

Tranche 12 analysis

A review of defined benefit pension schemes with valuation dates between September 2016 and September 2017 (Tranche 12)

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Introduction

In order to provide further context to our 2017 annual funding statement (found at www.tpr.gov.uk/statements), we are publishing our analysis of the expected positions of defined benefit (DB) pension schemes with valuation dates between 22 September 2016 and 21 September 2017 (Tranche 12).

This material and the work involved in preparing it are within the scope of and comply with the Financial Reporting Council's Technical Actuarial Standards regarding pensions, reporting actuarial information, data and modelling. For the purposes of these standards, the users of this material are considered to be the regulated community for UK occupational defined benefit pension schemes.

In modelling the impacts of market conditions on schemes, we have made a number of approximations based on the high level and limited data we hold, which means we cannot take account of some scheme-specific characteristics. The position of individual schemes will therefore vary depending on a number of individual factors. Similarly, our analysis of trends in potential sponsor affordability is based on high level publicly available data and is not offered as a substitute for scheme-specific assessments.

Summary

Market conditions and impacts on scheme funding

For those schemes carrying out valuations in 2017 (Tranche 12 or T12), our analysis shows that most major asset classes performed well since their last valuation date.

For example, over the periods December 2013 to December 2016 and March 2013 to March 2017, the FTSE All World (excluding UK sterling) returned 52.9% and 60.7% respectively. However, wider concerns for global growth and reductions in the nominal and real yields are likely to have a significant impact on schemes' expected returns across various asset classes over the medium and longer term.

Overall, our modelling suggests that, for the majority of schemes, the value of their liabilities is likely to have grown by more than their assets since their last valuation. The level of increase in deficits for individual schemes could vary greatly compared with our aggregate estimates depending on their valuation dates, their funding and investment strategies and in particular the extent to which they had hedged their interest rate risks.

Many Tranche 12 schemes experienced relatively favourable market conditions when conducting their last valuations (2014, Tranche 9) and as such will have been more significantly impacted by the current market conditions than schemes in other tranches. Although asset returns have been better than expected, in general this has not been enough to offset the increase in liabilities due to the change in market conditions, meaning deficits have increased and funding levels have fallen.

Developments in employers' profits, balance sheets and dividend payments

Changes in the strength of the employer covenant are a key consideration for trustees and employers when setting their funding plans. Our analysis of sponsoring employers suggests that the majority of employers have seen an increase in the nominal value of their profits and balance sheets over the last three years. However, there is a wide distribution of how profits have changed across and between individual companies, and there remains a considerable proportion of schemes whose employers have experienced a decline in profits over the period.

For the group of FTSE350 companies who paid both deficit repair contributions (DRCs) and dividends in each of the previous six years, we have seen, at the median level, the ratio of DRCs to dividends decline from around 10% to around 7%. This is mainly driven by the significant increase in dividends over the period, without a similar increase in contributions.

Impact on recovery plans (RPs) and affordability

Our modelling highlights that if Tranche 12 schemes were to retain their RP end dates, or for those schemes nearing the end of their RP make a modest increase in the RP length, the median increase in DRCs would be in the region of 75%-100%. About 20% of schemes would be able to retain their DRCs at the same level or less and a similar number would need to increase DRCs to more than three times their current levels. The latter group has a high proportion of schemes which are large compared to the size of the employer.

Our assessment of affordability for Tranche 12 schemes suggests about 50% of these schemes' employers have the resilience to continue to maintain the same pace of funding and many will be able to increase their contributions if the circumstances of the scheme require it.

A further 37% of these schemes have a covenant we also deem to be adequate to support the scheme. However, their current contribution and/or risk strategies pose unnecessary longer term risks which may be mitigated by an increased pace of funding combined, for some schemes, with a reduction in the level of risk.

Among the remaining schemes, 8% have the potential to benefit from wider group support either from a UK or a global entity. It may be the case that this wider group has no legal obligation to support the scheme.

This leaves 5% of Tranche 12 schemes where the prospect of additional support from the employers is uncertain and minimal, and for whom the least detrimental impact for members' benefits may be for the scheme to continue to take a reasonable level of unsupported risk.

Market indicators

Scheme funding is sensitive to the impact of the changes in market conditions on schemes' assets and the valuation of their liabilities.

Bond yields

Figure 1 shows the Bank of England estimates of nominal and real gilt yields and implied inflation as measured by the Retail Prices Index (RPI) over a 20 year period at each date from March 2010.

