

THE PENNSYLVANIA STATE UNIVERSITY
SCHREYER HONORS COLLEGE

DEPARTMENT OF RISK MANAGEMENT

IMPACT OF THE ECONOMY AND REGULATION ON PENSION RISK TRANSFER

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SPRING 2018

A thesis
submitted in partial fulfillment
of the requirements
for a baccalaureate degree
In Risk Management
with honors in Actuarial Science

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ABSTRACT

With the changing culture of financial security and risk aversion in America, insurance companies must be more innovative now than ever. Major life insurance companies are looking towards new business tactics on which to rely, now that Americans are shifting away from purchasing traditional life insurance policies. One such opportunity is pension risk transfer (PRT) activity. That is when a defined benefit pension provider offloads some or all of the plan's risk. Currently, around three trillion dollars is tied up in pension promises, of which only 5% has been de-risked thus far. This provides a lucrative opportunity for life insurance companies to apply de-risking strategies in giant, multi-billion dollar pension risk transfer deals. This paper will examine the potential growth of the PRT business in light of trends in market conditions, and the regulatory and reporting landscape for pension plans. It also discusses what the future for PRT holds in terms of opportunities and challenges, as well as the implications PRT activity has on plan participants.

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ACKNOWLEDGEMENTS

I would like to thank Ron Gebhardtsbauer for helping me throughout the thesis writing process, and providing me with great insight and advice during the bumps along the way. Thank you for being a committed mentor throughout my actuarial career. Your commitment to teaching and passion for your profession will continue to inspire me throughout my own path.

I would like to thank the FitnessGram Pacer TestTM for all the late nights and laughs. I would be nowhere without your constant support and supply of memes. I especially want to thank Elaine Wang and Kevin Chow for keeping me sane throughout this actuarial journey. You both have been by my side throughout all the highs and lows, and I would have never made it to the end without you.

Finally, I would like to thank my family for keeping me grounded and always pushing me to strive for more. Mama, Papa, and Sangu: thank you for your sacrifices, your love, and your belief in me. I will never have the right words to express my gratitude, but I will never stop trying to make you proud.

Chapter 1

Introduction

For several decades, pensions have been the main source of retirement security for millions of Americans. However, the changing retirement landscape has brought about increasing costs and volatility to traditional pension plans. Sponsors are finding it increasingly difficult to maintain these expensive pension benefit obligations, and are looking into innovative ways to mitigate risk. Specifically, they are utilizing Pension Risk Transfer (PRT) strategies to target and transfer specific types of risks associated with pensions. While PRT strategies are not a new concept, the past few years have seen a massive growth in the PRT market for the United States. The multi-billion dollar PRT deals by General Motors, Verizon, and Ford in 2012 drew extensive media attention and became a watershed moment for de-risking strategies in America. This report examines what exact economic and regulatory variables caused such a dramatic increase in de-risking activity in the United States, as well as what the future market for PRT transactions might look like.

Chapter 2 focuses on the origin of pensions, and the shift in the retirement landscape from defined benefit plans to defined contribution plans. The emergence of PRT activity is also introduced.

Chapter 3 examines the three main drivers for risk transfer activity. The impact of various pension regulation, the financial crisis of 2008, and changing mortality rates on maintaining pension plans is analyzed.

Chapter 4 discusses the specific types of de-risking strategies that are available for plan sponsors. Examples of how these strategies were implemented in the three historic PRT transactions of 2012 are also examined.

Chapter 5 presents several considerations that plan sponsors must take into account before deciding on what de-risking strategy is most appropriate for their plan. The factors of interest rate, accounting standards, funding status, and economic liability are all at play when readying a plan for risk transfer, and must be carefully analyzed.

Chapter 6 takes on a forward-facing perspective in examining potential challenges and opportunities for risk transfer activity. The workings of an increasingly connected global pensions market are assessed, as well the impact of potential future regulatory and economic conditions on PRT transactions in the United States.

Chapter 2

Details Background on Pension Risk Transfer

Origin of Pensions

The concept of pensions dates as far back as the Roman Empire, when they historically served as a source of income for soldiers after they retired from the military. In the United States, the Continental Congress rewarded survivors of the Revolutionary War with a monthly lifetime income benefit. This pension was offered again by the federal government for every American war that followed. Throughout history, there is also a record of pensions being offered to workers in the public sector (Phipps). During the turn of the 20th century, many workers' groups encouraged bills in Congress that would mandate pensions for non-military federal workers as well. By 1920, the U.S. federal government began to officially offer pensions to all federal workers under the Civil Service Retirement System (CSRS) as a defined benefit program.

Pensions were used to incentivize private workers to remain with the company and work until retirement age during times of economic prosperity. In the earlier days, most companies were small or family-run businesses, so there was no need for a more substantial pension plan to cover several employees. As the industry began flourishing in the United States, however, it became necessary to offer some sort of retirement benefit to private workers. The very first corporate pension in the United States was established in 1875 by The American Express Company. Because of the size of their wealth and power, banking and railroad companies were

among the first to offer pensions to their employees in the late 1800s. Slowly around the early 1900s, several large corporations began to offer pensions, including Standard Oil, US Steel, AT&T, Goodyear and General Electric (Phipps). Manufacturing companies also followed in adopting these new retirement plans a few years later. Labor unions in the 1940s pushed to increase the number and types of benefits offered in pension plans. By 1950, 25 percent of the private sector workforce or 10 million Americans had a pension. The popularity of pension plans kept growing, and ten years later, about half of the private workforce had one. Since this time, pensions have faced a number of different changes through legislation and shifting retirement practices.

Changing Retirement Environment

Today, retirement in the United States operates very differently than it did in the mid-20st century. Specifically, retirement has taken a massive shift from defined benefit to defined contribution plans. A defined benefit plan is where the employer sponsors and promises to pay a set monthly amount at retirement age – essentially a pension. The payment amount is determined by the length of service and salary earned at the time of retirement. The employer manages the portfolio and takes on the investment risk for the plan. With traditional defined benefit plans, the employee has little control over their retirement, as the employer controls the benefit formula and investments. The obligations that must be paid on defined benefit plans become very expensive and complex, and it became apparent that a new system was needed. Congress passed The Revenue Act of 1973, in which section 401(k) allowed for defined contributions to emerge. Defined contribution plans allow employees to contribute money in a tax-advantaged way to

their own individual retirements account, along with tax incentives for the employer to also contribute to the plan. This shifts the risk from employer to employee, and allows more autonomy for retirement (Davidson). In today's society, where more and more free agents make up the workforce, there is substantial appeal to have an individual retirement account without the involvement of a company. From an employer's perspective, defined contributions are simpler.

Emergence of Pension Risk Transfer

Today, defined benefit plans have lost some of their popularity in the private sector, and employers are looking for a way to manage their massive pension obligations from these plans. Many sponsors have taken steps to offload the variety of risks associated with defined benefit plans, which is known as pension risk transfer or PRT. As stated in a 2016 issue brief by the American Academy of Actuaries, the types of risks addressed in PRT deals include:

“the risk that participants will live longer than current annuity mortality tables would indicate (longevity risk); the risk that funds set aside for paying retirement benefits will fail to achieve expected rates of investment return (investment risk); the risk that changes in the interest rate environment will cause significant and unpredictable fluctuations in balance sheet obligations, net periodic cost, and required contributions (interest rate risk); and the risks of a plan sponsor's pension liabilities becoming disproportionately large relative to the remaining assets/liabilities of the sponsor.” (“Pension Risk Transfer”).

There are several benefits associated with pension risk transfer that go beyond just mitigating risk. PRT strategies can help improve the consistency of financial results and realize corporate finance benefits. When there are underfunded pension liabilities on a plan, it is

accounted for as a form of corporate debt. Losses in the pension fund can cause both shareholder equity and stock price to fall. By offloading pension obligations, firms can improve their financial reputation. Additionally, PRT transactions allow firms to shift their focus from worrying about issues related to retirement benefits back to their core business. By implementing the proper PRT solution, a company can also enhance the retirement security of its employees and retirees. However, PRT deals are also very expensive, so sponsors must employ a lot of caution before deciding on de-risking. The recent popularity of de-risking pensions is primarily due to government regulation and the changing market conditions of the last decade. These regulatory changes have been made in part due to economic variables, as well as due to the political landscape of the time.

Chapter 3

Drivers of De-Risking Solutions

Over the past few decades, there have been a number of changes in the regulatory and economic environment, which have exacerbated the risks and costs associated with pension plans. A majority of regulatory requirements have become increasingly complex, which has resulted in higher expenses to maintain and manage these large plans. The shift towards market interest rates has introduced greater volatility in minimum funding. The sustained decline in interest rates has also impacted balance sheet liabilities and funding requirements. All of this has led sponsors to strongly consider pension risk transfer strategies.

History of Pension Regulation

The past 50 years have seen significant upheaval in the regulation of pensions, reflective of the various changes in the United States economy and working environment. The first major pension legislation passed was the Employee Retirement Income Security Act (ERISA) of 1974, a federal law passed to set minimum standards for pension plans in order to protect the millions of pension plan participants by ensuring that funds will be available during retirement. ERISA protects the interests of employees by making sure they are more informed about their pension plans. Through this regulation, plan sponsors are required to provide necessary information about their defined benefit plan features and funding requirements (“What Is ERISA?”). Additionally, the law provides security for plan participants against management abuse of their funds by

holding plan fiduciaries liable. ERISA also established minimum standards for benefit accrual and funding. It created detailed funding rules, which require plan sponsors to contribute a minimum amount to their pension plans each year, based on a variety of factors (Geddes et al.). These funding regulations have become an integral part of decision-making for companies, as they impact both the cash flow and corporate balance sheet.

