

The end of the beginning? Private defined benefit pensions and the new normal

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Executive summary

About this report

The collapse of BHS and concerns over the future of Tata Steel have put the sustainability of **private sector defined benefit (DB) pension schemes** firmly into the spotlight. These types of DB schemes promise a set payment to their members in retirement based on salary and years of service, but there are growing concerns that many such schemes and their sponsors will be unable to fulfil their promises at a time of rising life expectancy and falling interest rates.

With scheme liabilities rising faster than assets, firms may be diverting resources away from supporting the wages of current staff or making productivity enhancing investments in order to plug the pension deficit. But the alternative of capping pension scheme pay-outs could leave those in retirement caught short. This dilemma sits at the heart of the challenge facing policymakers, regulatory officials, pension fund trustees, scheme members and wider society. In this context, this report explores the scale of the DB pensions' crisis, outlines what its implications have been for firms and employees and examines the prospects going forward. We conclude by offering some thoughts on solutions. Rather than a technical paper, this report is intended to be a discussion piece in order to stimulate further debate on this highly important issue.

Headline findings

Background: Key facts and figures

- DB pension schemes pay a fixed amount of pension income to their members based on an employees' salary and years of contribution. Longevity risk and interest rate risk is born by the scheme and its sponsor (employer) not the member (employee).
- With widespread concerns about the affordability of DB pensions, many schemes have closed to new members. In 2016, only 13% of schemes were open to new members, with 50% being closed to new members and 35% being closed to future accrual.
- DB pensions are regulated by The Pensions Regulator (TPR) whose primary objective is to secure full benefits for members. If schemes and their sponsors go bust, the Pension Protection Fund (PPF) can take over scheme assets and continue to pay members – albeit at a reduced rate.

Rising pension scheme deficits and their causes

- According to the PPF, total scheme deficits peaked in August 2016 when DB scheme liabilities stood at £1,919 billion and scheme assets were valued at £1,460 billion. This represents an overall deficit of £459 billion.
- The latest data from October 2016, shows the deficit has fallen back to £328 billion, on account of a decline in liabilities to £1,766 billion.
- Since February 2011, schemes have consistently been in deficit, driven by rising life expectancy and in particular falling interest rates.

Falling interest rates

- Scheme valuations typically calculate liabilities using the interest rate on safe assets such as UK government bonds. But these have seen their real returns fall from a thirty year high of 6.8% in 1994 to a prolonged period of negative returns between 2010 and 2013. Although bond yields have begun to generate positive yields again, they are still below 2%.

Rising life expectancy

- Barring the last couple of years, life expectancy has consistently surpassed expectations. In 1977, period life expectancy for men born in 2014 was forecast to be only 70.8 years. By the 2014 forecast, men born in the same year were expected to live to nearly 80.
- In fact, when looking at cohort life expectancy which is considered a more realistic measure for individuals, life expectancy for men born today is over 90 and for women it is over 93.

How big a problem is the deficit?

Beware of large numbers

- The proportion of schemes in deficit is volatile, but as of October 2016, 80.6% of schemes were in deficit.
- Small changes in the returns on gilts and equities can have a significant impact on the deficit. According to the PPF's estimates, a 0.1 percentage point change in gilt yields could reduce the deficit by over £20bn.
- While scheme valuations of liabilities are calculated using historically low yields on gilts, the real 5-year annual average return on UK pension assets is actually 8.4%. The real 10-year return on UK pension assets is 6.5%.

But a sizeable number of firms are in trouble

- Between 10 to 17% of schemes are in serious risk of default. At the upper end, this accounts for approximately 1,000 schemes or 1 in 6 private sector schemes.
- These are schemes whose businesses are likely to fail before they have repaired the deficit in an underfunded closed DB scheme.
- Members of those schemes deemed most likely to fail could lose up to 20% of their pension benefits in the case of either scheme or company insolvency.

...and plugging deficits is driving down wages

- Since the year 2000, pension contributions have accounted for an increasingly large proportion of total employee compensation. As a result, where wages once accounted for more than 87% of total compensation, they now account for around 83%.
- While some of those pension contributions will be for current employees, and therefore represents deferred consumption, around half has been for servicing the deficits of DB pensions which have since closed to new members.
- We calculate that if the money being used to plug pension deficits between 2000-2015 had been redirected into wages, by 2015, average wages before tax would have been £1,473 (or 6%) higher.

How persistent might the DB challenge be?

Life expectancy is likely to continue rising

- While we project the number of people in receipt of DB pensions to peak at 5.8 million by around 2020, the continued increase in life expectancy means that there will still be at least 3 million recipients in 2060 and around 1 million in 2070.
- Similarly, despite legislated changes to State Pension Age to help contain the amount of time spent in retirement, those retiring at State Pension Age in future decades will continue to spend a longer time in retirement than we do today.

We seem to be in the midst of a new normal

- Weak growth and low returns on bonds have been highly persistent since the financial crisis. Up until now this has been portrayed as a temporary problem which will eventually be reversed. But there is an emerging view that current economic weaknesses are structural and that we are in a new normal where the trajectory of growth is permanently lower.
- The middle to late period of the twentieth century may turn out to be the true anomaly. The returns on bonds and other assets may not therefore revert back to the levels last seen in the 1980s and 1990s.

Conclusions and recommendations

- Around 1 in 6 schemes are unlikely to be able to fulfil their pension promises in full. In the longer term, a new economic normal plus longer lives may exacerbate the current issues facing schemes. In turn, rising deficits create problems for firms since some must divert resources away from investing in their own futures and towards plugging deficits.
- This environment creates the potential for a downward spiral where firms seek to plug deficits at the cost of reduced profitability which may ultimately make the business and pension scheme unviable.
- With the potential for a vicious circle in mind, we think that there needs to be a change of direction in the approach to regulating DB pensions. At the moment, the regime is predicated on the notion that members must secure full pension benefits. Our view is that the regime should shift focus to take account of member's interests **as well as** that of the firm and its employees. It must, in other words, weigh up the relative merits of continuing to pay pensioner members in full against the costs to the firm, its employees and ultimately the long term viability of the scheme itself. In this context, we have set out the following principles for reform.
 - Revise the TPR's remit to better take account of the interests of the firm and its employees as well as its members.
 - Ensure the TPR takes a proactive business model perspective on regulating the sector.
 - Ensure TPR, PPF and pension scheme trustees take a long term view on the changing external economic and demographic environment.

Introduction

Defined benefit (DB) pensions are often referred to as the gold standard when it comes to occupational pension schemes, providing income security for those in retirement. But promises were made to employees during a different time, one of solid income growth and high interest rates. Individuals were only expected to live into their early 70s at best, so these promises were realistic. And this would be underpinned by significant contributions from employees and employers. This was the contract that millions of workers signed up to. Yet today, the vast majority of private sector DB pension schemes are closed to new members and there is a real possibility that many current pensioners will receive less than what they were originally promised by their employers. How did it come to this?

Debates about the future of private sector DB pensions have entered the mainstream. Barely a day passes without a new astronomical figure highlighting the size of the deficits facing schemes. While the figures may be large, getting a handle on what they actually mean for scheme members, employers and their employees is no easy task, but a necessary one if wide reaching solutions are to ever be achieved. This problem is exacerbated by a general lack of publicly available data on schemes in difficulty and, critically, the financial position of the sponsors (employers).

With regards to the size of the problem, there appear to be two competing schools of thought. On the one hand, are those who argue that rising deficits are reflective of the increasing difficulty many firms are facing to meet their pension obligations. Urgent action is therefore required to prevent firm and scheme insolvencies, including the capping of benefits for current pensioners, if we are to avoid redundancies and even larger losses for scheme members. On the other hand are those who argue that big deficits are a crude actuarial construct rather than a true reflection of the weaknesses of schemes and their sponsors. Once returns on bonds revert back to levels seen before the financial crisis and subsequent quantitative easing, deficits will be reversed. As such, we do not need to take urgent action in the face of today's deficits.

What does this report find?

This report argues that rising deficits may be having a material impact on the wages of current workers by diverting firms' resources away from compensating current employees and towards funding the pensions of former workers. Through new analysis of the ONS' National Accounts, we find that wages may have been, on average, as much as 6% higher (£1,473) in 2015 if the money used to plug deficits had instead been directed towards boosting the pay of current workers. In addition, as many as 1 in 6 pension schemes are unlikely to be able to fulfil their pension promises in full, and this situation is potentially exacerbated by a new economic normal plus longer periods of time in retirement. Indeed, we conservatively estimate that despite most DB schemes having closed to new members, the number of retirees receiving a DB pension will remain in the millions well into the latter half of this century – 3 million by 2060 and 1 million by 2070. At the same time, we argue that returns on bonds are unlikely to revert back to the unprecedented highs of the latter half of the twentieth century. As a consequence, we believe the DB problem is very real and requires coordinated and immediate action from government and the regulator to address the challenge.

In order to reach these conclusions, the report explores the latest evidence and presents new data analysis on the scale of the problem. It contains six chapters:

Chapter 1 goes back to basics. It begins by outlining how private sector DB schemes differ from other forms of pension saving and the extent to which membership of these schemes has fallen in recent decades, before going on to discuss how they are regulated and how compensation is managed.

Chapter 2 traces the driving forces behind rising scheme deficits including falling real returns on government bonds and rising life expectancy. It also discusses pension scheme asset allocation and how this has shifted since the financial crisis.

Chapter 3 discusses what the overall pension deficit really means in terms of the sustainability of private sector DB by focusing on the two schools of thought mentioned above. It then refers to recent evidence about the number of schemes thought to be at risk of insolvency and how this could affect the retirement benefits of scheme members.

Chapter 4 outlines our new analysis of ONS data on the wider economic costs of plugging the pension deficit including its impact on wages, as well as discussing previous evidence about how deficits have impacted on firm behaviour.

Chapter 5 contains a detailed discussion about the potential for longer lives and lower interest rates on government bonds. Both of these issues are of critical importance for determining the future scale of the challenge facing private sector DB schemes. As a result, the chapter reads as two mini essays in order to reach reasonable conclusions on our likely economic and demographic future.

Chapter 6 concludes the report by highlighting some of the solutions pension fund trustees and sponsoring companies can take to transfer risks to third parties, as well as outlining a number of recommendations for public policy and regulation.

Back to basics

Summary

- DB pension schemes pay a fixed amount of pension income to their members based on an employee's salary and years of contribution. Longevity and interest rate risk is born by the scheme and its sponsor (employer) not the member (employee).
- With widespread concerns about the affordability of DB pensions, many schemes have closed to new members. In 2016, only 13% of schemes were open to new members, with 50% being closed to new members and 35% being closed to future accrual.
- DB pensions are regulated by The Pensions Regulator (TPR) whose primary objective is to secure full benefits for members. If schemes and their sponsors go bust, the Pension Protection Fund (PPF) can take over scheme assets and continue to pay members – albeit at a reduced rate.

What is a defined benefit pension scheme?

A defined benefit (DB) pension scheme is a type of pension plan in which the sponsor (employer) promises a specified income to an employee upon their retirement. This amount is pre-determined based on the employee's earnings history and years of service, rather than being solely dependent on contributions and investment returns. Often retirement income will be based on a proportion of someone's final salary or average earnings over their career. Partners and dependents may also continue to receive pension payments upon death.

Pensions are usually received at the State Pension Age, although some schemes may set their own retirement age. DB schemes place a heavy responsibility on the employer, which is obliged to make set annual payments to retirees, even if the investment returns of the scheme's assets are not generating sufficient income. DB schemes can either be funded schemes, where assets are set aside to finance the obligatory payments, or unfunded schemes, where they are not. Unfunded schemes are common in the public sector, whereas private sector DB pensions are funded. It is these private DB schemes that are the central focus of this report.