Figure 1: Benchmark yields

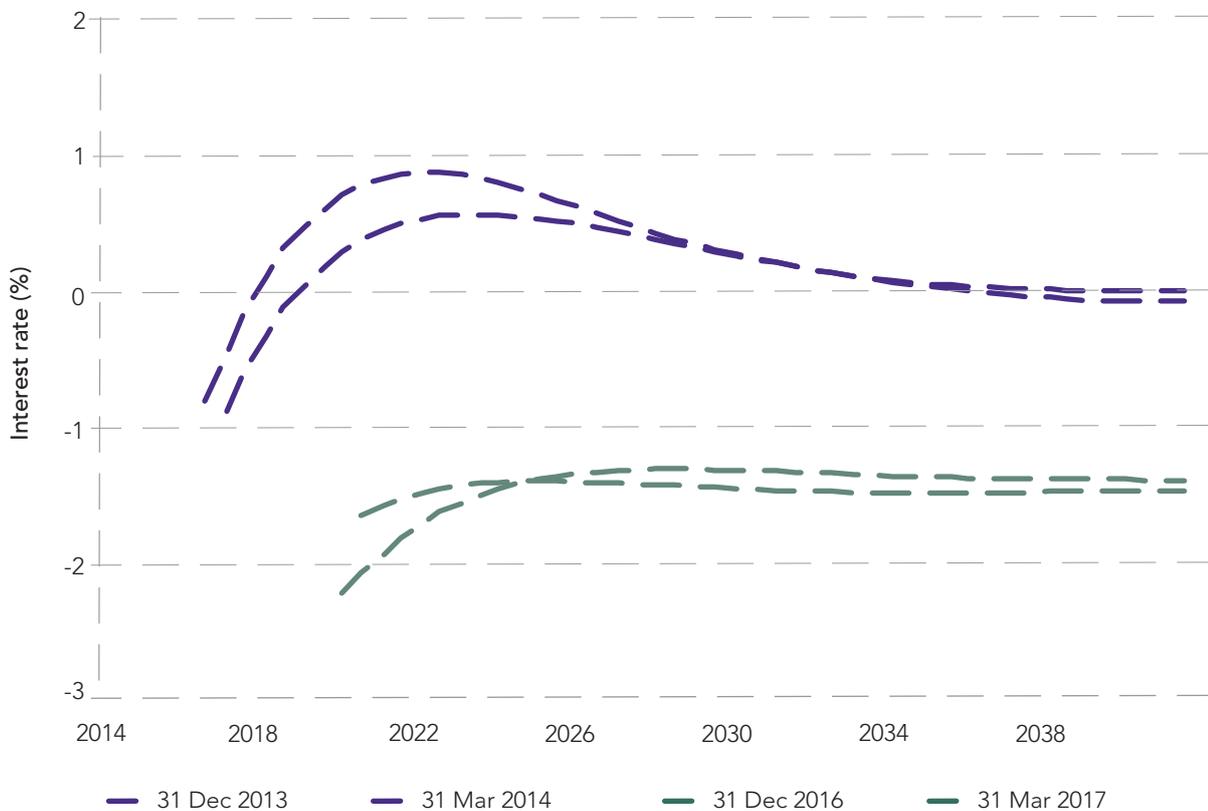


There was a significant fall in yields in mid 2014 with the long-term real gilt yields falling into negative territory. While they stabilised during 2015, they took a further significant fall in the middle of 2016 to a level they have not recovered from.

Figure 2 shows the real forward interest rates as estimated by the Bank of England as at the end of December 2013, March 2014, December 2016 and March 2017. End of December and end of March are the most common valuation dates for schemes in this tranche.