ERISA established the Pension Benefit Guaranty Corporation (PBGC) to guarantee payment of benefits should a pension plan terminate without sufficient funding. In a way, the PBGC can be interpreted as insurance for pension plans, as it guarantees "basic" benefits for plan participants in the case of insolvency. Basic pension benefits are guaranteed up to a legal maximum, indexed each year for inflation ("How PBGC Operates"). While the PBGC is a federal agency, it not funded through taxes. Instead, its operations are financed by insurance premiums set by Congress and paid for by sponsors of pension plans, as well as investment income. The premium value is set to a certain dollar amount per participant, in addition to a variable amount based on the pension plan's underfunded portion. The PBGC's board follows a specific investment policy, which consists of an asset allocation of 30 percent for non-fixed instruments and 70 percent for fixed income ("How PBGC Operates"). In recent years, PBGC premiums have increased significantly going from \$31 per participant in 2007 to \$64 in 2016 ("Pension Risk Transfer"). With Congress and the PBGC in continued talks about raising premiums, this expense is becoming an increasing concern for sponsors.

The Pension Protection Act of 2006 (PPA) served as the most comprehensive pension reform legislation in the United States since ERISA. PPA was designed to increase minimum funding standards and increase the importance of the PBGC. PPA affected numerous funding measures, PBGC premiums and IRS reporting requirements. Now, it was legally required for

pension plans to be at least 90 percent funded. When the law was initially passed, the average corporate pension plan was funded at 96 percent, according to the Government Accountability Office (Koos). Prior to PPA, actuaries were able to choose from a variety of different funding methods, as well as choose the appropriate mortality table and interest rate in deciding a plan's minimum funding level. With PPA, there is now a mandated single funding method, mortality table, and interest rates to be used for minimum funding levels (Koos).

Generally, PPA's minimum funding requirement is determined by adding the present value of the benefits of all plan participants accrued in the current year (normal cost) to the payment required to pay down the plan's underfunding over a seven-year period (shortfall amortization payment). The valuation liabilities, or the target liability, are calculated by the plan's termination liability based on current interest rates. Underfunding is the extent that plan assets are less than the target liability. The changes to funding status requirements have made it especially costly to maintain traditional pension plans, causing sponsors to look towards de-risking solutions ("The Impact of the Pension").

The most recent significant piece of pension legislation is the Moving Ahead for Progress in the 21st Century Act, or MAP-21 as it is commonly referred to, which was signed into law in July 2012. Its main purpose was not actually for pension reform, but rather surface transportation programs. The legislation, however, still had two major provisions in pension law. One provision provided pension-funding relief through a reformed interest rate methodology. As a result, sponsors temporarily had a higher effective discount rate under which to value plan liabilities. This new rate allowed for lower contribution requirements for many employers (Geddes et al). MAP-21 also affected employers by increasing its premium rates payable to the PBGC. Furthermore, MAP-21 provided a premium cap of \$400 per participant,

indexed each year by the national average wages. The increase to required premium rates has pushed sponsors to seriously look at de-risking alternatives to offset their premium obligations (Cunningham).

Financial Crisis of 2008

The stock market crash of 2008 led to crucial changes in de-risking strategies for several companies. The financial crisis had a substantial impact on the private pension market, as the investments related to pensions lost 23 percent of their value in OECD countries, which is equivalent to \$5.4 trillion. The United States, which accounts for half of all private pension assets in OECD countries, showed the third largest decrease in value at about 26 percent (D'Addio). While there are pension protection plans in place for sponsors who are unable to pay their obligations, no one had anticipated the number of insolvencies that would be seen in the months following the crash. The PBGC experienced an increase in its total balance sheet deficit from \$11.2 billion in September 2008 to \$21.9 billion at year-end 2009, to account for the benefits that needed to be paid out (Antolin et al.). Overall, there was a general decline in interest rates, increasing the value of liabilities. The liability for the 100 largest corporate U.S. plan sponsors was about \$1 trillion in 2008, and grew to about \$1.4 trillion in 2016, despite a large number of PRT transactions in the years in between.

In 2007, right before the financial crisis, the average corporate pension was 104.3 percent funded (Randall). Between the end 2007 and spring of 2009, the average funding status plummeted to rates well below the legal minimum of 90 percent. Of the pension plans operated by S&P 1500 companies, an estimated 59 percent are below 80 percent funded (Randall). Along

with the crash came historically low-interest rates which not only negatively impacted sponsors' premium payments to PBGC, they also made the premiums on pension transfer annuities more expensive. Traditionally, most sponsors waited for interest rates to rise before venturing into the market. However, while waiting for interest rates to rise, they also experienced more funding, market, and premium volatility because of the severity of the recent recession. Now, sponsors are preparing to de-risk irrespective of interest rates, leading many to focus on pension risk transfer as a strategy.

Changes in Mortality

Over the past several decades, people are living far longer than ever. With this improvement, however, comes a significant cost as pension liabilities grow, and larger liabilities have longer durations. Pension plans will be exposed to more interest rate and duration risk, with funds that have cost-of-living adjustments facing nearly double the risk exposure. Figure 1 demonstrates the impact of the mortality changes on pension liabilities, and the resulting risk exposure. The left graph reflects fixed liabilities with no cost-of-living adjustments, which are typically seen in U.S. corporate pension funds. The right graph shows inflation-linked liabilities, common to U.S. public sector pension funds. Retiree liabilities are shown on the bottom of each graph, while younger, deferred annuitants are on the top. The first two bars illustrate the impact on the liability from a 1% reduction in rates and a 1% increase in mortality improvements. The third bar is the crossover risk, or compounded impact of mortality and interest rate risk, that arises because people lived longer than predicted and the pension liability grew. These stresses

are totaled in the fourth bar. Interest rate risk, inflation risk, and longevity risk compound each other in pension liabilities.

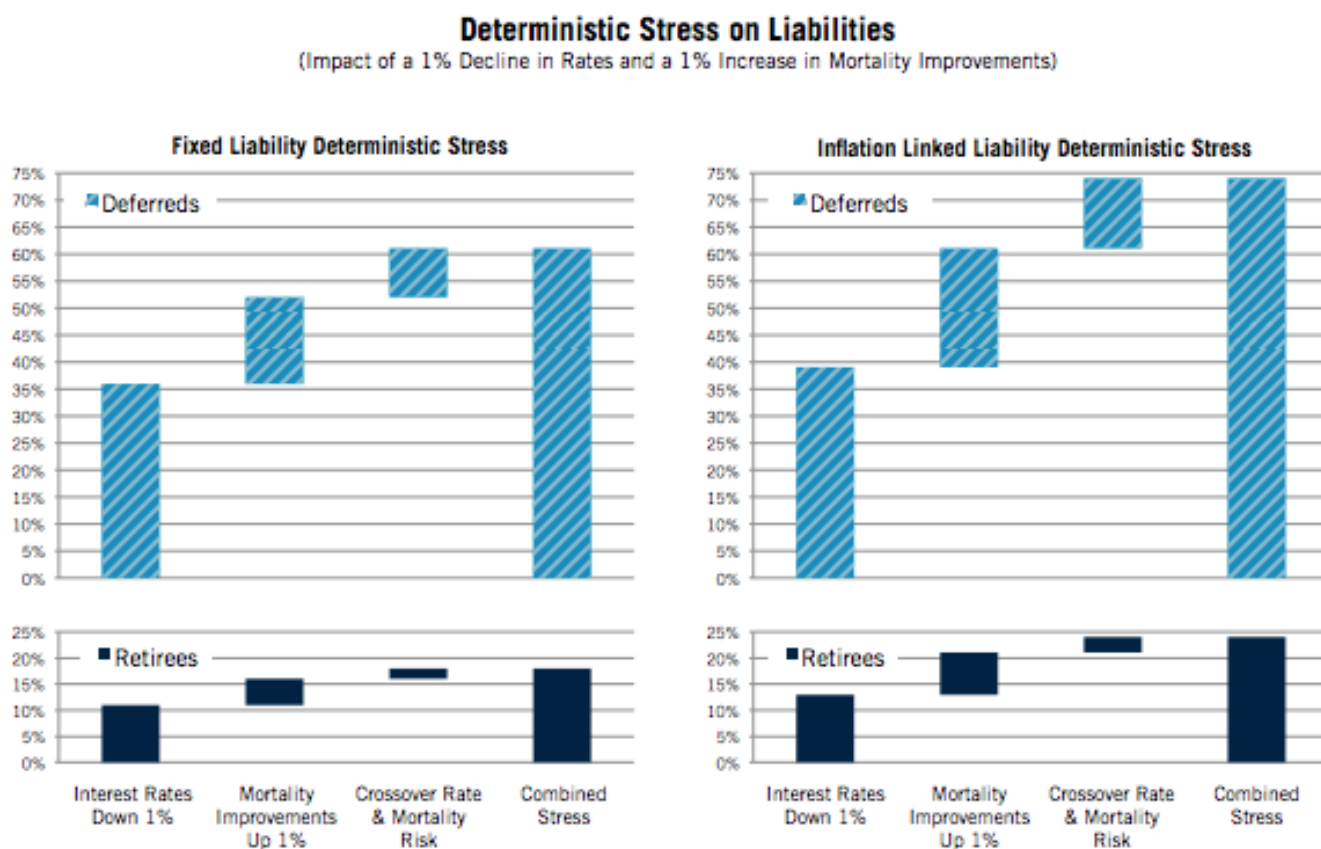
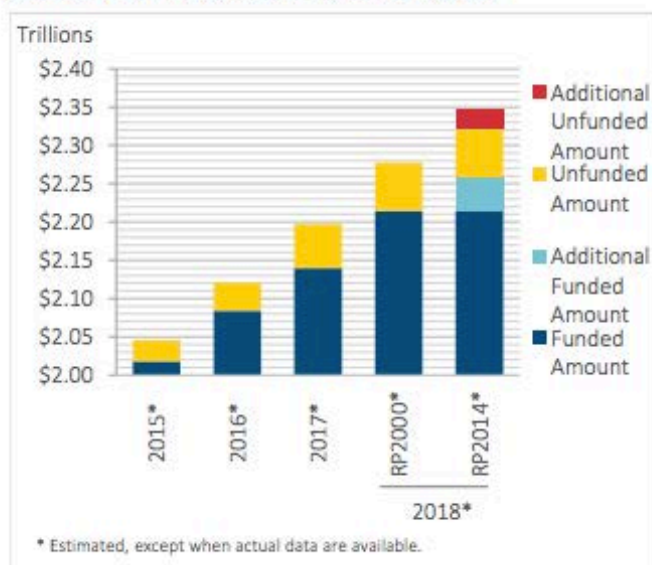