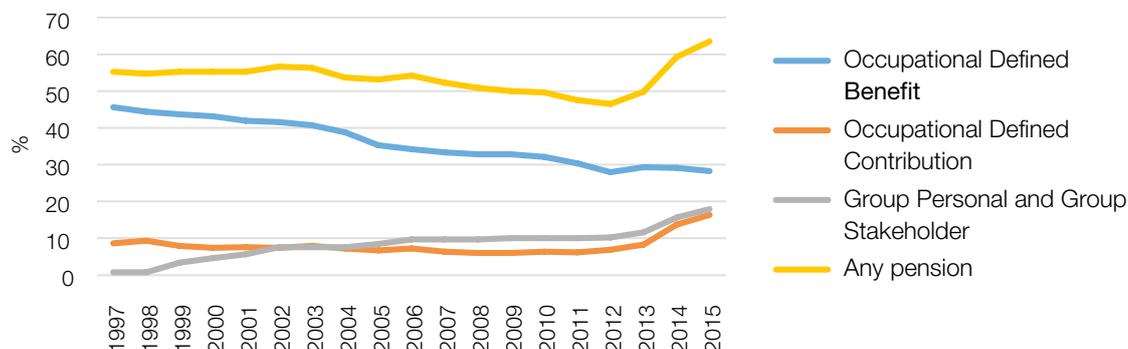
DB pension schemes sit in stark contrast to defined contribution (DC) schemes. In the case of the latter, employers and employees contribute a certain amount into an individual's pension pot which then grows over time depending on the relative size of the contributions and investment returns. Retirement income depends on the size of the accumulated pension pot at retirement and how the retiree decides to use this pot to generate an income into old age. If contributions or investment returns are too low, the risk of income shortfalls in retirement is born completely by the individual. In funded DB schemes, if contributions or asset returns are too low, the scheme's sponsor will still have to pay out on the promises it made to employees even if this means the scheme as a whole runs a deficit.

Schemes are managed by trustees. These can be individuals who have been nominated by members or hired by the sponsors due to their financial experience and knowledge. If the sponsoring company wishes to run the scheme itself, it becomes known as a corporate trustee. The duties and responsibilities remain the same though. Trustees must act within the trust's rules, and act in a manner which is both prudent and honest. The main objective of trustees is to act in the best interest of the beneficiaries of a scheme. Trustees have many powers, including deciding on investment strategy and taking responsibility for investing firm assets, as well as augmenting rules, benefits and membership.

Falling DB membership

For many years DB pensions have been the most prominent form of pension saving amongst employees. While the proportion of the workforce with DB schemes has fallen over the last twenty years, around 30% of today's workforce are still part of such a scheme. Indeed, as of 2015, there was still a greater proportion of the workforce with DB schemes than DC despite the introduction of auto enrolment.

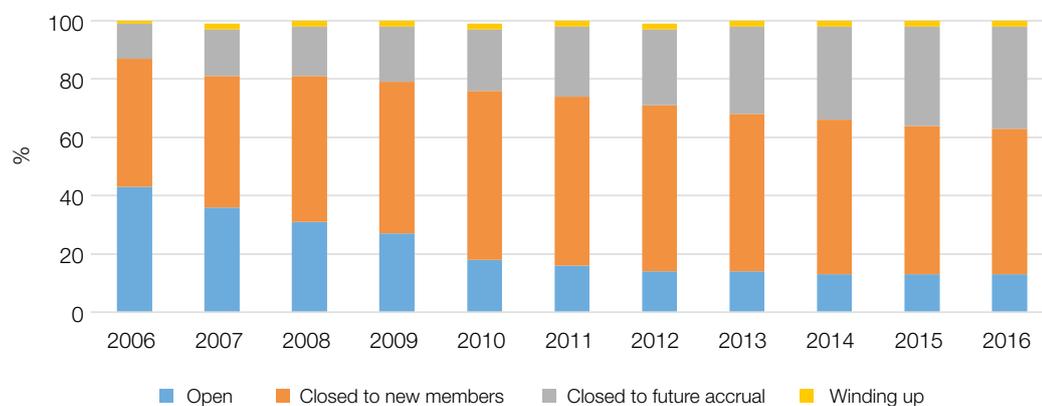
Figure 1: Proportion of employees with workplace pensions: by type of pension



Source: ONS annual survey of hours and earnings, pension tables

The decline in DB pensions is indicative of a growing concern among employers who must bear the responsibility of providing pension payments despite growing liabilities relative to scheme assets. As employers seek to protect themselves from the growth of future liabilities, the number of schemes open to new members or future accrual has fallen. In 2006, 43% of schemes were open to new members, but this has steadily declined to just 13% of schemes in 2016.

Figure 2: DB scheme by status



Source: Pension Protection Fund/The Pensions Regulator

What protection is offered to DB members?

With millions of people depending on their DB pensions to provide them with retirement income, and in the wake of the collapse of Equitable Life, the Government intervened with the Pensions Act 2004 to establish a regulatory body and safety net. The Pensions Regulator (TPR) and Pension Protection Fund (PPF) were created by Parliament to ensure that pension schemes acted in accordance with the rules and regulations set out for them so that the interests of their members were well protected.

The Pensions Regulator

The remit of TPR is to ensure that members of occupational and personal (where there is a direct payment arrangement) pensions schemes have their entitled benefits protected.

TPR is allowed to investigate schemes through data collection and receiving updates on the activity of the scheme. Scheme managers/trustees also are obliged to notify the Regulator in the event of any information changes which may impact the scheme. The Regulator can demand all documents deemed necessary to assess the sustainability of the scheme.

If there is any reason to believe the security of member’s pensions is in doubt, the Regulator can take several courses of actions. This may involve recovering any unpaid contributions, or freezing the activity within a scheme, to allow time for investigation.

Trustees deemed to be unfit for the role can be prohibited from continuing. If there are any further breaches of these conditions, then a fine can be imposed and in some cases, prosecutions can be made in criminal courts.

Furthermore, DB schemes are obliged to meet a “statutory funding objective”, which is a minimum level

of funding required in order for the scheme to have sufficient assets. This ensures the scheme is not left underfunded. If TPR believes that the scheme is being underfunded, then they can take action to make the sponsor contribute to the sufficient level.

The Pension Protection Fund

Despite the best efforts of the Regulator, there may still be a scenario where a scheme is no longer in a position to meet its obligations. If a firm becomes insolvent for example, and the scheme has insufficient assets to cover its obligations, the PPF intervenes to provide some compensation. The PPF is funded by a levy on all eligible DB schemes.

When an employer becomes or is at serious risk of becoming insolvent, the scheme enters the PPF assessment period, where the data held for the scheme is checked for accuracy so that the PPF knows exactly how vulnerable the scheme is and how much compensation would be appropriate. During this period, members are informed of the process and progress.

In rare cases, a Regulated Apportionment Arrangement may be pursued. This allows a firm to transfer assets to the PPF and removes the burden of pension payment to help reduce the threat of insolvency. This would only be allowed if the assessment showed that the burden of pension payments was making it more likely for the firm to go insolvent.

If it becomes clear that the scheme cannot be saved, then the PPF serves as an independent “life boat” offering compensation to those who have lost their pensions as a result of insolvency. This compensation is likely to be well below the originally agreed amount of the scheme.

The PPF level of compensation is 100% for those who have reached normal retirement age at the point the employer goes insolvent, with benefits in respect of post-1997 service increasing by CPI (subject to a ceiling of 2.5%). For deferred and active members, compensation is set at 90% of the value of the pension at the same point. The cap at age 65 is set at £37,420 a year (resulting in a maximum annual pension of £33,678 once the 90% cap has been applied). Benefits earned since 1997 will be increased in line with CPI each year, again subject to a cap of 2.5%¹.

¹ Pensions and Lifetime Savings Association (2016) “DB Taskforce: Interim Report”

Rising scheme deficits and their causes

Summary

- Total scheme deficits peaked in August 2016 when DB scheme liabilities stood at £1,919 billion and scheme assets were valued at £1,460 billion. This represents an overall deficit of £459 billion.
- Since February 2011, schemes have consistently been in deficit, driven by rising life expectancy and in particular falling interest rates which are used to calculate liabilities.
- Barring the last couple of years, life expectancy has consistently surpassed expectations. In 1977, period life expectancy for men born in 2014 was forecast to be only 70.8 years. By the 2014 forecast, men born in the same year were expected to live to nearly 80.
- Scheme valuations typically calculate the liabilities using the interest rate on safe assets such as UK government bonds. But these have seen their real returns consistently fall from a thirty year high of 6.8% in 1994 to a prolonged period of negative returns between 2010 and 2013. Although bond yields have begun to generate positive real yields since, they are still below 2%.

The overall size of the deficit

DB schemes are said to be in deficit if the value of the scheme's assets are worth less than the projected cost of providing pensions to scheme members. All else being equal, the larger the deficit, the higher the chances of the scheme failing to fulfil its obligations to pay pensioner members.

The Purple Book, a publication by the PPF collects data from DB schemes across the country. As noted earlier, the PPF was established to provide compensation to members of DB pension schemes whose employers have become insolvent and where the scheme's assets, and assets recoverable from the business, are insufficient to provide a minimum level of benefits. In order to assess the position of eligible schemes the PPF asks all schemes (nearly 6000) to carry out a Section 179 valuation every three years. This valuation determines the ability of a scheme to provide benefits at least at the level of PPF compensation. The results of the valuation are used by the PPF to determine the overall level of Section 179 underfunding across eligible pension schemes in the UK².

Figure 3: DB pension assets and liabilities (purple book sample)



Source: Pension Protection Fund/Pensions Regulator

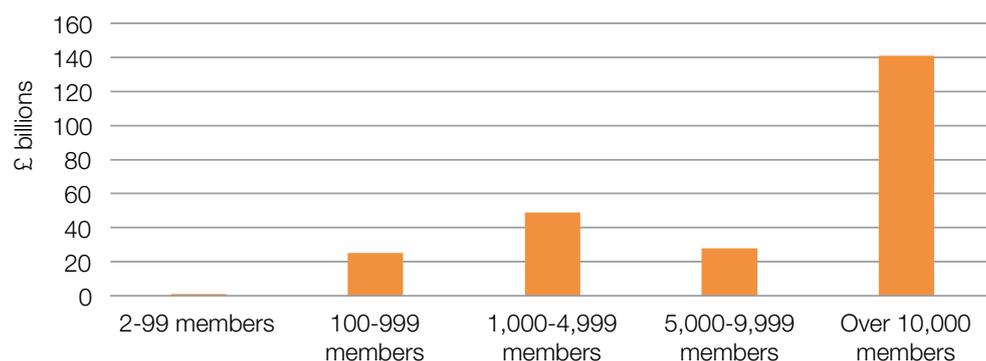
According to this method, liabilities have consistently exceeded asset values since late 2011. The most recent figures suggest that the pension deficit has now reached £328 billion³. However, in August the deficit was £459.4 billion, which highlights the volatility of DB asset and liability values. It should be noted that this is lower than the amount which would be required to secure full benefits for employees because PPF compensation is below full benefits. It is also below the level required for a full buyout – i.e. how much a scheme would have to pay an insurance company to guarantee its full liabilities. It does, however, give some indication of the level of systemic risk associated with DB liabilities. Deficits

² There are other methods for valuing pension deficits, but for the sake of consistency, we only refer to this measure of the pension deficit throughout this report.

³ As of October 2016: <http://www.pensionprotectionfund.org.uk/Pages/PPF7800.aspx>

are largest for the biggest schemes – with those having over 10,000 members accounting for over £140bn of the total deficit.

Figure 4: Pension deficits by size of scheme membership (2015)



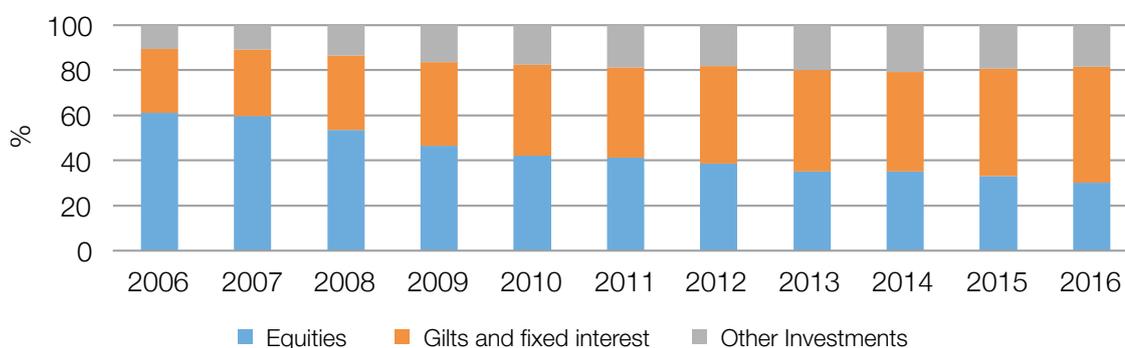
Source: Pension Protection Fund/ Pensions Regulator

What are the causes of growing deficits?