Figure 2: UK instantaneous real forward gilt curves

Source: BoE



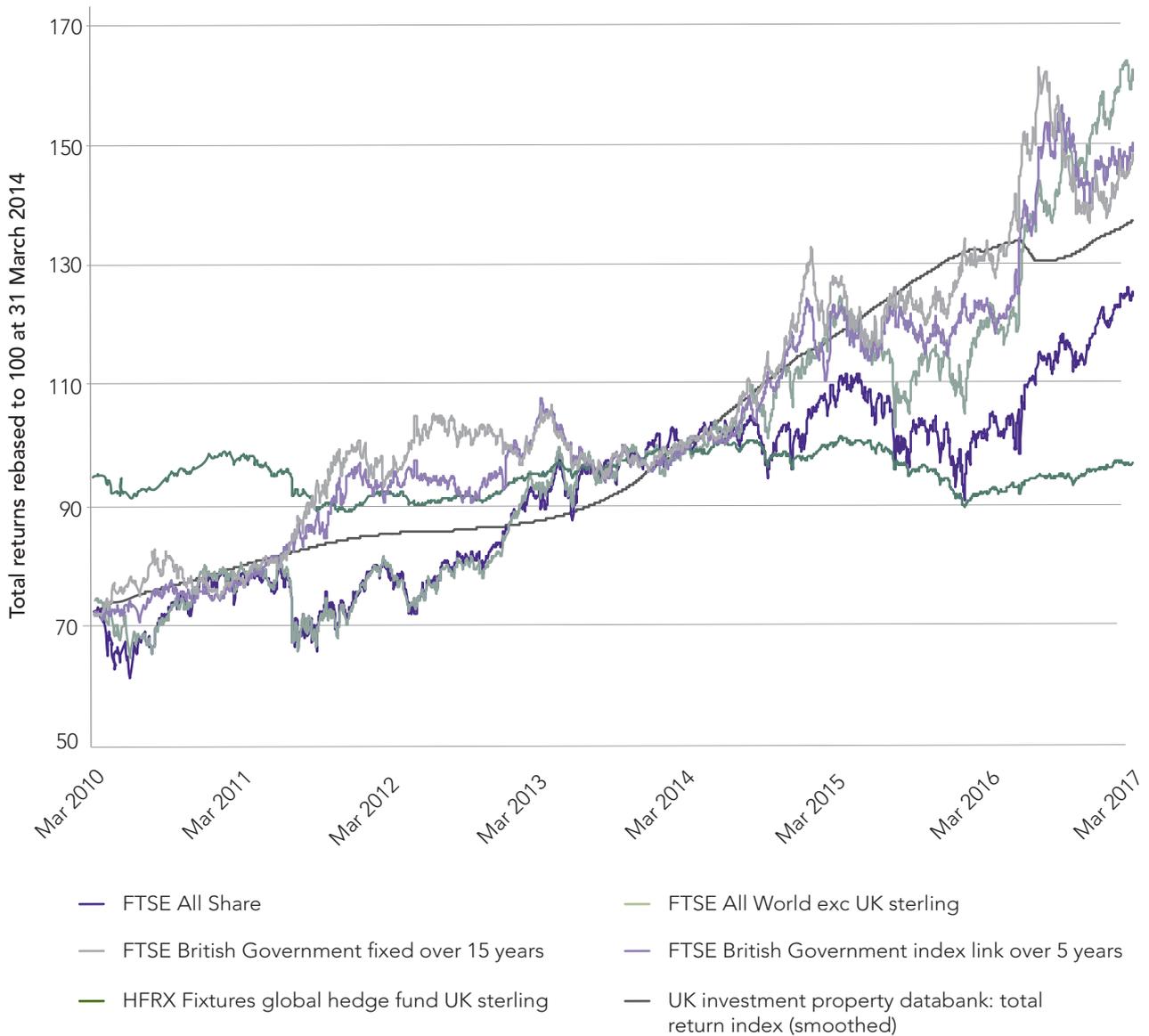
This chart shows that over the periods December 2013 to December 2016 and March 2014 to March 2017, there has been a similar fall in the implied real forward interest rates across both periods, and they are expected to be lower in the short and long term.

As was the case in the previous tranche comparison, the reduction in yields and expectations for interest rates and inflation is likely to have a significant impact on the expected returns across various asset classes. All else being equal, we would expect that most schemes in Tranche 12 will set funding strategies based on lower expected investment returns from most asset classes than at their last valuation. As a consequence, we expect that most schemes will have a larger than expected reported value for their liabilities at their valuation date.

Asset returns

Figure 3 shows total returns (ie increases in value with income re-invested) for a range of asset class indices since 2010. The returns have been re-based to 100 at 31 March 2014, so that if equal amounts had been invested in each asset class index at that date, the chart shows the relative change from that point.

Figure 3: Asset returns



Source: Thomson Reuters

NB: the property index yield has been smoothed using a monthly index.

Table 1 shows the total returns for various asset indices over the periods December 2013 to December 2016 and March 2014 to March 2017.

Table 1: Total returns for various asset indices

Index name (asset class)	Total returns over the period 31 Dec 2013 – 31 Dec 2016	Total returns over the period 31 Mar 2014 – 31 Mar 2017
FTSE All Share (UK equities)	19.3%	24.9%
FTSE All World excluding UK Sterling (Overseas equities)	52.9%	60.7%
UK Investment Property Databank: Total Return index (Property)	39.6%	37.4%
FTSE British Government fixed over 15 years (fixed interest gilts)	49.6%	48.3%
FTSE British Government index link over 5 years (index-linked gilts)	52.8%	50.4%
HFRX Global Hedge Fund United Kingdom Sterling/Pounds	-2.9%	-2.7%

Source: Thomson Reuters

Over the last three years, returns have been significantly positive for the asset classes shown above. This is mainly due to strong asset returns in 2014 and 2016, despite being relatively flat or negative during 2015. The hedge fund index has seen a negative return over both periods.

