lower equity beta reduces the company’s WACC from 10.7 to 9.7%, a reduction of approximately 100 basis points. As shown in Exhibit 11, if the execution of the buy-in results in a lower equity beta, the buy-in dramatically improves the company’s valuation range compared to the option of maintaining the DB plan’s current investment strategy.

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GM takes action to reduce its pension benefit obligation by $26 billion.

“...the move helps significantly reduce economic volatility, improves valuation transparency and enables GM to focus more on making cars rather than managing a pension fund.”
—Morgan Stanley


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.

—Credit Suisse


Motorola reduces pension benefit obligation by $3.1 billion.

“We believe this leaves the business in a stronger footing, reducing the pension funding overhang and freeing up cash for potential incremental share repurchases.”
—Citi Research


J.C. Penney Company, Inc. is a plan sponsor whose shareholders appear to have benefited from DB risk reduction. In May 2009, J.C. Penney contributed common stock to its pension plan to improve its DB plan’s funded status. The firm’s stock price increased 1.4% on the day of the announcement.32 Shortly afterwards, J.C. Penney announced that it was adopting an LDI strategy within its DB plan over the next five years. J.C. Penney explained that the move to LDI is expected to decrease the expected return on plan assets from 8.4 to 7%, but significantly reduce the volatility of investment returns from 13.2 to 6%.33 By mid-2010, the beta of J.C. Penney’s stock had declined from 1.37 to 1.26. Also by mid-2010, Standard & Poor’s upgraded J.C. Penney’s credit rating, despite a challenging environment for retailers.34

In October 2015, after completing a lump sum offering to select participants of their plan, J.C. Penney de-risked a substantial portion of their remaining pension obligations by entering into a buy-out group annuity contract with Prudential. On the day the company announced a reduction in its defined benefit obligations from both lump sum and annuity transactions, the firm’s share price increased 7.01%, outperforming the S&P 500 Index by 5.60% that day.

CONCLUSION

This paper demonstrates that the conventional wisdom about de-risking DB plans is often false. Invalidating the five myths discussed in this paper can help broaden the range of options that DB plan sponsors are willing to evaluate when formulating their long-term pension strategies. A wider range of options is essential to providing sponsors with the flexibility they need to achieve their long-term DB objectives.

It is also critical that plan sponsors begin evaluating the solutions discussed in this paper as soon as practical, as executing many of these solutions—such as a buy-in or a buy-out—requires significant lead time. Proactive evaluation of these solutions will enable plan sponsors to successfully execute DB risk reduction strategies at the timing of their choice.

Of course, the decision to transfer pension risk is based on the specific nuances and demographics of each particular plan. To determine which solution is appropriate for their companies, plan sponsors should work with their actuaries and advisors to:

- Examine the health of their plans
- Consider how management of the plans impacts the companies
- Explore the available pension risk transfer solutions

Buy-outs and buy-ins, along with the emergence of longevity insurance in the U.S. market, offer the certainty of outcomes that sponsors may need, along with the benefit security that participants demand. Forward-thinking plan sponsors that make time today to reexamine the assumptions surrounding their pension plan obligations will be able to confidently chart the right course for their pension and their company—and they will be at an advantage relative to those who don’t.
## APPENDIX

### Risk Management

- Executed by asset manager

<table>
<thead>
<tr>
<th>LDI</th>
<th>Longevity Insurance</th>
<th>Buy-in</th>
<th>Buy-out</th>
<th>Lump Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LDI</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liability-Driven</td>
<td>Transfers only longevity risk to insurer and results in a fixed and known life expectancy for plan participants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investing (LDI)</td>
<td>LDI can be combined with longevity insurance to address asset and liability risks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>manages investment risks by closely matching a bond portfolio to the liability cash flows</td>
<td>Longevity insurance is actively used in the U.K. but not yet in the U.S.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assets and liabilities remain with the pension plan</td>
<td>Transfers investment and longevity risks to insurer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assets remain in the pension plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Does not trigger settlement accounting or reduce funded status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Convertible to buy-out at any time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transfers investment and longevity risks to insurer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assets transfer to insurer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>May trigger settlement accounting and reduce funded status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plan pays benefits in a lump sum to specified participants who elect that option; plan liabilities are thereby reduced</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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