Over the last decade, the asset allocation of DB pension schemes has dramatically changed with a significant shift away from equities towards safe fixed income assets – such as government bonds. The chart below shows the allocation of assets in defined benefit schemes.

In 2006, equities accounted for 60% of total asset allocation. In contrast, the proportion of assets held in fixed interest bonds only stood at 28.3%. Yet by 2016, only 30.2% of total assets were invested in equities, while 51.3% were invested in fixed interest bonds. Other forms of investments (including cash) have also become increasingly popular. In 2006, other investments only made up 10.6% of total asset allocation, whereas in 2016 this had risen to 18.4% although this is below the 2014 peak of 20.9%.

Figure 5: Asset allocation (as proportion of total assets)

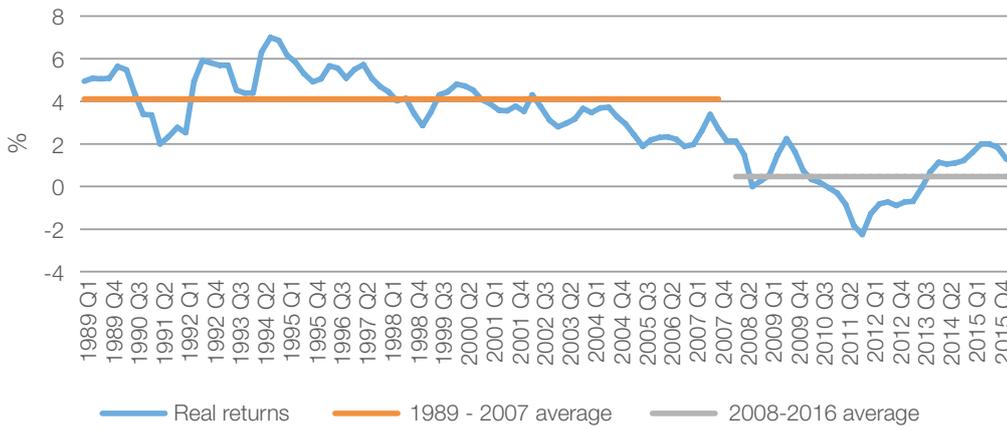


Source: Pension Protection Fund/ Pensions Regulator

The shift away from equities to government bonds coincides with the 2008-9 financial crisis, a period of intense volatility in the stock market and other assets. It also reflects the fact that many pension schemes have been reaching maturity, whereby a large number of scheme members are retirees who are receiving pension payments. As they reach maturity, schemes will tend to invest in assets that match the profile of these liabilities and guard against volatility to ensure that they can meet their regular payment obligations.

While government bonds are a safe investment, real returns (the yield on bonds adjusted for inflation) have been in steep decline. In 1994, bond yields reached as high as 6.8% and remained above 2% for most of the period up until 2008, only dipping below slightly twice. From 2008 onwards, bond yields fell sharply, especially in the aftermath of the financial crisis, and were negative between 2010 and 2013. Since then, bond yields have once again become positive, although they have continued to languish below 2%. As of the second quarter of 2016, 10-year government bonds had a yield of 1%. The average return between 1989 and 2007 was 4.1%, while between 2008 and 2016 the average was only 0.45%.

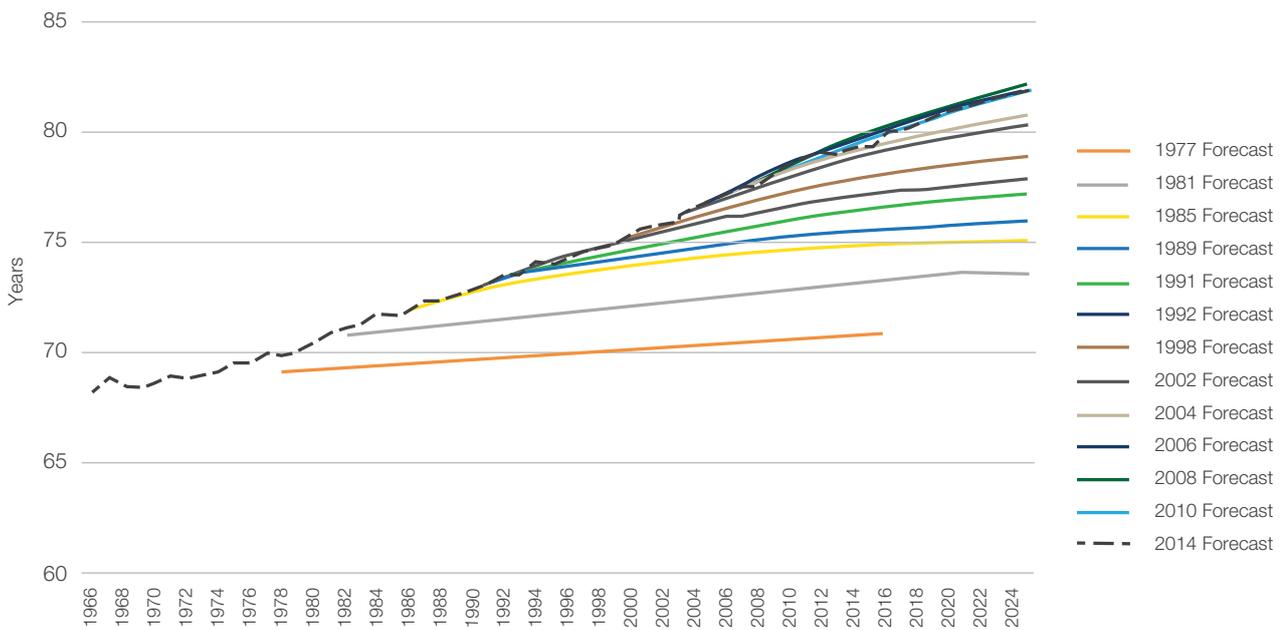
Figure 6: 10 year government bonds - real returns



Source: Bank of England, ONS and author's calculations

In addition to declining bond yields, rising life expectancy means DB schemes are paying out over longer periods – longer than those who originally set up the schemes would have imagined. Life expectancy has continuously surpassed the expectations of analysts over the last 40 years. In 1977, period life expectancy for men born in 2014 was forecast to be only 70.8 years. By the 2014 forecast, men born in the same year were expected to live to nearly 80. In fact, when looking at cohort life expectancy which is considered a more realistic measure for individuals, life expectancy for men born today is over 90 and for women it is over 93⁴.

Figure 7: Historic revisions to the expectancy forecast: At birth male period life expectancy



Source: ONS and MF

The consistent trend for life expectancy to exceed expectations is a testament to the technological strides and healthcare innovations which have been made over the last 50 years, as well as improvements in lifestyles – in particular reduced levels of smoking. But while these improvements should be welcomed, they have impacted on the viability of DB pension schemes. Together with falling returns on bonds, rising life expectancy helps to explain the current financial predicament facing many private DB schemes.

⁴ Past and projected expectations of life (ex) from the 2014-based life tables. Principal projection: <https://www.ons.gov.uk/peoplepopulation-andcommunity/birthsdeathsandmarriages/lifeexpectancies/datasets/expectationoflifeprincipalprojectionunitedkingdom>

How big a problem is the deficit?

Summary

- The proportion of schemes in deficit is volatile, but as of October 2016, 80.6% of schemes were in deficit.
- Small changes in the returns on gilts and equities can have a significant impact on the deficit. According to the PPF's estimates, a 0.1 percentage point change in gilt yields could reduce the deficit by over £20bn.
- While scheme valuations of liabilities are calculated using historically low yields on gilts, the real 5-year annual average return on UK pension assets is actually 8.4%. The real 10-year return on UK pension assets is 6.5%.
- Irrespective of the overall deficit figure, it is estimated that between 10 to 17% of schemes are in serious risk of default. At the upper end, this accounts for approximately 1,000 schemes.

Market movements and the deficit

While a high proportion of schemes are in deficit, this number has fluctuated wildly over the last decade. This is partly due to how pension scheme liabilities are calculated. In order to estimate the present value of pension liabilities, a discount rate is used to represent the time value of money – i.e. 10 pounds today is worth more than 10 pounds tomorrow. The higher the discount rate, the lower the present value of future liabilities. The discount rate is often based on the yield on government or safe corporate bonds which are currently at historically low levels. If yields change, even by a small amount, this can dramatically affect the value of liabilities. The table below estimates the impact that changes in gilt yields and equity prices would have on the size of the pension deficit. According to the PPF's estimates, a 0.1 percentage point change in gilt yields, with equity prices remaining constant, could reduce the deficit by over £20bn.

Figure 8: Proportion of DB schemes in deficit



Source: Pension Protection Fund/The Pensions Regulator

Table 1: Assets less liabilities £billions

Assets less liabilities £billions							
Movement in gilt yields							
Movement in equity prices	-0.3pp	-0.2pp	-0.1pp	0.0pp	0.1pp	0.2pp	0.3pp
7.50%	-281.9	-258.7	-235.5	-212.2	-188.8	-165.4	-141.9
5.00%	-292.6	-269.4	-246.2	-222.9	-199.5	-176.1	-152.6
2.50%	-303.3	-280.1	-256.9	-233.6	-210.2	-186.8	-163.3
0.00%	-313.9	-290.8	-267.5	-244.2	-220.9	-197.4	-173.9
-2.50%	-324.6	-301.4	-278.2	-254.9	-231.5	-208.1	-184.6
-5.00%	-335.3	-312.1	-288.9	-265.6	-242.2	-218.8	-195.3
-7.50%	-346	-322.8	-299.6	-276.3	-252.9	-229.5	-206

Source: Pension Protection Fund/Pension Regulator

In this context, a number of commentators have been quick to point out that concerns over a systemic problem emerging due to rising DB deficits may be overblown. They argue that liabilities are significantly overstated since the investments being made by pension schemes continue to yield higher returns than the return on gilt yields and other fixed income assets used to calculate scheme deficits. As Anthony Hilton recently argued in the Evening Standard:

“...every time interest rates fall; the assets will be assumed to grow at a slower rate. Therefore, you need more of them now to avoid a shortfall in future. Each rate cut compounds the problem. Those doing valuations are forced to assume that the assets in pension funds will yield next to nothing for decades to come”.

“But in the real world, pension funds do not earn next to nothing – at least as long as they ignore the advice of consultants peddling liability-driven investment schemes. Left to their own devices most, even in these markets, make a return significantly higher than the bond yield”⁵.

In a similar vein, Andrew Warwick-Thompson of The Pensions Regulator recently wrote:

“...a pension scheme does not have to invest only in bonds, but has great flexibility to diversify its investments across a wide variety of asset classes including equities, property, infrastructure and even derivatives. As the returns on these assets are generally anticipated to be higher than the yields on bonds, the discount rate used to calculate the scheme specific deficit will be higher too, and the deficit correspondingly lower”.

Predicting the future path of pension scheme assets and liabilities is a tough task, and by basing the discount rate for liabilities on safe assets such as UK gilts, valuations are likely to err on the conservative side. Pension fund real returns in the UK over the last 5 to 10 years have been relatively strong – over 8% per annum over the last 5 years and 6.5% over the last 10 (see chart). This is significantly above the discount rate applied to DB pension scheme liabilities. Nevertheless, returns may not be as strong as in the past and this may be compounded by the fact that DB schemes are increasingly investing in gilts and other fixed income assets.