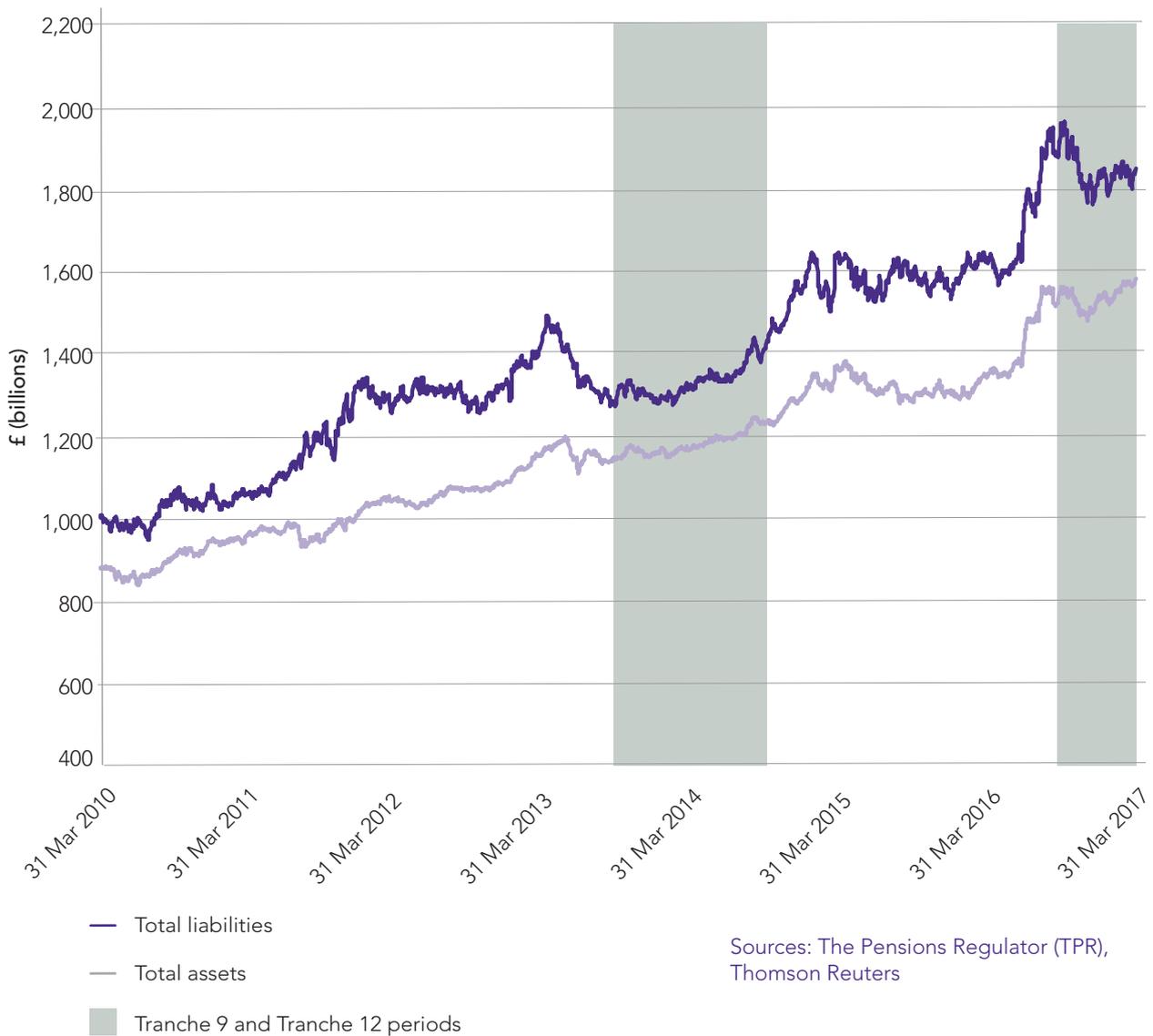
UK and overseas equities returned significantly more over the period March 2014 to March 2017 than December 2013 to December 2016. This is primarily due to the significant positive returns on these asset classes over the period December 2016 to March 2017, coupled with relatively low or flat returns over the period December 2013 to March 2014.

DB schemes

Funding position of DB schemes in aggregate

Figure 4 shows estimates of assets and technical provisions (TPs) derived from the movements in market indices from quoted positions for all schemes in our regulated DB universe. This is an aggregate analysis based on highly summarised data.

Figure 4: Estimated assets and liability positions of DB pension schemes



The changes in market conditions since their last valuation mean that deficits on a TPs basis are likely to have increased for many schemes in Tranche 12. This analysis may not be representative of individual schemes whose assets and liabilities will depend on many scheme-specific factors. These include (but are not limited to) the approach taken to setting discount rates, the exact timing of valuations and funding positions, the level of DRCs, asset allocation and interest rate and inflation hedging strategies.