Figure 1. Impact of Mortality Improvement on Liabilities (Source: Schilling, 2017)

As mortality rates are improving and people are living longer than expected, the Society of Actuaries (SOA) must reflect these changes in their new mortality tables. Many companies had already been reflecting these new numbers in their financial reporting, which resulted in an increase to liabilities by about 5-10%. However, once these new mortality tables are officially adopted, the new changes are expected to increase other costs of maintaining traditional defined

benefit plans. Specifically, for single employer plans, the SOA found that the new tables will increase PBGC premiums by 12%, from \$8.6 billion to \$9.6 billion. Additionally, the updates would also result in a 2.9% increase (\$65 billion) in the aggregate funding target liabilities, and decrease the aggregate funded status from 97% to 96% (“Proposed Mortality”). While many plans have enough surplus to cover the increase in their funding target, their surplus would shrink. As seen in Figure 2, those plans that already have a deficit on the current mortality basis would see a significantly increased deficit, while other plans with a small surplus would find themselves with a funding deficit. With the PPA’s required funding status, these funding issues can cause an issue for sponsors meeting regulatory requirements.

CLOSER VIEW: AGGREGATE FUNDING TARGET



AGGREGATE FUNDING SURPLUS AND DEFICIT

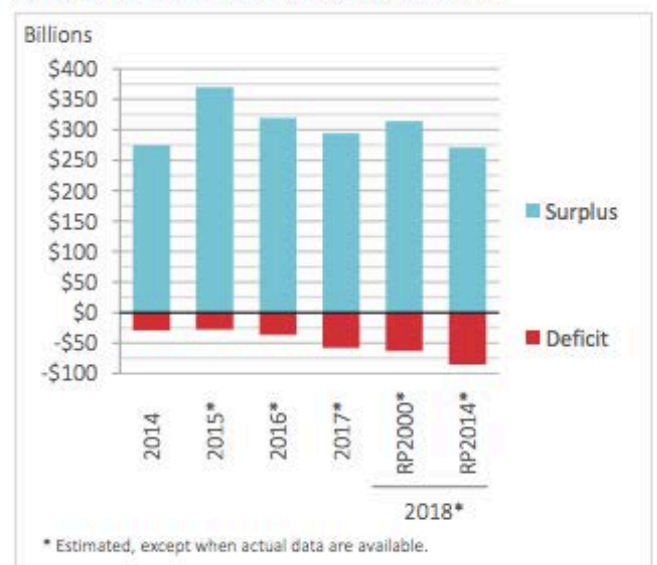


Figure 2. Impact of Mortality Updates on Funding (Source: Society of Actuaries)

The IRS has recently adopted these new reflected mortality tables in January 2018, and sponsors have the option to defer until 2019. The additional cost of purchasing an annuity from an insurer will decrease. Before, it was seen as cost-prohibitive compared to accounting liabilities, but with updated mortality tables that are more consistent with the assumptions insurers have already been using, the purchase will be less expensive (“Pension Risk Transfer: Interview”).

Chapter 4

Types of De-Risking Solutions

There are three main types of pension de-risking options available to sponsors: plan design, funding and investment strategy, and liability management.

Plan Design

Originally, traditional pension plans were designed with a more paternalistic mindset: employers would reward employees for their long-standing service and contributions to the firm with retirement income to see them through their final years. However, with the changing retirement landscape, employers have taken alternative plan designs as preliminary step to manage the expenses related to pensions.

Hybrid plans are a good option for employers who still want to use the defined benefit structure but with an easier to communicate benefit value. Some account-based alternative designs include cash balance, pension equity, and stable value plans, each of which allocates a certain amount of employee earnings to a hypothetical account, which may or may not grow with interest (Geddes et al). These plans serve as a de-risking measure by reducing some variability with respect to interest rate risk. The accrued obligations are based on hypothetical account balances, and they protect against economic volatility to a certain degree (Geddes et al). The next level of plan design includes plan closures and freezes. Before being able to completely freeze a plan and cease all future benefit accruals, pension plans must first close off new entrants. Sponsors also can choose to freeze just compensation or service accruals, as well. Additionally,

alteration to plan provisions such as early retirement subsidies and phased retirements help to encourage retention and reduce some volatility.

Funding and Investment Strategy

Employers can also utilize funding and investment-related strategies to manage their liability risk. If a plan is fully funded, sponsors may look to immunize the asset portfolio to remove further investment and interest rate risk. The “borrow to fund” strategy is used to improve funding by replacing the pension underfunding. The method is essentially a form of variable debt with other debt locked in at a fixed rate, which ends up removing the volatility associated with pension debt (Kaplan et al). In the current low-interest rate environment, sponsors of underfunded plans can borrow at very attractive rates and contribute the proceeds to their pensions, which in turn can increase shareholder value. The borrow-to-fund strategy can be beneficial to a wide range of sponsors, including those with frozen or ongoing plans. A well-funded plan has an asymmetric risk-reward tradeoff, with greater downside risk and limited upside potential (Kaplan et al). One issue, however, is that funding can increase risk by raising funded status volatility unless changes are also made to the asset allocation or the additional funding is utilized to transfer risk (Geddes et al). Another important issue to recognize is the impact of rising interest rates, which we are beginning to see a bit of. When interest rates increase, long bond values decrease so de-risking solutions might not necessarily have the same appeal until after the interest rates reach a new plateau. At that point, pension plan sponsors may decide to keep their pensions plans, since they won’t be as expensive. On the other hand, the annuities will be cheaper, so they may still want to try PRT.

Liability-driven investing (LDI) is employed to hedge the volatility associated with interest rate risk by attempting to match returns to plan obligations. There is no one exact approach in regards to the specific for LDI strategies. The managers of pension funds often utilize a variety of approaches. The original LDI model emphasized a fixed-income approach founded on certainty of coupon payment and principal return. Now, LDI strategies typically implement for frozen pension plans, as the asset portfolio is duration-matched with the plan's liabilities (Rudd). The portfolio is invested such that, liability interest rate movements are hedged by the asset returns, resulting in a relatively stable funded status. Over time, the plan's funding levels are expected to rise based on required contributions to the plan. Full-on LDI solutions might not be the most efficient solution, however, as they can lock up cash for a long period of time and take away cash and internal resources for plans (Rudd). Currently, some plans are using a combination of an LDI-style approach and cash-efficient risk-taking by spending more capital and resources in a complementary manner. Plan design and investment strategies are often applied as a precursor to actual risk transfer activities under liability management.

Liability Management

There are two major types of liability management strategies: lump sum cash outs and annuity purchases. According to US Legislation, qualified defined benefit plans must offer a life annuity to all participants. With the nature of life annuities comes the issue of longevity risk, which is why some deals offer the option of lump sum payments. Sponsors can offer lump sum payments to all groups, but it is most logical to provide it for terminated vested (TV) groups. A TV participant is a former employee who worked long enough to earn vested benefits in a

pension plan, but left the company; they can receive benefits once they reach retirement age. When a TV's employment ends, at either the employer's or the employee's discretion, the retirement reward considerations change; however, most sponsors continue to pay expenses for the investment, administration and insurance of TVs' benefits (Owens). Transferring risks for the TV group can be a particularly attractive option for many sponsors. Additionally, TVs are often more difficult to locate than active employees or plan retirees. As historical records become less accessible, determining final benefits become a more complicated task, causing administrative expenses to continue rising (Owens). Along with reducing costs, cashing out TVs offer the plan sponsor with the means of reducing the plan's interest rate risk by shortening the duration of plan liabilities. Because TVs are usually younger than retirees, the liabilities tend to be of greater duration than other plan liabilities. As such, removal of TV liability could make the plan less sensitive to interest rates changes and less impacted by interest rate risk as it matures (Owens).