⁵ Hilton, A, The Evening Standard, (Wednesday 14 September 2016) “Anthony Hilton: Our mad approach to pension-fund deficits”

Table 2: Pension fund nominal and real 5-year and 10-year geometric average annual returns in selected OECD countries

Country	5 year average		10 year average	
	Normal	Real	Normal	Real
United Kingdom (1)	11.8	8.4	9.5	6.5
Netherlands	9.8	7.8	6.6	4.8
Denmark	8.9	7.1	7.3	5.4
Australia (2)	8.8	6.0	6.6	3.7
Canada	8.7	6.9	6.5	4.7
New Zealand (3)	8.6	6.3	5.9	3.3
Mexico (4)	8.2	4.1	7.2	2.9
Iceland	8.0	4.5	7.6	1.7
Chile	7.1	3.7	7.1	3.5
Belgium	6.9	5.0	6.0	4.0
Norway	6.6	4.9	6.2	4.2
Israel (5)	6.5	4.8	6.3	4.1
United States	5.7	3.9	2.6	0.5
Luxembourg	4.7	2.8
Austria	4.6	2.4	3.4	1.4
Switzerland	4.6	4.8	3.6	3.3
Spain	4.4	2.9
Germany	4.3	2.9	4.2	2.6
Slovenia	4.2	2.7
Korea	4.2	2.1	3.8	1.2
Italy (6)	4.0	2.4	3.8	2.0
Estonia	3.6	0.9	1.9	-1.7
Portugal	2.9	1.3	3.9	2.3
Japan	2.5	1.8	0.6	0.3
Czech Republic	2.3	0.6	2.5	0.3
Slovak Republic	2.1	0.3		

Source: OECD Pension Markets in Focus 2015

Irrespective of whether or not returns are likely to beat the discount rates currently being applied, valuations undertaken by firms and especially the PPF must be prudent. This seems to be a sensible approach given that the PPF may have to pick up the tab should sponsors become insolvent. Ultimately if the PPF is unable to provide compensation this means that either: 1) pensioners will have significantly reduced incomes in retirement or 2) the government and therefore taxpayers will have to pick up the tab, neither of which seems fair. The PPF must be a sustainable force in its own right and therefore it is critical that it takes a prudent approach to estimating future liabilities and sets the industry levy accordingly so that it can fulfil its role.

In summary, while deficits have been growing, it is difficult to interpret what this actually means in terms of the short to medium term sustainability of private sector DB as a whole, as well as for the PPF who would have to takeover schemes in the event scheme sponsors go bankrupt. But this does not mean that taking a prudent approach to DB valuation is wrong. What we do know however, is that deficits are already causing some firms a great deal of financial difficulty.

Firms in distress

Of the 6000 schemes monitored by the PPF, just under 5000 are in deficit while just over 1000 are in surplus. Although there are concerns over the size of DB scheme deficits, this does not necessarily mean that the sponsor will get into significant financial difficulty and struggle to fulfil their commitments. Ultimately, as long as the company remains healthy, which is dependent on a number of factors and not just the size of its pension deficit, a deficit in itself does not mean the scheme is unsustainable.

According to recent estimates, between 10 to 17% of schemes are in serious risk of default. At the upper end, this accounts for approximately 1,000 schemes or 1 in 6 private sector schemes. These are schemes whose businesses are likely to fail before they have repaired the deficit in an underfunded closed DB scheme. This does not just relate to small schemes. According to Harrison and Blake from Cass Business School, more than 50 of the UK's largest closed private-sector DB schemes are already stressed or likely to become so, due to the weakness of the employer. These schemes account for more than £170bn of liabilities, which is more than 10% of the total for all schemes⁶. The authors base their findings on a chart from The Pensions Regulator from 2014 which showed that about 1,000 schemes, representing, on a conservative estimate, at least 15% (and possibly up to 17%) of the total PPF Index, are "in serious risk of default". In this context, they quote the head of research Gwyn Hacche, at the PPF, who has said:

*"It is abundantly clear from our 7800 index figures that there are many schemes out there currently in deficit. Some may not be able to meet the promises they've made. And there is perhaps 10 per cent, maybe more, where the chances of the shortfall ever being repaired, no matter what happens to interest rates, look decidedly bleak"*⁷.

The authors argue that the trustees of schemes in stress "might believe that in the case of their sponsor's business, insolvency is almost inevitable – a matter of 'when' rather than 'if'. Or they might believe that the business has a viable future, but that it may become insolvent unless the DB deficit is removed from the corporate balance sheet".

The main message from Harrison and Blake's paper is that if the Government does not accept and act on the reality that a significant number of schemes are in distress, the private sector, and the economy as a whole, will suffer a "worst-case scenario", where around 1,000 sponsoring employers' businesses – representing one sixth of the schemes in the PPF Index – are expected to become insolvent. "In some cases, insolvency might be preventable. In others, schemes will transfer to the PPF with far fewer assets than might otherwise have been the case, transferring the stress to the PPF in its role as the industry's compensation scheme". But the authors argue this could be avoided if the approach to managing pensions shifts to one that is "prepared for many more schemes to pay less than full benefits on a planned and co-ordinated basis, with all parties in agreement on how best this is achieved"⁸.

The potential impact on scheme members

The interim report by the PLSA's DB Taskforce attempted to quantify the probability of default for different types of schemes and the estimated losses of benefits for scheme members⁹. The analysis for the report separates scheme types by the strength of their covenant – that is the employer's legal obligation and financial ability to support their DB scheme now and in the future. The report finds that many members are unlikely to receive full benefits because either the scheme defaults or the sponsor becomes insolvent. In most cases there is a higher chance of sponsors defaulting than schemes defaulting and this is particularly the case for those schemes with a weak covenant. For those schemes with a weak covenant, there is a 65% probability of sponsor or scheme default over the next 30 years. In the event of such a default, individual members stand to lose nearly 20% of their expected pension benefits.

Table 3: Probability of default for different types of schemes

	Estimated benefits losses on default	Probability of default	Probability weighted benefit losses
CG1 Strong	11%	6%	1%
CG2 Trending to strong	14%	20%	5%
CG1 Trending to weak	16%	40%	7%
CG1 Weak	19%	65%	12%

Source: DB Taskforce Interim Report

⁶Harrison and Blake (2015) "The greatest good for the greatest number", A Pensions Institute discussion paper

⁷The source for this quotation was an article written by Gwyn Hacche, Head of Research at the PPF, which was published on 8th April 2015 in Pensions Expert: <http://www.pensions-expert.com/Comment-Analysis/Interest-rates-and-the-PPF>.

⁸Harrison and Blake (2015)

⁹Pensions and Lifetime Savings Association (2016) "DB Taskforce Interim Report"

The wider economic implications of rising DB deficits

Summary

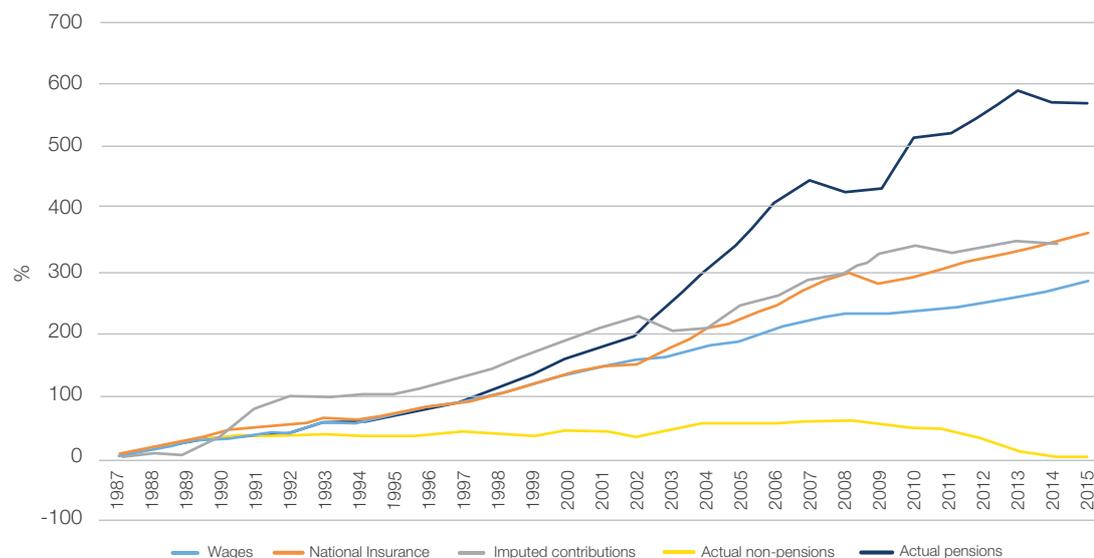
- Since the year 2000, pension contributions have accounted for an increasingly large proportion of total employee compensation. As a result, where wages once accounted for more than 87% of total compensation, they now account for around 83%.
- We calculate that if the money being used to plug pension deficits between 2000-2015 had been redirected into wages, by 2015, average wages before tax would have been £1,473 (or 6%) higher.
- According to a Bank of England survey of companies, over 50% of firms said that pension deficits had either a major or minor impact on their investment decisions, while over 40% said it affected pay decisions. Over 30% said it impacted their ability to raise finance¹⁰.

While running scheme deficits poses risks for individual firms and their scheme members, there may be wider economic implications. As we will show, since the turn of the century, companies have been increasingly plugging their DB pension deficits. This may have reduced potential investments that firms could have otherwise made to support their long run productivity growth, including boosting the wages of employees.

In order to quantify the potential economic impact, we have explored employer compensation data within the ONS' National Accounts. Total compensation is made up of a number of different elements including wages and social contributions. In turn, the ONS' National Accounts allows us to go deeper and assess the size of the different social contributions over time. In the Accounts, total social contributions are the sum of: National Insurance, imputed contributions (these are almost exclusively public sector pension schemes), non-pension contributions (i.e. benefits such as private healthcare, life insurance) and pension contributions.

If we look at the cumulative change since 1987 in all of these items, we can see that pension contributions have risen much faster than anything else since 2000, at which point DB pension deficits started to widen. Since contributions to pensions rose faster than wages, this meant that wages fell as a proportion of total compensation during the last decade.

Figure 9: Cumulative growth in employee compensation by type



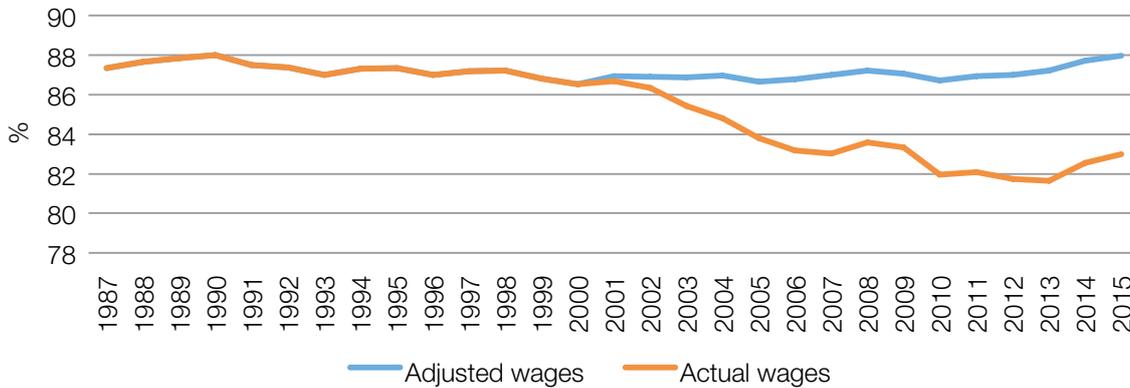
Source: Author's calculations and ONS National Accounts

While some of those pension contributions will be for current employees, and therefore represent deferred consumption, some of it will be servicing the deficits of DB pensions which have since

¹⁰ Bank of England (2013) "Agents' summary of business conditions" <http://www.bankofengland.co.uk/publications/Documents/agentssummary/agsum13jun.pdf>

closed to new members. From Brian Bell's research, we know that about half of the rise in pension contributions during the 2000s was the consequence of funding DB deficits¹¹. But what would have been the impact on wages and salaries if these deficits had failed to materialise? To explore this issue, we assume that pension contributions grew by half the actual rate between 2000 and 2015 and that the money saved was redirected into wages. As a consequence, wages as a proportion of total compensation remain relatively similar over the period 1987-2015. Perhaps most revealingly, by 2015, average wages before tax would have been £1,473 (or 6%) higher. The actual average wage before tax based on our measure was £24,537 in 2015. After reducing the DB pension deficit bill, wages rise to £26,011.