Potential impact on scheme deficits in more detail

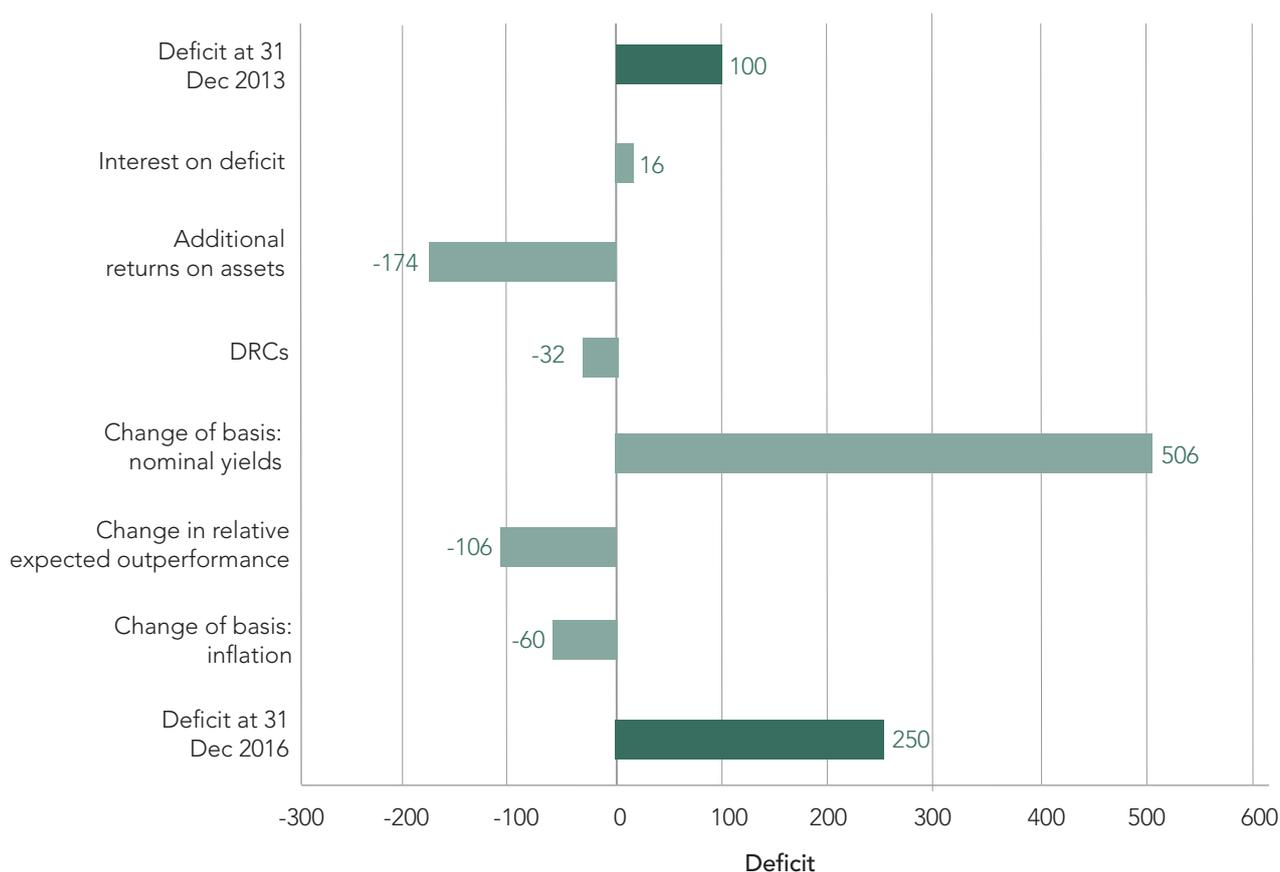
Figures 5a and 5b illustrate the key drivers in the change in deficit for all Tranche 12 schemes at the two most common valuation dates – December and March. For the purpose of these illustrations, we have assumed that the discount rate used to measure the liabilities of each scheme will have changed broadly in line with the net effect of the movement in gilt yields between these two dates and our estimate of the relative change in prudent expected returns over gilt yields from the portfolio of return-seeking assets held by each scheme. In practice, schemes may determine the appropriate discount rate in different ways.

In Figures 5a and 5b, the starting deficit for all schemes has been notionally set to 100 to allow for easy comparison of the change over the period. The size of the bars shown on the chart illustrates the relative impact of each of those items on the deficit over the period.

Deficit contributions and better than expected asset returns have not been enough to offset the increase in liabilities due to the change in market conditions, meaning funding levels have fallen.