An annuity purchase is another common PRT strategy. While all qualified defined benefit plans must offer a life annuity option to all plan participants, the annuity does not necessarily have to be paid through the plan's trust. Sponsors may purchase annuity contracts from a third party insurer to cover future annuity payments. Because plan sponsors are hiring the insurance company to take over the administrative role and all associated risks, these annuity contracts can be more expensive. However, sponsors are able to dissolve themselves of the longevity risk brought on by a number of their plan participants. Retirees are the most efficient group for annuity purchases, due more favorable pricing as a result of a shorter time span and higher certainty of the benefits being paid (Owens).

There are two major options for purchasing annuity contracts: buy-out (group annuity) and buy-in. The buy-out option entails purchasing the annuity contracts from an insurance

company to pay all future annuity payments for select participants. The third party will have full control over administrative duties and absolves the plan sponsor of any future pension obligations to the participants. The buy-in option is similar, except that the insurer pays the monthly annuity amount to the plan sponsor, which continues to make direct pension payments to participants. As such, the sponsor maintains the assets and liabilities on the corporate balance sheet. This method has seen more success internationally, but is becoming a more popular strategy in the United States as well. (Owens). Figure 3 visually demonstrates the difference in methodology between buy-in and buy-outs.

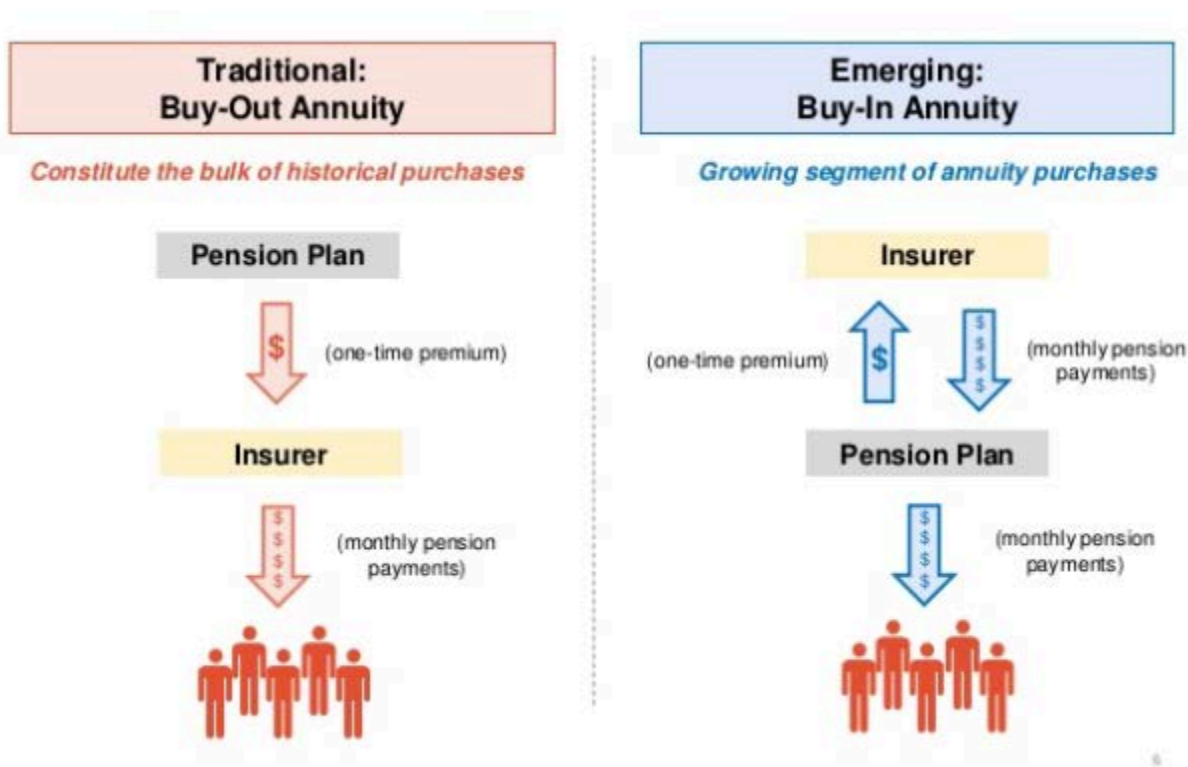


Figure 3. Annuity Purchase Strategies, (Source: Dickner, 2014)

Finally, lump sum cash-outs and annuity purchases can be combined together in a phased approach for plan termination. In order to effectively terminate the defined benefit plan, the sponsor will seek to maximize the number of participants who will cash out in order to minimize

as many ongoing obligations as possible (because lump sums are generally cheaper than buying the annuity). The sponsor will then purchase annuities for the remaining participants. As long as plan assets are sufficient enough to cover benefit liabilities, sponsors may choose to terminate their plans at any time. Voluntary terminations follow a very rigorous, lengthy process that is fairly expensive (“Steps for Terminating”). The plan sponsor must apply for a standard termination with PBGC, and most will also submit a plan termination filing to the IRS to receive a favorable determination letter. This letter ensures that all termination requirements were met, lowering the chances of an IRS audit of the termination. Once the process is finally complete, the plan sponsor is free of all funding, accounting and administrative requirements (“Steps for Terminating”).

Historic PRT Deals

In the year 2012, the market saw a number of historic pension risk transfer deals that set the stage for a growing trend among defined benefit plan sponsors to address their pension plans. The amount of media coverage these massive deals received helped to give more attention to pension risk transfer, and more plan sponsors began looking towards de-risking options. For many companies, the size of the pension liabilities represents a large portion of overall enterprise value. Significant exposure to pension risk becomes an issue for business strategy, as the focus shifts from the core business objectives to managing the costs and risks of operating massive pension obligations. Some experts feel that this adversely impacts the company’s cost of capital and increases the stock’s Beta, which measures volatility (Geddes et al). For General Motors and Ford, this issue was a reality that they wanted to solve quickly.

In November 2012, General Motors closed the largest PRT deal in history with Prudential Financial at \$25.1 billion. GM had been facing severe financial issues for several years, and by the end of 2011, the company's exposure to pension liabilities had grown to more than four times its post-bankruptcy market capitalization (Rowlins). Prudential took a multi-faceted approach to significantly reduce GM's pension obligations and guarantee the full payment of pension benefits to approximately 110,000 participants. The company first offered lump sums to approximately 42,000 retirees and surviving beneficiaries. For those retirees who were not offered or did not elect a lump sum, it subsequently purchased a group annuity contract (Geddes et al).

In the same year, Ford employed its own liability management strategies by offering lump sum pension distributions in bulk to almost 98,000 white-collar retirees and former employees. Ford's de-risking strategy continued by increasing its debt assets from 55% in 2012 to 70% in 2013, with an ultimate target of 80% fixed income in future years. In the same year, Verizon engaged in an alternative pension risk transfer tactic by bypassing the earlier lump sum offers and directly acquiring a group annuity contract from Prudential. This group annuity buy-out allowed the company to transfer the \$7.5 billion in pension obligations (Rowlins).

While more public attention has been given to these "jumbo" PRT transactions, increased activity in the de-risking market has not just been for large companies. Before, there was a perception that pension risk transfer strategies only made sense for large corporations, but over time this mentality has changed as conversations between consultants and plan sponsors progressed. Now, even smaller companies are exploring the benefits of PRT, starting with lump sum to terminated vested participants, continuing with annuity purchases, and at times ending with complete plan termination (McGrath). Transaction volume in the small- to mid-market has

increased. As shown in Figure 4, there was a diverse range of the pension risk strategies seen after the jumbo deals of 2012, and an overall increase in PRT activity in the years following.

While the market has not seen a PRT transaction on the same level as the GM or Verizon deals, there have been several smaller deals over the recent years as companies are seriously reviewing their pension obligations. The large amount of the longevity swaps represents PRT deals in the U.K, which be discussed in more detail in Chapter 6.