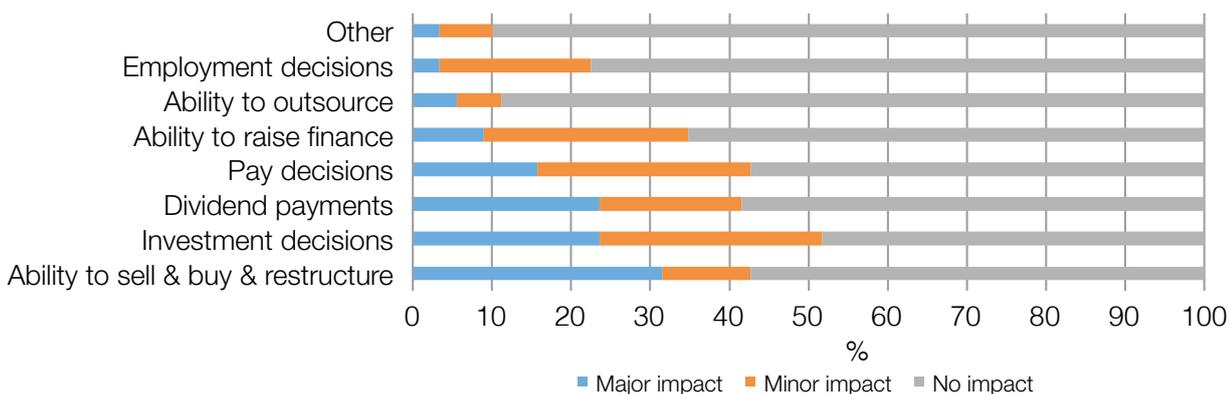
Figure 10: Wages as a proportion of total compensation 1987-2015



Source: Author's calculations based on ONS National Accounts

Now of course firms may not have used this money to invest in the workforce. They could have reinvested it in other ways, used it to pay out larger dividends or simply held it as cash. A survey by the Bank of England in 2013, suggests that deficits have had a significant impact on some firms' behaviours¹². Over 50% of firms said that pension deficits had either a major (23.6%) or minor impact (28.1%) on their investment decisions, while over 40% said it affected pay decisions. Over 30% said it impacted their ability to raise finance. 31.5% of firms surveyed said that their deficit had a major impact on their ability to sell, buy or restructure. If a firm is in need of change in order to become more profitable, and its pension deficit prevents this, then it may run the risk of insolvency, which would be to the detriment of the DB scheme they are sponsoring.

Figure 11: Pension scheme burdens impact on firm behaviour



Source: Bank of England

The results of the Bank of England survey differ from earlier empirical analysis of the problem. In 2005, an econometric study found only weak evidence of any impact on investment but a strong negative impact on dividends. They concluded that "companies that seek to tackle underfunding of defined benefit pension schemes by raising their contributions could pay lower dividends than they would have otherwise". In short, firms do make adjustments to their balance sheets but mainly through financial rather than real channels¹³.

¹¹Bell, B. (2015) "Wage stagnation and the legacy costs of employment" <http://cep.lse.ac.uk/pubs/download/cp458.pdf>

¹²Bank of England (2013), "Agents' summary of business conditions" <http://www.bankofengland.co.uk/publications/Documents/agentssummary/agsum13jun.pdf>

¹³Bunn, P and Trivedi, K. (2005) "Corporate expenditures and pension contributions: evidence from UK company accounts" Working Paper no. 276, Bank of England

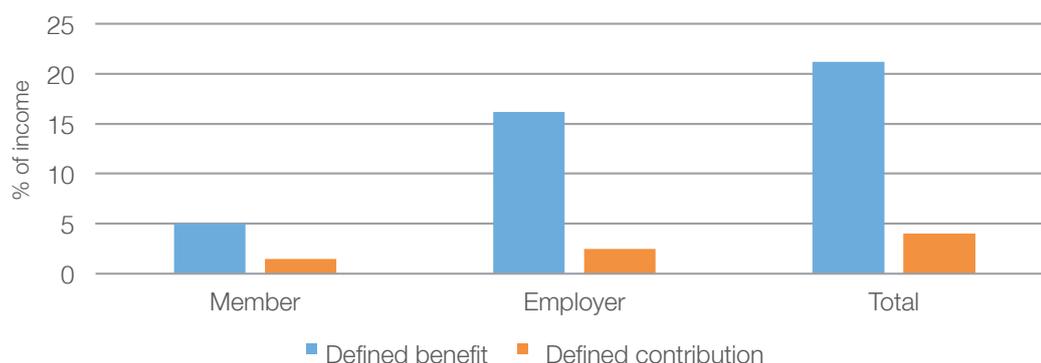
So what explains the difference in findings? Aside from a detailed discussion of methodology for the two studies, there are perhaps two plausible explanations. First, while the survey implied that some firms had changed behaviours due to pension scheme deficits, it did not quantify the impact in terms of actual reduced investment. If the impact amongst those affected firms was relatively small in comparison to all other firms with deficits that remained unaffected, then the overall impact of deficits on investment would remain negligible. There would be only a weak relationship between deficits and investment consistent with the 2005 study. Second, the 2005 study used a dataset covering the years 1983-2002. But these were largely the “good” years when pension contributions rose at the same rate as wages and other social contributions. As we showed earlier in this chapter, it is only since 2002-2003, that growth in pension contributions has significantly outpaced all other contributions and this has been prompted by rising scheme deficits. Therefore, it may be the case that some firms during this latter period could only partially offset the need to increase overall pension contributions through lower dividend payments. As a result, some firms may have needed to forgo pay rises and investment to meet their obligations. In this context, it is perhaps significant that in the 2013 survey, a higher proportion of firms said deficits had impacted on their investment decisions than dividends.

If funding a pension deficit adversely impacts on long term investment, this could result in a vicious circle for firms and the economy as a whole. A growing DB deficit prompts firms to take action to plug the deficit at the cost of reinvesting in the firm to support its future profitability. This in turn reduces its long-run ability to effectively pay its pension promises. Ultimately, if such behaviour continues indefinitely, there may come a time when the firm becomes no longer viable and subsequently unable to sustain its pension promises. The collapse of the firm will harm all parties, and may have negative effects on the local and wider economy. In the meantime, a dearth of investment by firms propping up ailing DB pension schemes will harm wages and economic growth.

Impact on existing employees’ pensions

If a sponsor is forced to divert funds to plugging a DB deficit, then it limits the amount that they may otherwise have allocated to existing employees’ defined contribution schemes. The table below looks at average employer and employee contributions towards different types of occupational private pensions. The total contribution to DB schemes is around 21% of earnings, with 5% of the contribution coming from the member and 16% coming from the employer. In contrast, the total average contribution to DC schemes is only 4%, despite increasing scheme membership in recent years. Of this, employers only contribute 2.5% of employee earnings to DC schemes. Such a combined contribution is not going to be sufficient to deliver an adequate income in retirement for those who are currently working¹⁴. This raises the question of intergenerational fairness, given that the majority of those with a DC scheme are likely to be younger members who are set for a retirement income far below what has been guaranteed for those with a DB scheme.

Figure 12: Weighted average contribution rates to occupational private pensions



Source: ONS Occupational Pensions Scheme 2015

¹⁴ Pensions Policy Institute (2013) “What level of pension contribution is needed to obtain an adequate retirement income?”: http://www.pensionspolicyinstitute.org.uk/uploaded/documents/20131022_ae_adequacy_final_report.pdf

Exploring longer lives and lower rates: Is this the new normal?

Summary

Longer lives

- While we project the number of people in receipt of DB pensions to peak at 5.8 million by 2018, the continued increase in life expectancy means that there will still be 3 million recipients in 2060 and around 1 million in 2070.
- Despite legislated changes to State Pension Age (SPA) helping to contain the amount of time spent in retirement, those retiring at SPA in future decades will continue to spend a longer time in retirement than we do today.

Lower rates

- Weak growth and low returns on bonds have been highly persistent since the financial crisis. Up until now this has been portrayed as a temporary problem which will eventually be reversed. But there is an emerging view that current economic weaknesses are structural and that we are in a new normal where the trajectory of growth is permanently lower.
- Clearly, predicting economic growth is fraught with difficulty. But the fact that our economic recovery has been slower than after the Great Depression suggests that more is at play than simply the normal economic cycle. It is hard to shake the feeling that we have reverted back to a time we have known before – one that is defined by lower for longer productivity growth and interest rates.

About this chapter

This report has so far explored the state of play today regarding the financial position of DB schemes and the wider economic implications of scheme deficits. However, in order to anticipate whether this is a problem that is set to improve or worsen with time, it is important to take a view on how the key causes of the current predicament – longer lives and lower interest rates - are likely to evolve over future decades. In order to come to reasonable conclusions on both of these issues we develop a couple of short essays which explain some of our own analysis of economic and demographic data with a review of past evidence and literature.

The potential for longer lives

The limits of longevity have long been discussed among the scientific community, with evidence suggesting that “life expectancy has steadily increased by a quarter of a year per year”¹⁵ since the 19th century. A recent study though has suggested that there may be limits to the lifespan, with “natural constraints” meaning humans cannot live much longer than 100¹⁶. The study bases this on evidence from the Human Mortality Database, arguing that if there was no upper limit on life span then we would expect to see the largest survival gains among the oldest old. According to the study this has not been the case, and survival rates have begun to plateau.

This research has been subject to criticism. The impact of future developments in medicine are ignored, which could otherwise improve longevity. Advances in the understanding of genetics and technology have already seen breakthroughs in smaller animals such as mice, where tissue regeneration has been achieved¹⁷. If there are future technologies which can enhance the maximum human life span, then this will of course create many new ethical and economic challenges for future generations.

However, even an increase in average life expectancy to 100 would be a considerable improvement over the life expectancies of people reaching retirement today. While this would be an excellent social achievement, indicating advancements in health, technology and general living standards, it will also mean that pensions may have to pay out for longer. In response to longer lives, the previous government legislated to raise SPA. But, as the chart below shows, given anticipated changes to

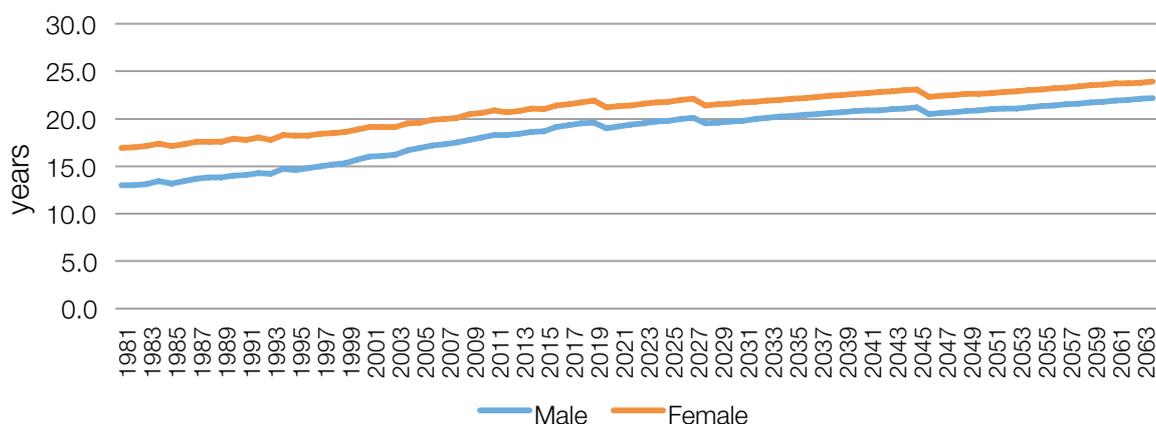
¹⁵ Oppen. J and Vaupel. J, (2002) “Broken limits to life expectancy” Science 296.5570: 1019-1031.

¹⁶ Dong. X, Milholland. B and Vijg. J (2016) “Evidence for a limit to human lifespan” Nature, 19793

¹⁷ Jaskelioff, M. et al. (2011) “Telomerase reactivation reverses tissue degeneration in aged telomerase-deficient mice” Nature 09603

life expectancy, the planned changes to SPA will not be sufficient to prevent individuals spending increasing periods of time in retirement. And this is arguably based on conservative estimates for future longevity and mortality.

Figure 13: Life expectancy at State Pension Age (adjusted for legislated changes to SPA)



Source: ONS and author's calculations

Ultimately, whether life span has a limit or not, we know that within the next few decades' longevity is likely to continue rising. In an attempt to adapt to a world where life expectancy is increasing, many DB schemes are choosing to turn down new members, as a means of limiting future liabilities.

From the below table, we can see that 6.45 million people are members of schemes that have closed as of March 2016. At this point, 2.18 million people are members of schemes which closed to future accrual. Only 650,000 people are active members of schemes which are still open.

Yet despite many schemes having closed to new members, companies will still be paying out DB pension liabilities for many decades to come. As of March 2016 there were 4.36 million people in receipt of a DB pension, but there are 6.5 million active or deferred members who have yet to start claiming their pension. While the closure of schemes to new members may therefore be reducing the number of active members, the numbers in payment are likely to remain substantial for some time.