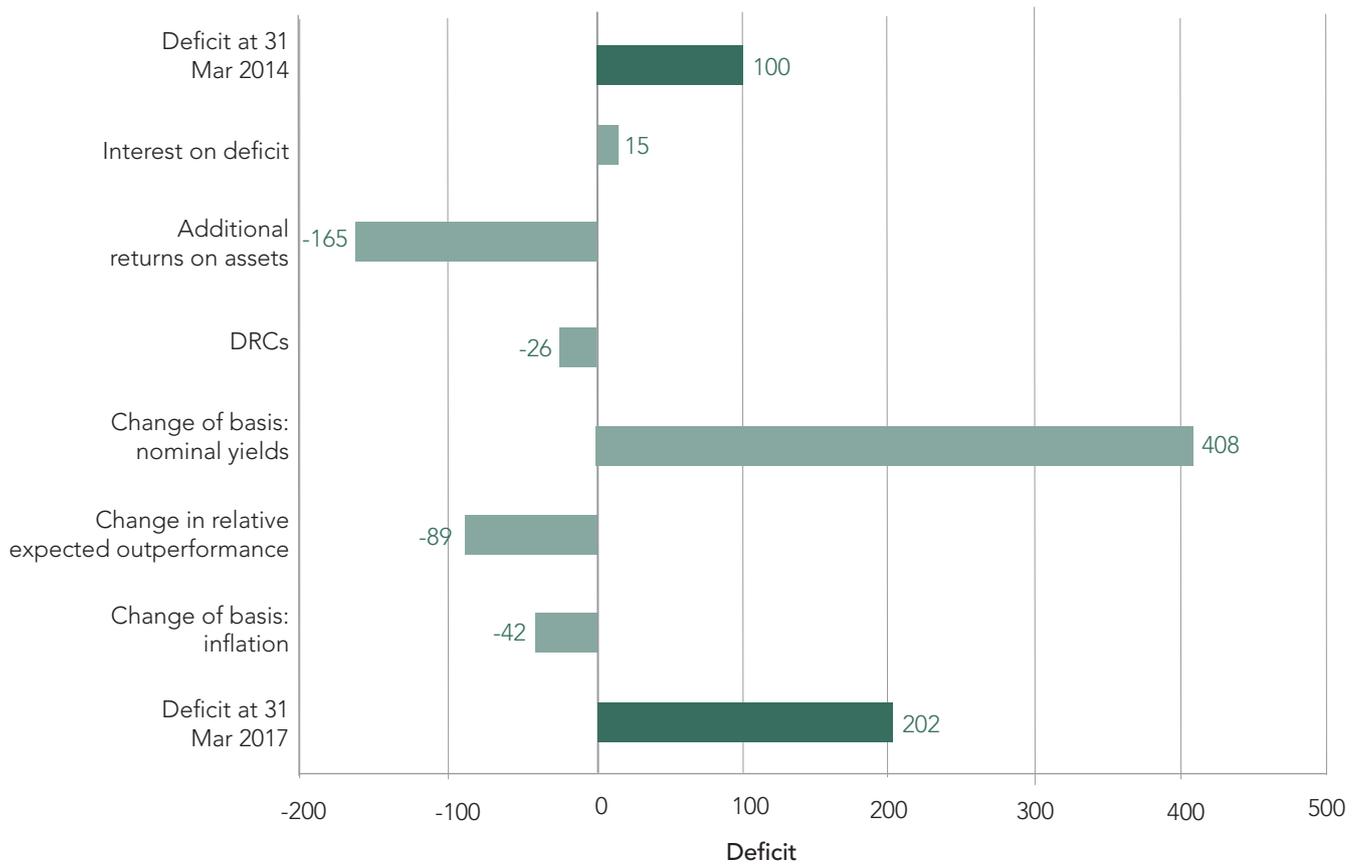
Figure 5a: Estimated impact of market conditions on deficits of all Tranche 12 schemes – December 2013 to December 2016

Sources: TPR, Thomson Reuters



We estimate that the aggregate deficit of Tranche 12 schemes as at 31 December 2016 could be approximately two and a half times what it was three years ago. The analysis is based on aggregated scheme data, and in practice individual schemes may experience higher or lower levels of impact over the three years.

Figure 5b: Estimated impact of market conditions on deficits of all Tranche 12 schemes – March 2014 to March 2017 Sources: TPR, Thomson Reuters, FTSE group, Markit iBoxx



We estimate that the aggregate deficit of Tranche 12 schemes as at 31 March 2017 could be approximately double what it was three years ago. This is lower than the estimate of the three year change from December 2013 to December 2016, mainly due to the change in market conditions between December 2013 and March 2014.

The analysis is based on aggregated scheme data, and in practice the impact on individual schemes may be higher or lower for various reasons.