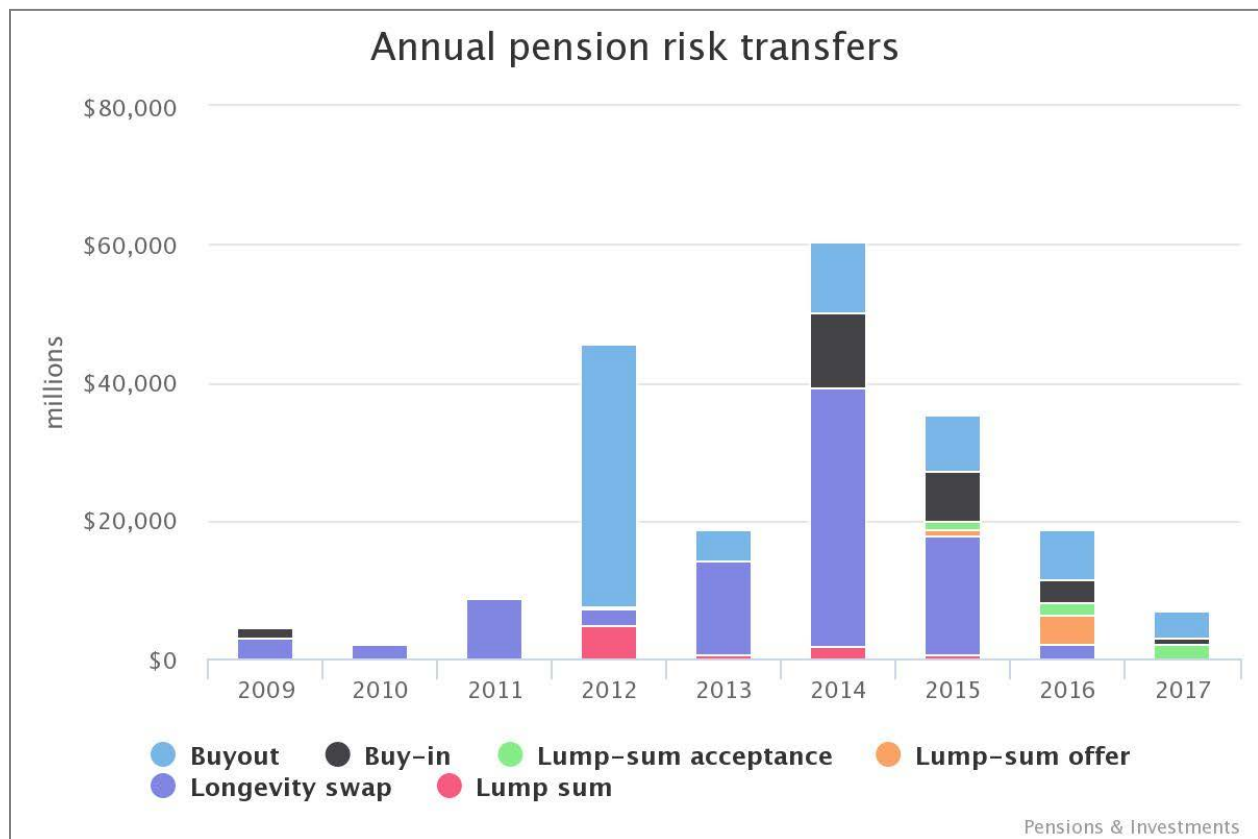


Figure 4. Annual PRT Deals (Source: Pensions & Investments, 2017)

Chapter 5

Considerations for De-Risking Solutions

While there are a number of approaches to risk transfer solutions, there are several aspects that sponsors have to consider before deciding which one to implement. PRT solutions are very expensive, and the high costs related to the transactions must be examined. The timing of the transaction in relation to interest rates, funding ratios, and the possibility of settlement accounting all impact the expense of pension risk transfer and must be taken into account before making a decision.

Cost of De-Risking

While the increasing costs of premiums and funding issues with the current low rate environment are important concerns for sponsors, the related expenses and risk might not be enough to merit doing a high-cost PRT transaction. When an insurer takes on pension obligations, they need to be very conservative in pricing in order to make they can cover the benefits that must be paid out, as well as to make a profit. This means that PRT transactions often come with a high overhead cost. PRT transactions are also very complex and lengthy processes. The larger the size of the transfer, the longer the process and the higher the expenses. For certain sponsors and pension plans, these costs can be just too expensive to justify implementing a pension risk transfer solution.

Interest Rate Timing and Risk

Over the past decade, we have faced declining interest rates. These lower interest rates result in increased market value of plan liabilities. If plan assets do not have similar level of exposure to interest rate changes as the liabilities, the market value of assets will not increase at the same extent, and the plan can end up in a funding deficit. Mismatch between a plan's assets and liabilities have affected the long-term sustainability of traditional defined benefit pension plans ("Practical De-Risking Solutions"). Sponsors must be wary of the interest rate risk exposure their plans are facing before entering a PRT solution.

Lump sum values are inversely related to discount rates. This means that when rates fall, lump sums become more attractive to plan participants. Sponsors also find lump sums more attractive as the rates used to calculate the lump sums are often higher than the rates used to value liabilities (Owens). Both these conditions were met in 2012, and there was significant market activity for lump sum cash-outs during that year. This increase in activity was also due to the five-year phase-in to corporate bond rates, as prior to the Pension Protection Act, lump sum rates were based on Treasury rates. Lump sums follow fixed yearly rates, which have fallen dramatically despite the five-year phase-in (Owens). Figure 5 demonstrates that despite the phase-in, lump sum rates stayed relatively flat since 2008 and even decreasing slightly, instead of increasing as was expected. Plan sponsors who are looking to strategically time a lump sum cash out must take into account interest risk and its impact on an economic and funding basis.

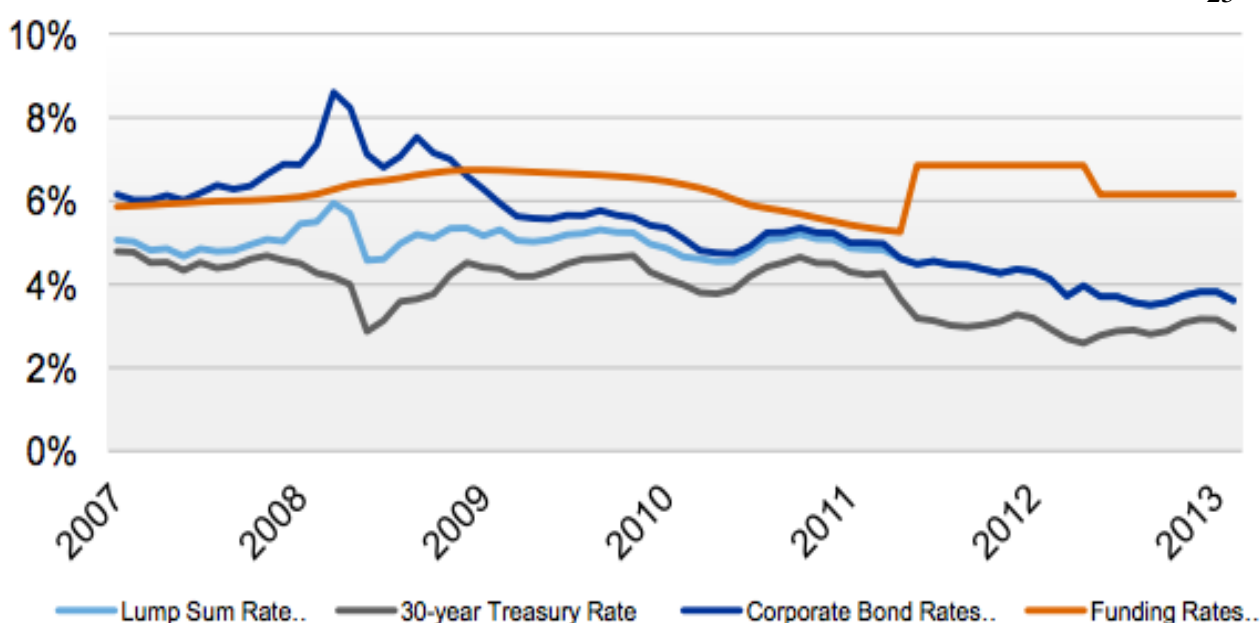


Figure 5. Phase-In Lump Sum Rates Following PPA (Source: Russell Investments, 2013)

Funded Status Percentage

Firms must closely follow adjusted funding target attainment percentage (AFTAP) requirements, as well as calculate how their funded status will change after risk transfer takes place. As part of the Pension Protection Act, sponsors must keep their AFTAP above 80% if they want to participate in risk transfer options. If they are below this threshold, they cannot offer accelerated forms of payment, such as lump sums and annuity purchases. Plan funding status is critical as it determines minimum and quarterly contribution requirements, benefit restrictions, carryover/pre-funding balances, among a number of other results (Geddes et al).

Plans that are underfunded must wait for their status to rise, or contribute the necessary cash amount if they want to pursue PRT solutions. Transferring plan liabilities can lead to reductions in overall funding status, which is why sponsors should be cautious if their plans are

severely underfunded. The funded deficit will increase if there is any loss due to risk transfer, and underfunded plans see larger dips in funded percentage after a transfer event.

Settlement Accounting

Plan sponsors considering pension risk transfer through annuitization or cash-outs need to be cautious of the accounting implications. Pension expense can significantly increase due to accelerated recognition of gains or losses with settlement accounting. To be considered a settlement, the arrangement must be an irrevocable action, relieve the employer of primary pension obligation, and eliminate significant risk related to assets used to affect the settlement (Owens). Buy-out annuity contract purchases or large lump sum payouts usually are settlements.

Settlement accounting is only required when the settlement cost is greater than the total of interest and service cost. When a settlement occurs, the sponsor must recognize the pension plan's unrecognized gain or loss. Accounting costs of settlements have been more severe in the past few years due to recent liability losses driven by declining discount rates, along with asset losses, which usually lead to large accumulated pension losses (Geddes et al). Additionally, fully frozen plans, which have minimal service costs, are also likely to trigger a settlement. These instances of settlement accounting have exacerbated the pension expense impact of certain risk transfer solutions, and sponsors must be careful when deciding whether risk transfer is the proper choice for the firm. Settlement strategies may be structured so that the settlement threshold can be avoided. One method is staggering lump sum payouts over multiple fiscal years (Geddes et al).