Table 4: Membership by membership type and status, 31 March 2016*

Members (millions)	Open	Closed	Closed to future accrual	Total
Active	0.65	0.87	0	1.41
Deferred	0.76	2.94	1.41	5.12
Pensioners	0.65	2.83	0.76	4.36
Total	2.07	6.45	2.18	10.9

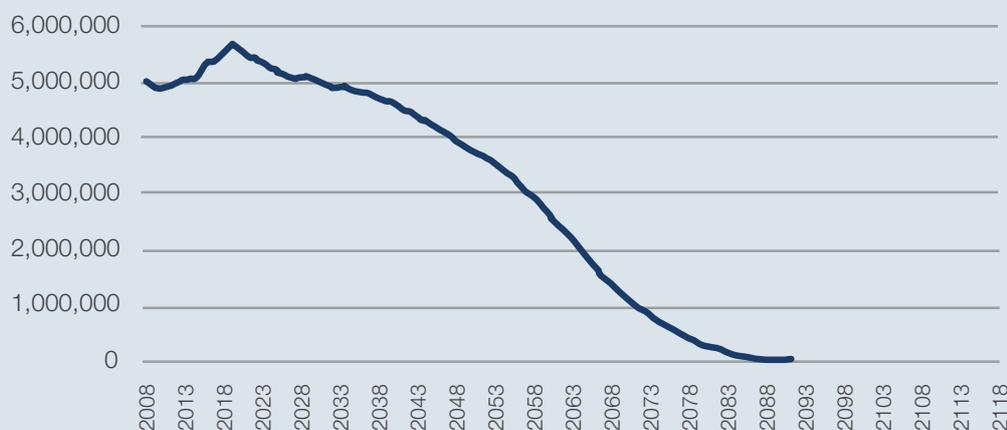
Source: PPF/The Pensions Regulator and author's calculations

*Note the sum of the components may not sum to the total column due to rounding

How many DB pensioners will there be?

For the purposes of this report, we have projected the future number of private sector DB pensioner members (i.e. those in receipt of a pension). In order to do this, we analysed data from the Wealth and Assets Survey and English Longitudinal Study of Ageing to derive the current age distribution of private sector DB pension members, including active members, those with deferred rights and those who are currently being paid a pension. We then applied period male mortality rates to the different age groups to project forward the total number of pensioner members in future years. We do not assume that there are any additional members that join a private sector DB pension scheme. Nor do we assume that pension rights pass on to partners on death. Based on these highly conservative assumptions, we can see that the deficit problem will not go away. By 2070 we will still have over 1 million people receiving money from private DB pensions. In 2060 around 3 million people. So while many schemes are closed to new members or future accrual the long tail, the obligations which schemes must fulfil - will continue over a very long time. Indeed, there are a small number of payments projected to go over to the next century.

Figure 14: Number of people in receipt of private sector DB pensions: 5 year rolling average



Source: ONS, WAS, ELSA and author's calculations

The potential for low rates

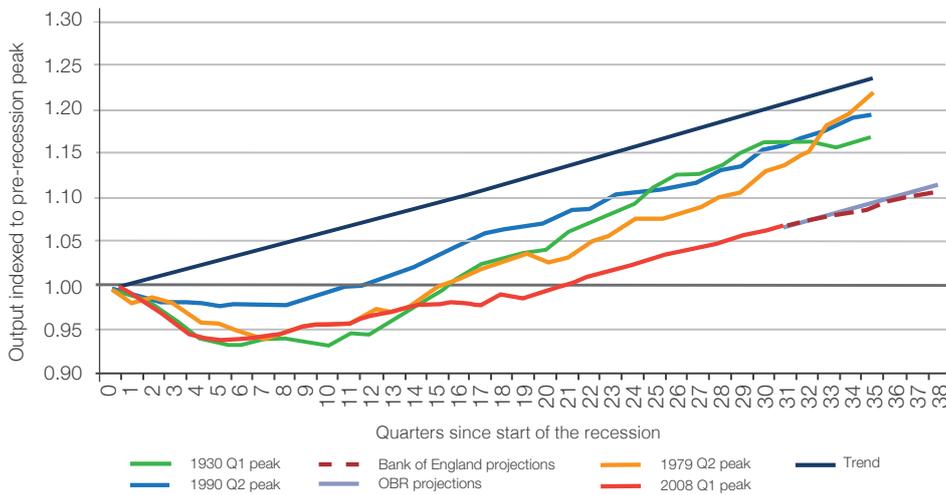
While the number of people in receipt of private sector DB pensions is likely to remain high over the next few decades, this does not necessarily indicate that there will be a worsening of the overarching DB pension problem. Indeed, after peaking around 2020, the number of people in receipt of DB pensions is projected to steadily decline. Perhaps more important than the number of people in receipt will be the economic climate.

As we saw earlier, small changes to the returns on government bonds or shares can improve or worsen the deficit by some margin. It follows that the current pension deficit is largely due to the ultra-low returns on bonds. While some commentators have suggested this is simply the result of a prolonged hangover from the financial crisis and returns will soon recover to their historic rate, others are more pessimistic and argue that it is reflective of a fundamental structural change to the economy.

Signs of a new normal

The business cycle describes normal fluctuations in the economy where the economy cycles through periods of expansion and contraction. When the UK experienced a recession in 2009, many believed that eventually the economy would return to growth as per periods after previous recessions. However, while the UK economy returned to growth, it failed to bounce back in the way it did following previous recessions. In fact, this recovery has been significantly slower than other historical examples, including the recovery in the aftermath of the Great Depression.

Figure 15: Way below the trend line: Recoveries from various recessions

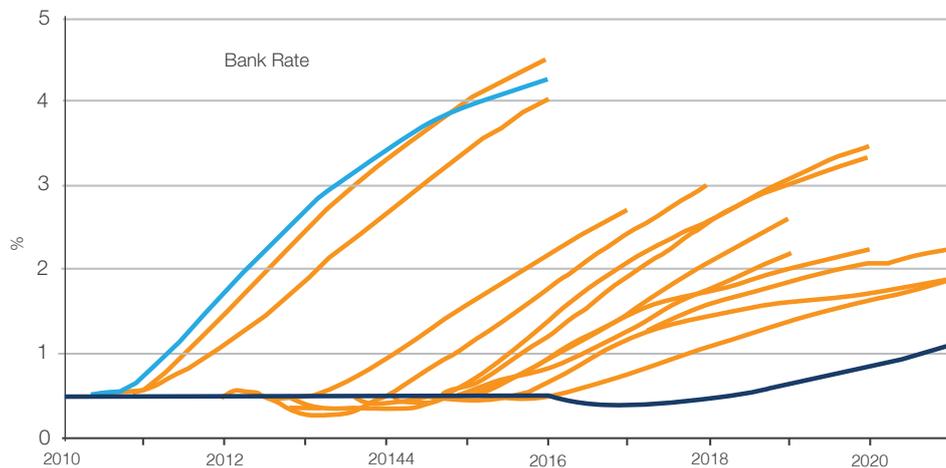


Source: ONS, OBR, NIESR, Bank of England and author's calculations

Another sign that we are in a new normal has been perpetually low interest rates. In an attempt to stimulate economic growth, the Bank of England lowered the base rate. The rationale behind this was that making it cheaper to borrow would encourage greater lending and borrowing, thereby stimulating growth. Improved financial liquidity means individuals have better access to credit, which is thought to encourage an increase in spending. Increases in consumption and investment drive economic growth in the economy, and once the economy is growing again, interest rates can rise.

However, the base rate has not risen with market expectations. As the economy returned to fledgling growth, interest rates remained at the unprecedented low of 0.5%. Since the vote to leave the European Union, they now stand at a new low of 0.25%. This dramatically contrasts with where in 2010 the market thought rates would be by this point, 4% (see chart). While some have criticized the Bank of England's policy decisions, the Bank of England's actions reflect weak underlying fundamentals, including weaker than anticipated growth and, particularly in the last two years, low inflation.

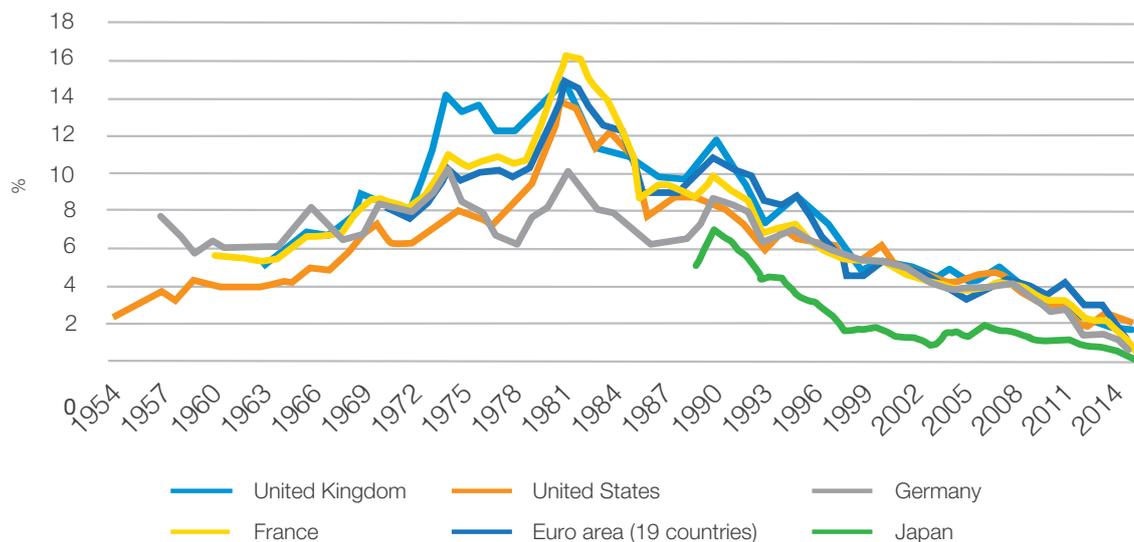
Figure 16: Market expectations for base rate vs actual



Source: Bank of England, Datastream, OBR

Countries across the developed world are experiencing falling interest rates, and, crucially it reflects a trend stemming from way before the 2008 crisis and subsequent unconventional central bank activity. On the chart below, we have plotted nominal yields on government bonds across a number of countries. As you can see, yields have been falling consistently since the 1990s.

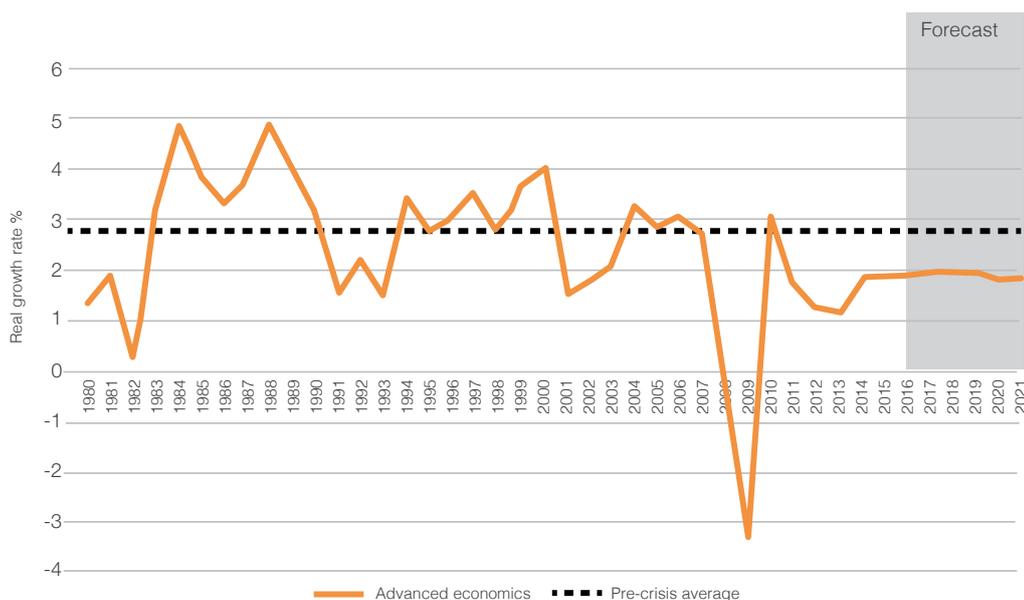
Figure 17: Long-term interest rates



Source: Author's analysis of OECD data

Underpinning all this is a slowdown in trend productivity growth – the UK economy much like the rest of the developed world is anything but overheating. Advanced economies are currently about 1 percentage point below their pre-crisis rate of growth (see chart), and are expected to remain there over the next five years.