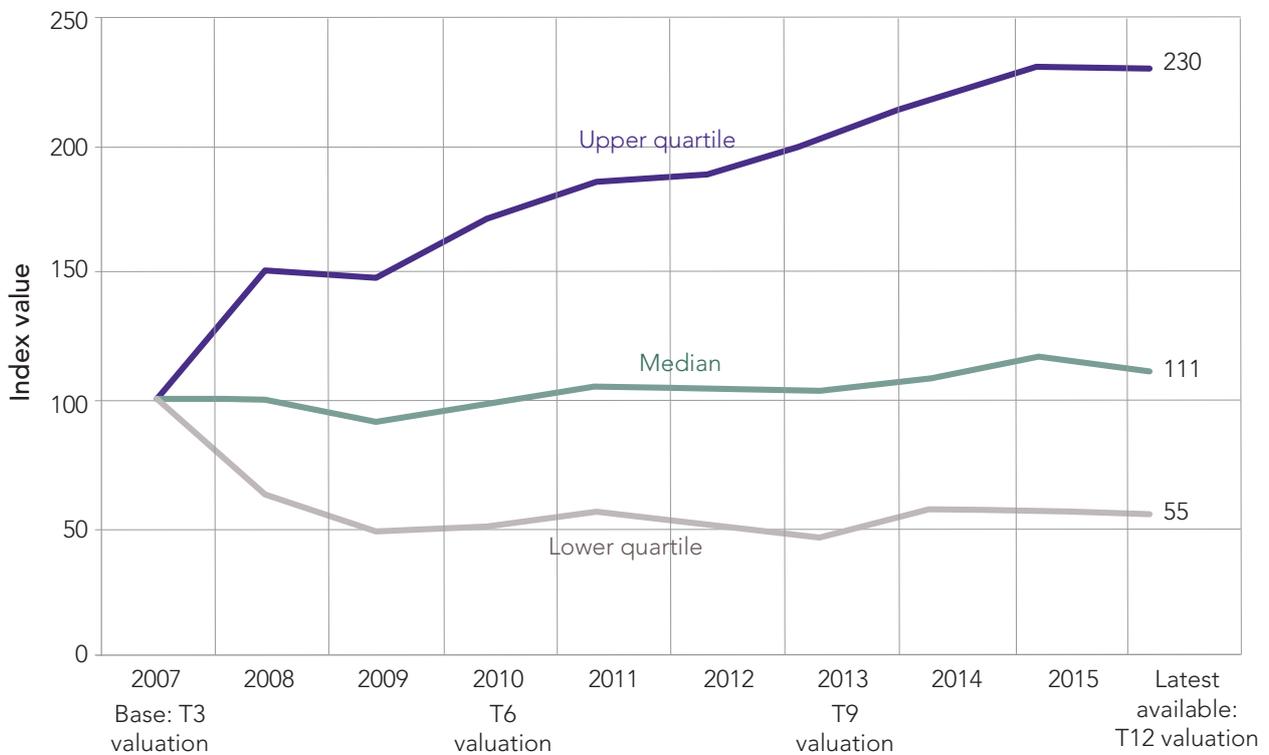
Employer trends

Employer profitability

As well as the impact of market conditions on the scheme, changes in the strength of the employer covenant are a key consideration for trustees and employers.

Figure 6 looks at how the level of profitability approximated by the employers' Profit Before Tax (PBT) in this illustration, has changed for schemes with a Tranche 12 valuation date. PBT data for 2007 (the data covering the tranche 3 valuation period, which a majority of the Tranche 12 population will have submitted a valuation in respect of) has been rebased to 100 for ease of comparison.

Figure 6: Profit before tax for Tranche 12 schemes from 2007



Sources: TPR, Financial Analysis Made Easy (FAME) published by Bureau van Dijk

Figure 6 shows, for Tranche 12 schemes, the distribution of changes in employer PBT from 2007 with the quartiles of the overall distribution plotted for each year, relative to 2007.

Only schemes with employers where positive PBT has been reported in each of the years shown are included in this chart, given presentational difficulties associated with negative PBT in the base year. See Table 2 for details of the full distribution of employers included in this chart.

The median of the distribution at the latest point (index value = 111) suggests that nominal profits have increased by at least 11% from 2007 for half of the schemes in the analysis.

The lower quartile of the distribution at the latest point (index value = 55) suggests that for a quarter of schemes, PBT has changed by between +11% and -45%, with a further quarter of schemes for whom PBT has decreased by more than -45%, relative to 2007.

The upper quartile (latest index value = 230) suggests that, for a quarter of schemes, PBT has increased by between +11% and +130%, with a further quarter of schemes for whom PBT has increased by more than +130%, relative to 2007.

Since the previous tranche 9 valuation date (covered by employers with financial years ending 2013), these schemes' increases in indexed values at the upper quartile and median suggest that, for the majority of schemes, nominal profits have increased.