Economic Liability

There are often additional “hidden” costs that are associated with pension risk transfer which are not reflected on balance sheets. The cost of purchasing group annuity contracts typically exceeds the Pension Benefit Obligation (PBO), the US GAAP (Generally Accepted Accounting Principles) liability measure. The balance sheet liability is the plan’s funded status or net liability, which is the difference between the assets and liabilities. True economic liability of the plan is the PBO plus all additional liabilities hidden from the balance sheet position (Geddes et al). Current accounting practices allow companies to show the market value of the unfunded expected benefit obligation. However, the netting of liabilities against the assets diminishes the financial leverage involved with this.

Beyond the issues in using the net liability, benefit payment outflows ignore additional liabilities associated with plans such as the present value of plan operating fees and mandatory insurance levies (i.e. PBGC premiums). Additionally, the discount rate used under US GAAP in measuring the pension liability may be overly optimistic. Insurers should make adjustments to the discount rate to account for potential credit risk and other risks associated with bond repayment (Geddes et al). It is important to recognize, however, that even after adjusting for these risks, taking yields out of the bond market and applying them to cash flows does not account for the resources managing a portfolio requires. Certain investment management expenses should be included to determine a more realistic pricing of group annuity contracts.

Furthermore, insurers have been incorporating higher rates of longevity improvement within their annuity contracts. Additional settlement premium may appear significantly

conservative because it reflects a more realistic view of mortality as compared to publicly available mortality studies. This reflection of improvements can be seen as an additional cost of termination and is quantified on balance sheets for plan sponsors. The true economic liability of the plan can be seen as the PBO, plus all additional hidden liabilities (Geddes et al). This can be seen with the pricing of the settlement (buy-out) premium, which is normalized to account for the uncertainty or risk associated with the defined benefit plan. Figure 6 illustrates how the actual settlement premium is usually lower than the value initially projected, once the PBO is adjusted for the true economic liability. The different components of settlement premium and how they total for group annuity pricing are depicted below. The population of participants can also impact the size of the settlement premium. The premium would generally be lower for a population of strictly retirees, than if it included active and terminated vested participants.

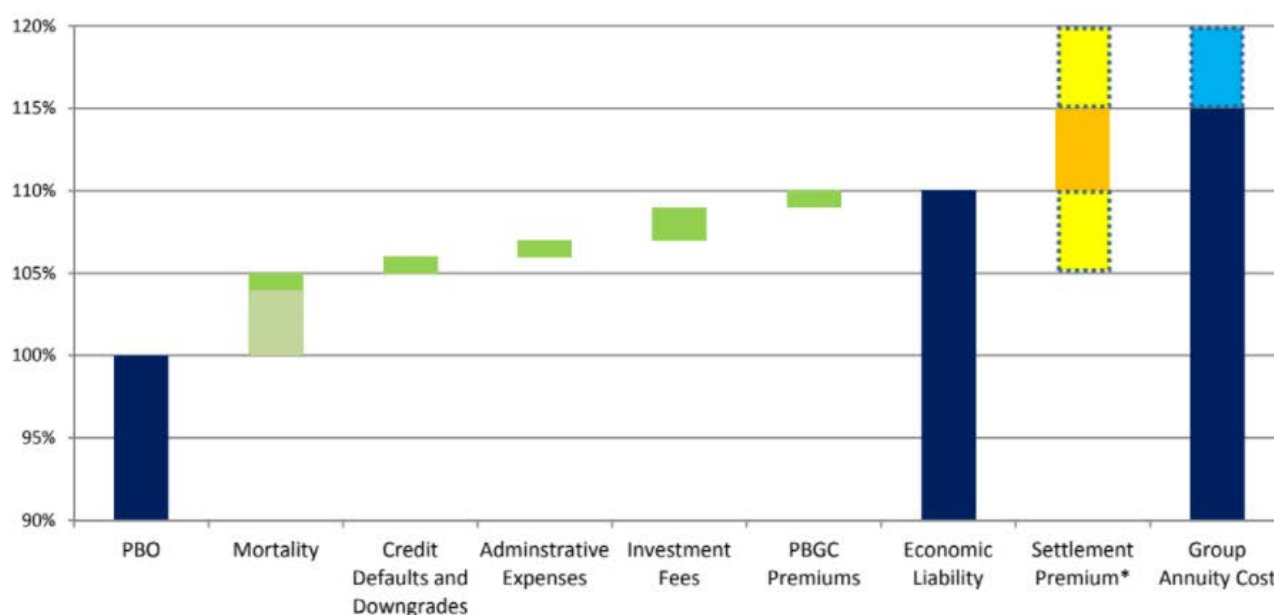


Figure 6. Premium Components for Annuity Pricing (Source: Geddes et al, 2014)

Chapter 6

Opportunities, Challenges, and Consequences of De-Risking

Continued Regulatory Reform

The regulatory environment impacting pensions and de-risking solutions remain uncertain, as there have been continued legislative changes and proposals in Congress. While this uncertainty heavily impacts decision-making with regards to pensions, it also presents a number of challenges and opportunities for pension risk transfer. Following the passage of MAP-21, Congress looked into furthering the act's funding relief in 2014 and updated legislation. This recent act caused the interest rates used for minimum required funding levels to remain higher, which artificially lowered pension obligations used to determine funding levels (Geddes et al). This presents a challenge to continued pension risk transfer activities, as a lower funding requirement is more manageable for sponsors and they will use that money towards other purposes. On the other hand, continued funding relief might encourage some PRT transactions by increasing pension plan's funding percentages above lump sum or amendment restriction thresholds (Klose). Those plans that were previously unable to execute a lump sum program might be able to take advantage of the temporary increase in funding status.

Recent tax reform from the Trump administration might also prove advantageous for risk transfer activity. The Republican tax reform, which was signed into law in December 2017, lowered the corporate tax rate from 35% to 21%. Sponsors have until September 15 to contribute to the pension funds at the current tax rate, which presents an advantageous opportunity for plan

sponsors. In this short period of time, sponsors can reduce PBGC expenses by accelerating funding and reduce plan contributions at the current 35% tax rate, resulting in a low risk, positive net present value (NPV) outcome (Mathur et al). The rate differential allows sponsors to create additional funding, which eases the de-risking process. By de-risking now, sponsors minimize potential costs associated with maintaining a plan through risk transfer utilizing interest rate strategies. Figure 7 demonstrates the advantage that funding today will have for generating a higher NPV benefit versus funding over a 10 year period. A \$1 billion plan that is 85% funded could create \$48.7 million today by eliminating PBGC premiums and deducting the contribution made today at the 35% tax rate. By waiting to fully fund after the new tax rate kicks in, the NPV benefit reduces by \$34.3 million.

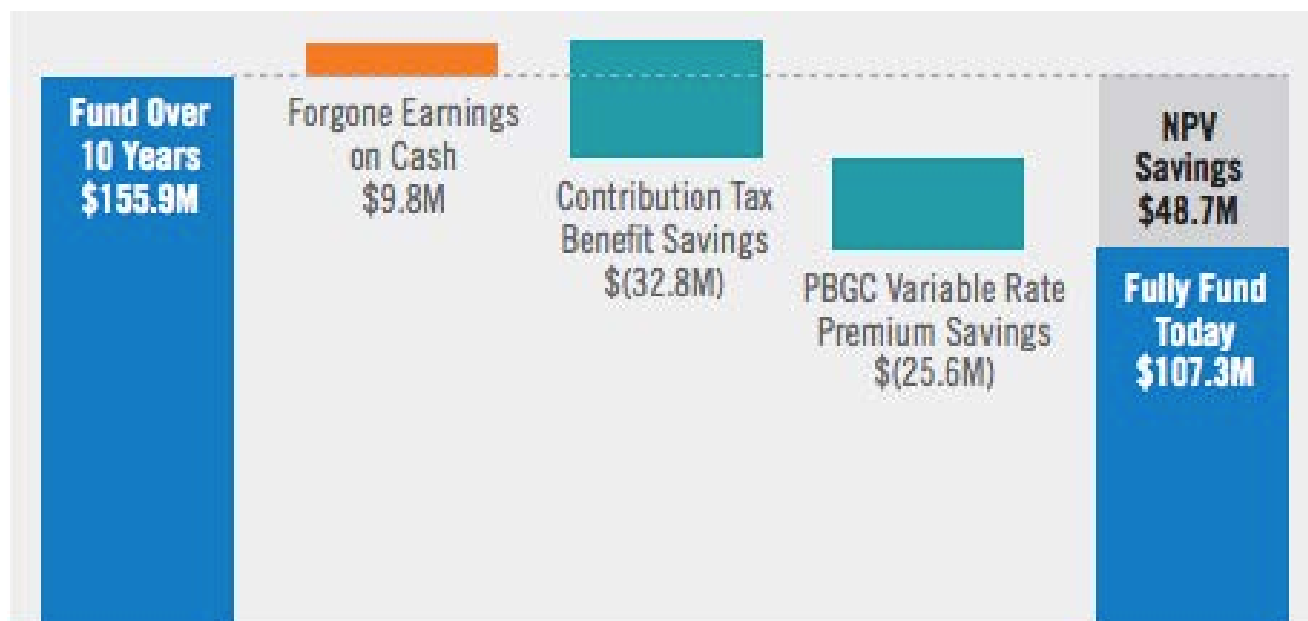


Figure 7. Example of NPV Benefit of Funding Today (Source: Mathur et al, 2017)

Changing Accounting Approaches

There has been serious discussion of updating US GAAP to more similarly match International Financial Reporting Standards (“IFRS”) accounting standards. Some plan sponsors have already adopted certain alternative policies and methods in accordance with IFRS standards, which might prove to be an opportunity from a PRT perspective. Balance sheets under both US GAAP and IFRS now reflect a mark-to-market asset method, for example, which allows companies to use an asset smoothing method for calculating pension expense (Geddes et al). This smoothing introduces significant volatility in pension expense, as it requires actual fair market value of assets as of the measurement date. This potential volatility can harm earnings quality and might even lower the price investors pay for a plan sponsor’s securities. In order to improve the stability of earnings, PRT transactions can be implemented to reduce overall pension exposure (Geddes et al). While asset smoothing spreads the impact of losses and gains over time to gradually reflect any deviations from expectation, some companies have shifted away from a minimum amortization schedule by immediately recognizing asset and liability gains/losses directly in their pension expense. These immediate recognition policies can cause significant fluctuations in pension expenses annually, which may require sponsors to seek out PRT opportunities (Geddes et al).