Figure 18: Advanced economics: actual and forecast



Source: Author's analysis of IMF data

Is the current economic malaise permanent?

There are a number of prevalent arguments which seek to explain the current underlying weaknesses of the UK economy and others in the Western world. In this section we discuss two of these arguments: the liquidity trap and secular stagnation.

Are we in a liquidity trap?

A liquidity trap is a situation when an injection of cash into the money supply, via lowering interest rates or through quantitative easing fails to stimulate the wider economy. This is because people and firms choose to hoard money rather than spend. Monetary policy is therefore largely ineffective in boosting demand even when it is at the zero lower bound.

There are several explanations as to why people may choose to hoard money when there is no or very

low cost to borrowing:

- **Deflationary expectations**¹⁸ – If prices are expected to fall then a low nominal interest rate would be a higher real interest rate. If an individual expects prices to fall, then they also expect the value of their wealth to rise.
- **Precautionary savings**¹⁹ – In the midst of an economic downturn, many people may feel pessimistic about the future and wish to hold on to their money in case of short term shocks such as unemployment. The same may be true for businesses curtailing investment.
- **Credit Crunch**²⁰ – As was the case post-2008, many major banks had made huge losses due to their exposure to the sub-prime mortgage crisis. Following the crisis, banks had very low levels of capital relative to loans and set about boosting their capital ratios to support their survival. But this has come at the expense of lending to the real economy.

According to the liquidity trap argument, demand is so weak that even at a zero, short-term interest rate spending falls far short of what would be needed for full employment. Central Banks have very little room for manoeuvre since interest rates cannot fall below zero because investors always have the option of simply holding cash.

There is however, a growing concern that the current liquidity trap is not a temporary manifestation of the economic downturn and an over reliance on monetary policy, but actually an era of secular stagnation, brought about by structural changes in how the economy as a whole operates – both in the UK and abroad.

Secular stagnation

Secular stagnation refers to a prolonged period of negligible growth that stems from the normal business cycle. It therefore relates to a situation whereby the underlying economic fundamentals perform poorly on account of structural changes.

Structural problems can mean anything from changes in how we produce goods and services to changes in our demographics. Although there is ongoing debate among economists as to the reasons for fundamental structural change lowering long run growth, there are several potential explanations which suggest the current economic climate is “permanent”:

- Technology – technological progress has slowed, reducing long run productivity growth.
- Demography – Stagnant population growth and ageing populations reduces the labour force and aggregate demand.
- Education – Mass education is completed and no further significant increases in productivity from education can be achieved.
- Inequality – Increasing wealth at the top end of the income distribution has deprived the middle classes of their ability to invest and drive growth.
- Public debt – High levels of public debt make maintaining and growing public services more difficult.
- Deficient demand: When a debt-financed bubble bursts, firms and households simultaneously attempt to pay down their debt. While sensible at the individual level, the result is an enduring lack of aggregate demand²¹.

According to its central proponent, Larry Summers, because of lower demand for investment relative to saving, this implies lower real interest rates. Since this environment is the result of fundamental structural changes, real rates are likely to remain below their pre-crisis historical averages for a long time to come²².

¹⁸ Lars O. "Escaping From A Liquidity Trap And Deflation: The Foolproof Way And Others," Journal of Economic Perspectives, 2003, v17(4, fall), 145-166

¹⁹ Guerrieri, V. and Lorenzoni, G., 2011. *Credit crises, precautionary savings, and the liquidity trap* (No. w17583). National Bureau of Economic Research

²⁰ Guerrieri, V. and Lorenzoni, G., 2011. *Credit crises, precautionary savings, and the liquidity trap* (No. w17583). National Bureau of Economic Research

²¹ For a detailed discussion of each of these arguments read: Tuelings and Baldwin (eds.) "Secular Stagnation: Facts, Causes and Cures", A VoxEU.org Book

²² Summers (2013), Why stagnation might prove to be the new normal, <http://larrysummers.com/2013/12/15/why-stagnation-might-prove-to-be-the-new-normal/>

Criticisms of the secular stagnation view

There have been criticisms of assertions that we are now in a period of secular stagnation. Historical evidence suggests growth stems from a “complex mix of the sociological and the technological”²³ which makes the future of growth or a new industrial revolution difficult to predict. While some would argue that technology has reached its limits, others point to exciting new opportunities which present a new frontier in which growth can flourish.

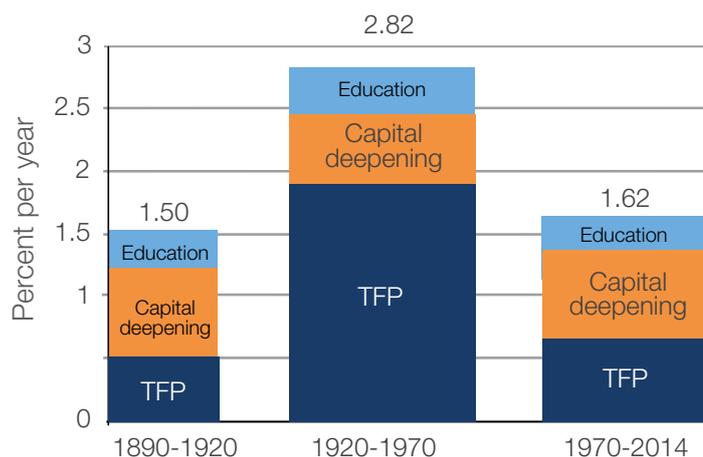
Similarly, while older population structures have been associated with lower levels of per capita economic growth and inflation, we do not have sufficient evidence to conclude that this will always be the case. Indeed, Bloom et al. find that while population ageing will tend to lower labour force participation and savings rates, so called “behavioural responses” (including greater female labour-force participation) and policy reforms (such as increasing the pensionable age) can mitigate the adverse economic consequences of an older population²⁴. Perhaps most importantly in the context of this report, the impact of ageing on asset prices is somewhat ambiguous and there is a limited amount of available data from which to draw reliable conclusions²⁵.

It is worth stressing that while many nations in the developed world are having to come to terms with their ageing populations, there still remains many developing countries who are yet to bank their demographic dividend with their working age populations set to continue growing deep into this century. Similarly, for some countries, education has yet to reach the masses, which can act as a further boost to the international economy. Finally, for many countries there remains a significant gender divide in terms of labour outcomes. Closing this gap should boost economies – significantly in some cases. The Organisation for Economic Cooperation and Development (OECD) concluded in a 2012 study that if male and female workforce participation rates were to converge, GDP across a group of developed nations would rise by 12.4% by 2030²⁶.

Our view

The period 1920-1970 was, barring WWII, the most economically successful of all time and by quite some margin. In particular, total factor productivity – that is the growth of output, less the contributions of extra inputs of labour and capital – was particularly strong in this remarkable 50-year period. This indicator is the magic component of growth capturing invention and innovation. Since the 1970s however, this measure of productivity seems to have reverted back to levels last experienced in the period 1890 to 1920. With the working age population slowing and education unlikely to dramatically boost growth over the long run, the chances of a rebound in productivity growth to levels experienced in the recent past looks slim for much of the developed world.

Figure 19: Growth rate of output per hour and its components, selected intervals, 1890–2014



Source: Gordon, Robert J. 2016. *The Rise and Fall of American Growth: The U.S. Standard of Living Since the Civil War*. Princeton: Princeton University Press.

Similarly, with regard to returns on assets, Dimson, Staunton and Marsh show how the period since

²³ Haldane, A. (2015) “Growing, Fast and Slow” University of East Anglia (speech on the 17th February)

²⁴ Bloom, D., Canning, D., and Fink, G. (2010), “Implications of population ageing for economic growth” *Oxford Review of Economic Policy*, 26(4): 583-612.

²⁵ Borsch-Supan, A, and Ludwig, A. (2009) “Aging, Asset Markets and Asset Returns: A View from Europe to Asia” Mannheim Research Institute for the Economics of Aging, NBER

²⁶ OECD (2012), “Closing the Gender Gap: Act Now”, OECD Publishing

1950s and particularly since 1980s, were characterised by very high investment returns. Since 1980 the worldwide real returns on bonds and equities was 6% per annum. By contrast, based on current bond yields and the risk premium investors have historically demanded for holding equities, future returns are likely to be much lower. In a UK context, they estimate that bonds will deliver less than 1% real returns and equities just over 3%²⁷.

The authors argue that “the projections made by many asset managers, retail financial product providers, pension funds, endowments, regulators and governments are optimistic” because they are based on the abnormally high returns world of the 30 years prior to the financial crisis”. In turn, they believe that “overly optimistic estimates of future returns are dangerous, not only because they mislead, but also because they can mask the need for remedial action”²⁸.

Irrespective of the exact reasons for the “new normal”, it is ultimately hard to disagree with the facts as they stand. Many developed countries are experiencing lower growth, inflation and interest rates than at any point in the post WWII era. While the financial crisis was undoubtedly a seismic event, the fact that our recovery has been slower than after the Great Depression suggests that more is at play than simply the normal economic cycle. We may have reverted back to a time we have known before – one that is defined by lower for longer productivity growth. The middle to late period of the twentieth century may turn out to be the true anomaly. This feeling is perhaps best encapsulated by the example of Japan which is a lens into our future. As Martin Wolf wrote when discussing the policies termed Abenomics which were intended to stimulate growth and inflation in Japan – ultimately “you can’t print babies”²⁹. Japan maybe an extreme case but it shows that sweeping demographic change can fundamentally reshape our economies irrespective of policies undertaken by governments and central banks to counteract its economic effects. On balance then, it seems as though we are in the midst of a new economic normal and it could persist for some time to come.

²⁷ Credit Suisse (2013) “Global investment returns yearbook 2013”

²⁸ Marsh, Dimson and Staunton, “Lower your expectations to the new normal”, Article for the FT <http://www.ft.com/cms/s/0/be436e04-9de6-11e2-9ccc-00144feabdc0.html#axzz3Onn480Nv>

²⁹ <https://www.ft.com/content/b94e6c00-7dd3-11e3-95dd-00144feabdc0#axzz34hdtlbn>

Conclusions and recommendations

This report has traced the rise and fall of DB pensions, their impact on the wider economy and how current economic and demographic trends have made it all the more difficult to sustain these once popular schemes. Underpinning the fall in membership has been the concern that the promises made to members are no longer affordable with the size of scheme assets falling relative to liabilities. This has been driven by rising life expectancy and falling returns on safe assets. While it is difficult to draw hard conclusions about the overall level of systemic risk posed by the growing deficit, there do appear to be a sizeable number of schemes that will struggle to pay their members in full (around 1000). In addition, some firms have had to plug their pension deficits at the expense of investment in their existing workforce resulting in potentially depressed wages as well as reduced productivity.

While most DB schemes are now closed to new members, this does not mean that the challenges posed by DB deficits will quickly disappear. Based on conservative estimates regarding future mortality rates, the numbers of pensioner members will continue to rise in the short term and will remain high over the long run. Our analysis suggests that even in 2060 there may be around 3 million pensioners entitled to receive pension payments and indeed a small number are set to continue receiving DB pensions into the next century. Pension scheme assets will need to generate sufficient returns over an extended period in order to fulfil these promises, but as we have seen, we may be facing lower for longer interest rates which reflect weak underlying economic conditions in the UK and other developed nations. A continued prolonged period of low growth and low investment returns is no certainty, but it does seem as though we will not be able to rely on the returns we have been accustomed to in the Post WWII era.

In this final chapter we explore if there is anything trustees can do to minimise their risks and whether there needs to be a change in approach from the regulator.

What can trustees and sponsors do to de-risk?

Trustees and sponsors have a number of options available to them in order to reduce the pension burden for them and their sponsor, while ensuring that members receive their benefits. Trustees and sponsors might be mindful of the availability and suitability of these solutions to the challenges they face.

Below we briefly describe what some of these technical solutions are and their relative pros and cons. This is not an exhaustive list, but gives an indication of the types of options available to some.