PRT strategies are also encouraged with the elimination of expected return on assets assumption in order to removal moral hazard. Under US GAAP, pension expense is determined by factoring in expectations of future asset returns through an assumption setting process. This boosts near-term profitability by holding riskier pension assets with higher expected returns (Geddes et al). The profitability improvement does not depend upon outperformance, but rather a justifiable expectation of higher returns. When calculating the net funded position of a pension

plan, International Accounting Standard 19 (“IAS 19”) changes the expected long-term rate of return to the discount rate. The discount rate is generally less than the long-term rate of return, leading to an increase in pension expense (Geddes et al).

The IRS now requires a new calculation of minimum funding based on updated mortality tables, which will spur more PRT activity as discussed in Chapter 3. Additionally, there will be a lag between when the new tables are implemented under US GAAP accounting standards and mandated by the IRS for determining minimum required lump sum values. This short window of time will create an opportunity for plan sponsors to offer participants lump sums lower than the liability recorded on the balance sheet. This arbitrage opportunity to offload a dollar of liability for less than a dollar in assets may cause sponsors to accelerate de-risking actions (Geddes et al).

Going Global

From a global perspective, the market for pension risk transfer and general de-risking strategies has been seeing massive growth, with high potential for both sponsors and insurers. Since 2007, over \$300 billion in liabilities have been transferred to insurers and reinsurers in the United States, United Kingdom, and Canada alone (Kessler). Figure 8 illustrates the totals for liability transfers for the top three countries from 2007-2016, and we can see just how rapidly the PRT market increased in volume.

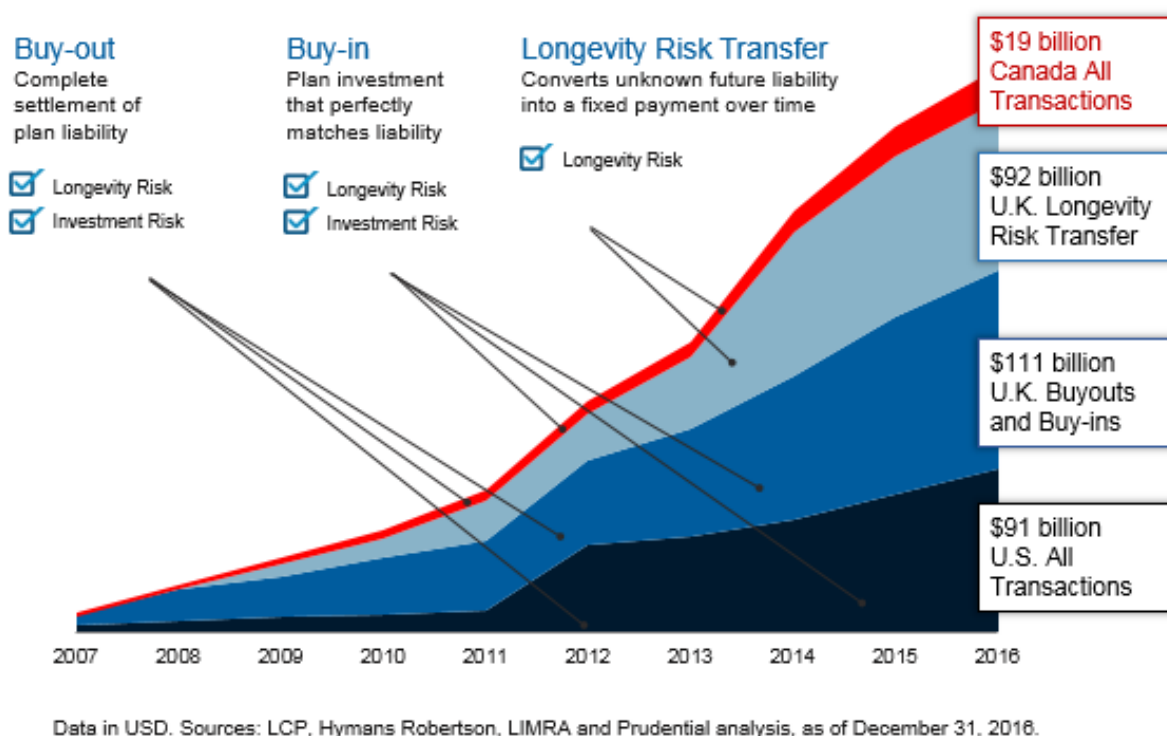


Figure 8. Cumulative Liabilities Transfer Totals (Prudential Financial, 2017)

While the United States has seen a dramatic increase in PRT transactions over the years, it still trails far behind the U.K., which is globally recognized as the leader in pension de-risking. The U.K.'s giant longevity market makes up for a large volume of the country's transactions, as the more mature pension funds in the U.K. are hedging their longevity risk (Kessler). Sponsors in the U.K. typically engage in longevity swaps, where a third party agrees to pay out actual benefit payments to the participant in exchange for an agreed upon fixed stream of payments. A typical longevity transaction is illustrated on the next page in Figure 9.

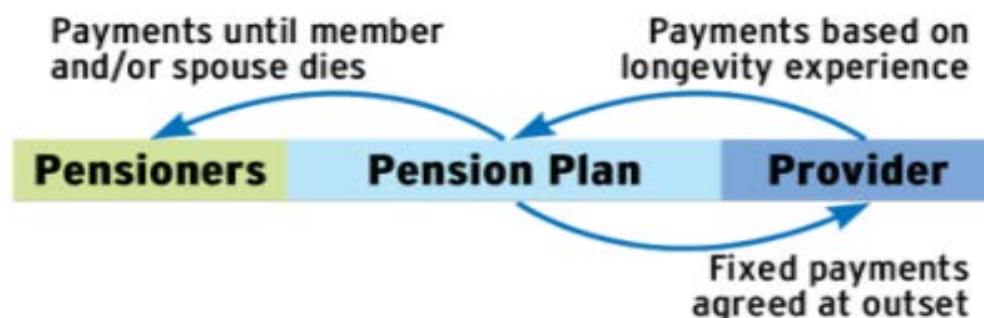


Figure 9. Longevity Swap Model (Source: Tessier)

This enables sponsors to offset longevity risk without locking in low bond yields, but still allowing them to continue managing assets in order to generate additional investment returns or fixed income assets (Tessier). This can be a good de-risking solution for plans that provide indexed benefits (i.e. cost-of-living adjustments) to their participants, which lengthens the duration of exposure and increases longevity and inflation risk. Many plan sponsors in the UK provide indexed benefits (as they are required for contracting out from their Social Security benefits), making longevity risk an attractive option. This type of transaction usually leads to an increase in future contributions because of the ongoing premium payments, so many sponsors would prefer an annuity purchase to offload all of the pension risks to the insurer (Kessler). Still, some sponsors may like to keep some risk in order to seek future reward. It is interesting to note that the only longevity risk transfer deal to occur outside of the U.K. was in 2015 for Bell Canada at \$5 billion.

While the PRT markets for the United States, U.K., and Canada are already established, new markets are emerging and growing globally. Other European nations with matured pension markets such as France and the Netherlands have been recently showing potential for greater risk

transfer activity. As there is a larger push towards more updated mortality tables, regulatory and internal accounting standards that encourage longevity hedging, and competitive pressure, many more sponsors throughout the world will seriously look towards de-risking solutions. The Society of Actuaries specifically cited Switzerland, Germany, Australia, Chile and Nordic countries will begin transacting PRTs between now and 2020 (Kessler). For major insurers in the United States with international branches, this can prove to be a lucrative opportunity in the future.

Issues from a Participant Perspective

One side of pension risk transfer that is not often discussed is the impact it has on participants, and the lack of oversight there is to protect their interests. The consequences of several pension plans being transferred from sponsors to third parties are starting to arise. For example, a future challenge for PRT activity will be holding insurers responsible for the pension obligations they will taking on post-transaction completion. Considering how over \$86 billion in pension obligations has been transferred over the past 5 years, there is a large administration challenge in keeping an accurate record of beneficiaries for insurers. Metlife has recently come under fire for losing track of 2% of their pension clients, which is equivalent to 13500 individuals (“New Details into Metlife”). The firm had given up trying to locate the pensioners after only two attempts. This business problem started 25 years ago for the company, back when they followed a policy of attempting to reach beneficiaries twice — once when at age 65 and again at 70, when they were required by federal law to start drawing benefits (“New Details into

Metlife”). As risk transfer activity does not appear to be stopping, insurers must follow a more rigid process in tracking beneficiaries to avoid this sort of reckless oversight.