Table 5: Some technical solutions³⁰

Solution	Pros	Cons
<p>Longevity swaps: Longevity swaps transfer the risk of pension scheme members living longer than expected from pension schemes to an insurer, bank or other investor. A regular payment is made to a third party, who will pay the compensation if members live longer than expected.</p>	<p>There is no upfront premium, which makes it a more affordable option than buy in/out, especially for schemes with large deficits.</p> <p>Allows the scheme to separate itself from the risk of longevity, so it can hedge (protect) itself against other risks such as rising inflation or low interest rates.</p> <p>Providers of longevity swaps require some collateral in the event of a default, but there is flexibility in the swap market as to what counts as collateral.</p> <p>The pension scheme can retain its assets and can attempt to improve its return with more efficient portfolio management.</p>	<p>There may be a difference between scheme projection of mortality and the views of the counterparty, which could lead to swaps being over-valued.</p> <p>The risk of increased longevity still remains; it is only now with a counterparty which could be sensitive to defaults.</p> <p>As a new type of financial product, there is generally no standard approach to how swaps should be managed.</p>
<p>Buy-outs: A buy-out could be negotiated through a third party investor, often an insurer. In this scenario, a premium is paid, and the insurer takes on all the responsibilities of the DB scheme, including the risks associated with increased longevity, low yields and rising inflation.</p>	<p>Removes risks for members.</p> <p>Members now have a covenant with a third party, rather than the scheme itself and such companies tend to have larger capital reserves.</p> <p>The Financial Services Compensation Scheme, a last resort compensation fund for banks and building societies, would cover annuity payments of each member of up to 90%. This offers more security for members and a potentially greater level of payment compared to PPF levels of compensation.</p>	<p>A buy-out is expensive. Many schemes are in deficit and would require a significant boost in capital funding in order to make such an option affordable.</p> <p>Discretionary benefits that the scheme may have offered could be lost.</p> <p>The scheme hands over its assets.</p>
<p>Buy-ins: This is similar to a buy-out in that a third party investor, often an insurer, is paid to take on the risks of a scheme, but instead they make payments to the schemes, which in turn pay members, rather than pay the members directly.</p>	<p>Helps to eliminate many of the risks that a scheme is susceptible too.</p> <p>Reduces complexity in the administration and governance of schemes which will have cost benefits.</p> <p>This can pave the way for a buy-out and completely insuring all liabilities.</p>	<p>This would constitute a long term and costly investment on behalf of the scheme, which may not generate any savings.</p> <p>If the pension scheme is poorly funded to begin with, then a large transfer of assets in exchange for insurance may leave the scheme in a worst funding position.</p>

³⁰ We base the following table on: “De-risking: Meeting the challenge” March 2012, produced by Sackers

A change in policy direction is also required

While the technical solutions explained in the table above offer some alternatives to pension schemes, the size of the challenge facing some firms exacerbated by the persistently low interest rate environment may mean that such solutions are out of reach. Policy changes may be needed to cope with the fundamental underlying challenges facing many DB schemes.

Owing to the increased longevity of DB scheme members, it is likely that such schemes will be paying out on their liabilities for many decades to come. It is important that adjustments are made so that these schemes can be better managed in an economic environment which is very different from the world of high returns and lower life expectancy which existed back when the pension promises were first made. Taking this into account, we have developed our own recommendations based on existing literature, which attempt to offer solutions to the problems we have identified.

Breaking the vicious circle

Currently around 1 in 6 schemes are unlikely to be able to fulfil their pension promises in full. In the longer term, a new economic normal plus longer lives may exacerbate the current issues facing schemes. In turn, rising deficits create problems for firms since they must divert resources away from investing in their own futures and towards plugging deficits. This environment creates the potential for a downward spiral where firms seek to plug deficits at the cost of reduced profitability which may ultimately make the business and pension scheme unviable.

With the potential for a vicious circle in mind, we think that there needs to be a change of direction in the approach to regulating DB pensions. Maintaining the status quo could result in poor outcomes for all stakeholders involved:

1. Scheme deficits are likely to continue growing or at least remain high with some firms reducing or limiting wage growth and other forms of investment. This penalises current employees, firm profitability and the economy as a whole.
2. Some firms may ultimately become insolvent which penalises current workers. It will also mean that their schemes are taken over by the PPF and so pensioner members will receive less than full benefits.
3. If large scale insolvencies become more prevalent, the PPF may struggle to provide adequate compensation for pensioner members without the Government and ultimately the taxpayer stepping in.

A worst case scenario which involves all three of the above is no certainty and measures can be taken to reduce the likelihood of each occurring. But to break the vicious circle means departing from the current regulatory mould. At the moment, the regime is predicated on the notion that members must secure full pension benefits. Our view is that the regime should shift focus to take account of members' interests **as well as** that of the firm and its employees. It must, in other words, weigh up the relative merits of continuing to pay pensioner members in full against the costs to the firm, its employees and ultimately the long term viability of the scheme itself. In this context, we have set out the following principles for reform.

Revise the TPR's remit to better take account of the interests of the firm and its employees as well as its members

The current TPR remit for pension scheme trustees is to ensure members receive full benefits. As noted by Harrison and Blake, this "makes it difficult for trustees to acknowledge that, in reality, full benefits may never be delivered by the scheme". In line with their recommendation, we think the remit could be revised to one that focuses on "protecting members' interests". This would enable trustees to be more pragmatic given the financial and economic circumstances. In particular, this would help:

- Trustees, sponsors, TPR, and the PPF to take a more realistic view of their options and facilitate "second-best" outcome negotiations that could result in better pensions than would be paid by the PPF.
- Trustees to be more frank with their members about the true state of the scheme.
- Reduce trustees' incentive to take excessive investment risks in order to increase the chances – however small – of paying full benefits, even when this gamble may not be in the interests of the employer, the members, and PPF levy payers in general.

- Reduce the contributions required by the sponsor to prop up an ailing scheme³¹.

Taking a proactive business model perspective

TPR should take a more proactive approach to understanding the profitability of scheme sponsors. Currently the regulator takes a short term view of impending insolvency, as a trigger for regulatory action. But this is arguably too short a time period and it would be better to take action earlier on in order to try and avert more serious problems arising later. This requires a better understanding of the financial position and business model of scheme sponsors in order to make judgements about the firm's likely profitability over the medium to long run. It might be that detailed evaluations of all sponsors' finances would require too much resource, but it may be feasible for the sponsors with larger schemes.

Trustees should also be supported to take a long term view of the sponsor's profitability so that they can better take this into account when making decisions about the scheme.

Taking a view on the changing external environment

The state of UK DB schemes will largely depend on changes to the external environment – the economic and demographic outlook. Liabilities and asset growth should be modelled to reflect the potential economic and demographic outlook which the UK is facing. Schemes should be stress tested for a world where people live for longer and interest rates are lower. Any economic outlooks should also factor in potential impacts on sponsors' business models. For instance, it might be worth exploring how a prolonged fall in the value of the pound might impact on the UK manufacturing sector and subsequently the ability of firms in that sector to sustain or close their pension deficits.

The latter two changes to the regulatory approach should feed into one another and may even form the basis for a new department to act as the organisation's radar, anticipating challenges and risks long before they materialise.

Focus on scheme consolidation

The current system is incredibly fragmented. Many smaller schemes lack the economies of scale enjoyed by larger schemes with membership in the thousands, resulting in "significantly higher" running costs for small schemes in comparisons³². Consolidating schemes could allow for sponsors and scheme members to enjoy better value, which would alleviate some of the financial pressures associated in running a DB scheme. Furthermore, the regulatory framework surrounding DB schemes may be ineffective if it is designed to accommodate schemes with huge disparities in membership size and asset wealth. The existence of small schemes "sets the tone for the regulatory framework"³³ which could potentially be much better suited for governing the behaviour of schemes which were consolidated and more homogenous. There is a case for undertaking a review about how this might be done.

Final thoughts

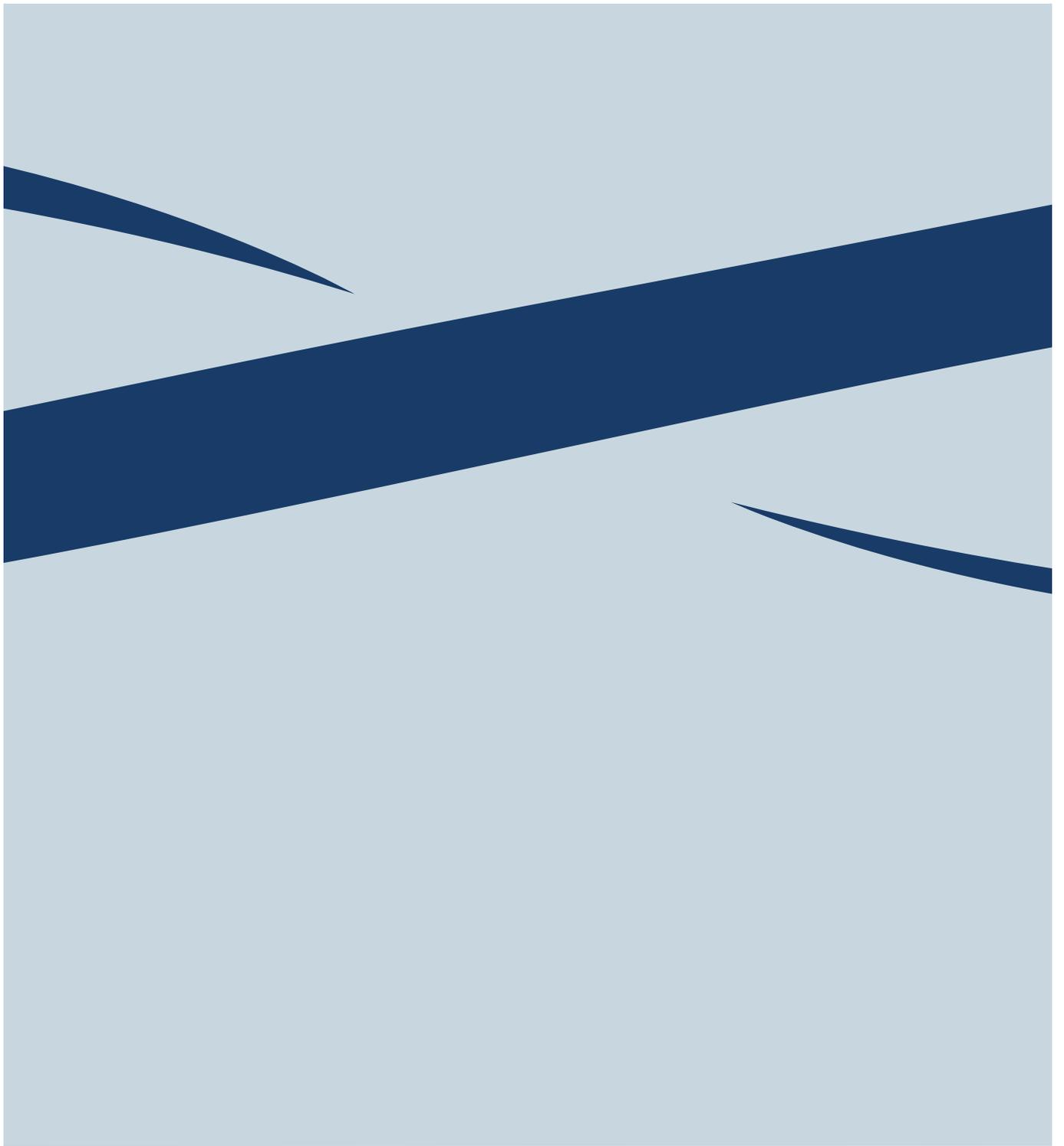
This report has explained the reasons and consequences of pension deficits for DB schemes in the UK. Adverse economic conditions and an unprecedented demographic shift towards an ageing society has put the sustainability of such schemes in doubt. We have shown that this may have placed downward pressure on wages, and despite the decline in popularity of these schemes, the increased life span of claimants and lower interest rate environment means the issues surrounding DB pension payments is unlikely to abate any time soon.

While there are technical solutions available to scheme trustees and their sponsors, these ultimately do not address the structural issues which are affecting DB schemes in this new economic and demographic normal. In order to break the "vicious circle" of persistent deficits, we advocate a new approach to dealing with DB scheme management. This involves a more proactive stance from the regulatory body and a change in emphasis away from protecting full member benefits and towards supporting members' interests while better taking into account the interests of the firm and its employees.

³¹ Many of these are referred to in Blake and Harrison (2016)

³² IFF Research (2014) "Defined benefit (DB) scheme running cost research: A data report on the costs of running DB pension schemes (quantitative survey)"

³³ Pensions and Lifetime Savings Association (2016) "DB Taskforce Interim Report"



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