No longer being protected by the federal government and ERISA is also a concern for participants, and backlash from pensioners following PRT transactions is taking the form of legislative battles. Following Verizon’s \$7.5 billion annuity buy-out with Prudential, the 50,000 plan participants who remained in Verizon’s pension plan sued the company over the alleged mismanagement of the plan from the transaction. The pensioners were concerned that their interests would no longer be protected, as their pensions are now to be regulated by the state government and insurers (Reiser). The case of *Pundt v. Verizon Communications Inc.* was complicated, as the plan participants were fighting to get standing, despite not being able to prove actual or imminent harm because their benefits were not currently impaired. The case remained in court for several years until eventually, the Fifth Circuit held that the plan participants lacked constitutional standing to sue for breach of fiduciary duty against Verizon because, “the risk to participants’ benefits was too attenuated”, despite the plan only being 66 percent funded (Reiser). While the result of this case worked out in Verizon’s favor, contradicting Supreme Court decisions regarding ERISA cases requires firms to be prepared for litigation.

Additionally, there are issues with participants receiving a reduction in their retirement assets when accepting a lump sum offer. The Government Accountability Office (GAO) found that the amount of the lump sum payment participants are offered may be less than their retail value. This because the mortality and interest rates used by market insurers are different from the rates used by sponsors (“Private Pensions: Participants”). The discrepancy in value is especially heightened in the case of lump sums for younger participants and women. There are also

investment challenges with lump sums, as some participants do not save their lump sum for retirement, but instead spend it all. For some retirees, the prospect of receiving a relatively large sum of money immediate holds high appeal in the short term, and they are not educated on the real value of their retirement benefits (“Private Pensions: Participants”). The GAO has recommends that the Department of Labor increase oversight of lump sum offers, and provide participants more information about how lump sum payments will replace and impact their retirement security.

All of these cases indicate that there needs to be increased regulation and government oversight in place in for PRT deals in order to protect the interests of participants. Some recommendations include (1) more thorough background checks for participants records, which must be updated on a two-year basis; (2) proper information provided to participants about the value of their lump sum offering vs. annuity purchase; and (3) reassessing of the mortality tables and interest rates used in lump sum calculations to reflect actual market value. While these recommendations might put a financial and administrative strain on insurers, it is important that some protection is in place for participants.

Chapter 7

Conclusion

The landscape for retirement has seen remarkable change over the course of the past few decades. The rapidly evolving pensions market has currently been focused on PRT activity in order to offset the various risk associated with maintaining traditional pension plans. This paper studied the combination of economic and regulatory variables that served as a catalyst for the massive increase in risk transfer transactions in the recent years. Specifically, three drivers for de-risking were examined: legislation that specified minimum funding levels, the financial crisis that resulted in increasing PBGC premiums and a low-interest rate environment, as the serious threat of longevity risk from improving mortality rates. There are a number of different approaches to mitigating and eliminating risk with pension plans, and firms have been applying a unique combination of strategies tailored to their individualistic plan needs.

Looking towards the future, strict pension regulation and low-interest rates will continue to put pressure on sponsors to examine and execute more de-risking solutions. The main drivers for PRT activity in the U.S. will also be conducive to the growth of the PRT market globally, especially in the matured European markets. Policy change must be implemented in order to protect the interests of plan participants after the execution of a PRT solution, especially through an increase in government oversight. While it is difficult to predict whether the impact of the massive volume PRT deals will be positive or negative, there is no doubt that de-risking solutions are here to stay.

Appendix A

List of Largest PRT Transactions Globally

Largest PRT Transactions by Assets Involved					
Type	Asset owner	Employees covered	Assets involved	Country of plan	Date
Buyout	General Motors Co.	118,000	\$ 29,000	United States	6/11/2012
Longevity swap	BT Pension Scheme	NA	\$ 27,400	United Kingdom	7/4/2014
Longevity swap	Aviva PLC	19,000	\$ 8,400	United Kingdom	3/6/2014
Buyout	Verizon Communications Inc.	41,000	\$ 7,500	United States	10/17/2012
Buy-in	ICI Pension Fund	NA	\$ 5,000	United Kingdom	3/26/2014
Longevity swap	BAE Systems 2000 Pension Plan	NA	\$ 4,900	United Kingdom	2/21/2013
Longevity swap	Rolls-Royce Holdings PLC	37,000	\$ 4,680	United Kingdom	11/28/2011
Longevity swap	MMC U.K. Pension Fund	7,500	\$ 4,500	United Kingdom	9/14/2017
Longevity swap	AXA	11,000	\$ 4,400	United Kingdom	7/13/2015
Longevity swap	AstraZeneca Pension Fund Trustee	10,000	\$ 4,100	United Kingdom	12/16/2013
Longevity swap	BCE Inc.	NA	\$ 4,000	Canada	3/3/2015
Longevity swap	ITV PLC Pension Scheme	12,000	\$ 4,000	United Kingdom	8/22/2011
Buyout	TRW Automotive Holdings Inc.	22,000	\$ 3,900	United Kingdom	11/27/2014
Lump sum acceptance	General Motors Co.	12,600	\$ 3,900	United States	10/31/2012
Longevity swap	Heineken	19,000	\$ 3,600	United Kingdom	9/14/2015
Buyout	Motorola Solutions Inc.	30,000	\$ 3,100	United States	9/25/2014
Longevity swap	RSA Insurance Group	NA	\$ 3,100	United Kingdom	7/27/2009
Lump sum offer	International Paper Co.	47,000	\$ 3,000	United States	4/1/2016
Longevity swap	ScottishPower U.K. PLC	9,000	\$ 3,000	United Kingdom	2/9/2015
Buyout	Philips Pension Fund	26,000	\$ 2,900	United Kingdom	11/5/2015
Longevity swap	BAE Systems	17,000	\$ 2,900	United Kingdom	12/19/2013
Buy-in	ICI Pension Fund	NA	\$ 2,800	United Kingdom	10/29/2015
Buy-in	Total U.K. Pension Plan	NA	\$ 2,700	United Kingdom	6/9/2014
Buyout	WestRock Co.	35,000	\$ 2,500	United States	9/9/2016
Buy-in	Civil Aviation Authority Pension Scheme	NA	\$ 2,500	United Kingdom	7/21/2015

(Source: Pensions & Investments, 2017)

Appendix B

Pros and Cons of Buy-in vs. Buy-Out Annuity Purchase

Buy-in	Buy-out
+ Pros and Cons –	
<ul style="list-style-type: none"> – Does not reduce pension plan's liabilities + Can be converted to a buy-out at no additional cost + Does not create the need for a cash contribution – PBGC premiums continue for covered participants + Does not trigger settlement accounting 	<ul style="list-style-type: none"> + Reduces pension plan's liabilities – May trigger the need for an additional cash contribution + Eliminates PBGC premiums for covered participants – May trigger settlement accounting

(Source: McDonald, 2016)

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Exam P/1 Probability	Sep 2016
Exam FM/2 Financial Mathematics	Sep 2017
VEE Economics and Finance coursework completed	May 2016

PROFESSIONAL EXPERIENCE

Prudential Financial	Newark, NJ
<i>Actuarial Intern – Retirement Actuarial Forecasting</i>	<i>May 2017 – Aug 2017</i>

- Performed user acceptance testing for model redesign for Asset Adequacy Testing (AAT)
- Expedited model affirmation process for AAT model through coordinated communication with Prudential's Actuarial Model Governance group
- Streamlined internal swap run process for GGY Axis by constructing various actuarial tools and macros

Long Term Care Group	Trevose, PA
<i>Actuarial Intern</i>	<i>May 2016 – Aug 2016</i>

- Analyzed and updated incident ratios for several major insurance companies according to variable factors
- Identified and examined future trends within the Long Term Care industry on both domestic and global levels
- Refined Microsoft Excel and Access skills to perform actuarial calculations and data validation

Karat^ (Technical Assessment Startup)	Seattle, WA
<i>Customer Support Manager and Digital Content Editor</i>	<i>May 2015 – Nov 2015</i>

- Reviewed technical interviews for various software companies to ensure scoring and accuracy consistent with Karat's standardized assessment system

LEADERSHIP EXPERIENCE

Lead Scholar Programming Assistant	University Park, PA
<i>The Schreyer Honors College</i>	<i>Apr 2016 – May 2017</i>

- Lead efforts of a five-member team that serves as a liaison between the Honors College staff and students
- Plan academic and community related events to promote the values and mission of the Honors College for over 1500 students in the Schreyer learning-living community

<i>Schreyer Diversity Department</i>	<i>Apr 2015 – Apr 2016</i>
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- Facilitated scholar activity relating to the promotion of diversity and inclusion within the Honors College, including serving as Chair of the Student Programming subcommittee for the Schreyer Diversity Council
- Spearheaded new initiatives for constructive dialogue on diversity issues through Schreyer Town Halls, diversity blogging, and the creation of a student-led programming committee

Schreyer Career Development Program	University Park, PA
<i>Executive Board Member</i>	<i>May 2016 – Present</i>

- Strengthen and develop the professional skills of 150 Schreyer Scholars in a diverse range of majors via mentoring programs, networking workshops, and resume reviews