Table 2: Full distribution (proportion of all schemes including negative PBT categories)

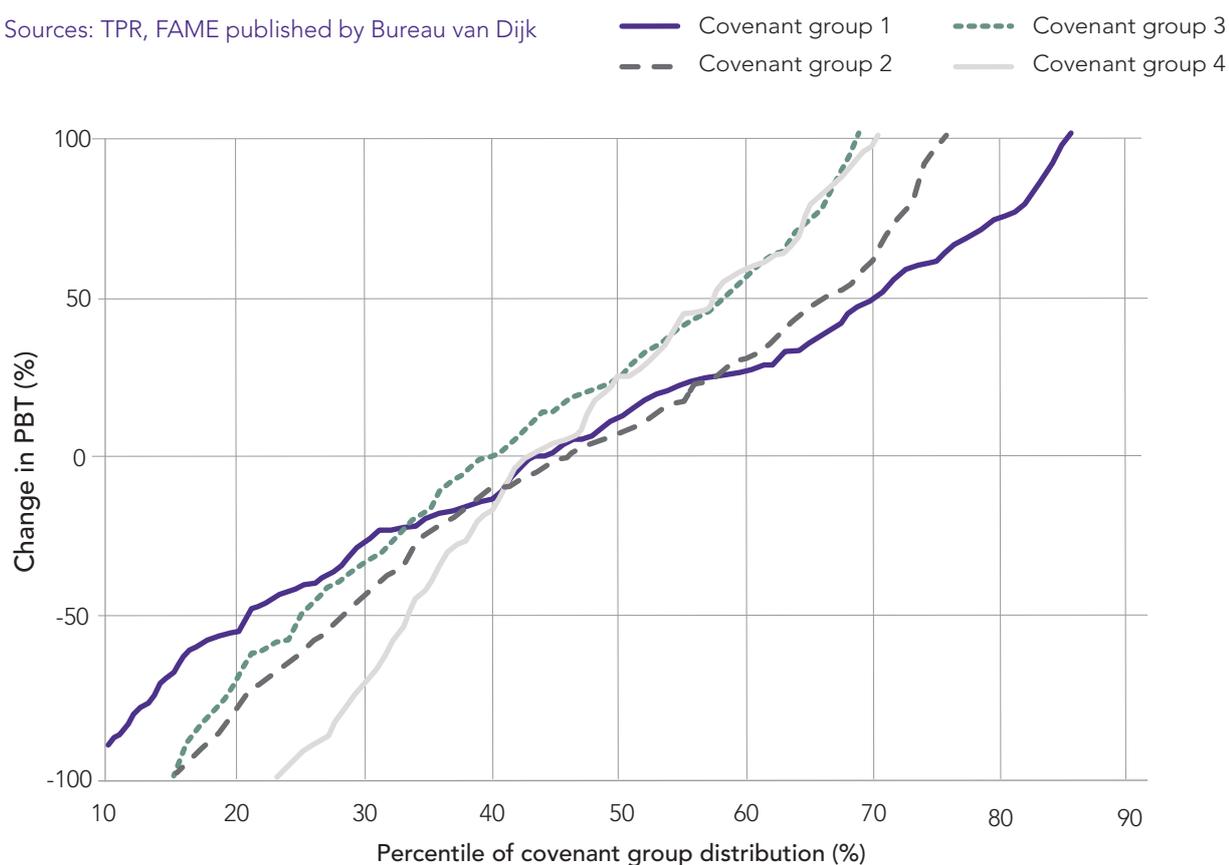
Group	Base (2007) (%)	2008 (%)	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)	Latest (%)
Insufficient PBT data (inc base)	18.2	19.7	20.3	21.2	21.3	20.9	21.4	21.8	23.2	21.0
Included in Figure 6	65.8	53.8	50.1	53.7	53.6	52.8	53.7	53.5	51.4	52.5
Negative PBT in base year	16.0	5.3	6.9	8.4	8.9	9.3	9.7	10.2	9.3	9.7
Negative PBT in ref year	N/A	11.1	14.3	10.0	10.0	11.1	9.9	10.0	10.9	11.5
Negative PBT in both years	N/A	10.1	8.5	6.8	6.1	5.9	5.3	4.5	5.2	5.4

Sources: TPR, FAME published by Bureau van Dijk

In each of the years, the data covers around 50% to 65% of schemes and around 20-25% are excluded due to insufficient employer PBT data. The remainder has been excluded due to either reporting negative PBT in the base year (2007), in the reference year, or both.

Figure 7: Change in Profit before tax for Tranche 12 schemes (including negative PBT categories)

Sources: TPR, FAME published by Bureau van Dijk



The above chart shows the distribution of the relative percentage change in employer PBT for Tranche 12 schemes from the previous valuation (employer financial year ending 2013) to latest available employer data.¹ The data is split by covenant group² for comparison where the covenant group was assessed at the scheme's previous valuation.

The chart shows, for example, that for Covenant group 1, one quarter of schemes experienced an increase in their sponsors' PBT by 60%³ or greater over the period, while the same proportion of schemes experienced a decrease in their sponsors' PBT by 40%⁴ or greater, with the remaining half falling between these two values.

1 Latest available represents approximately 20% employer accounts with 2016 financial year ends, and approximately 80% 2015 financial year ends.

2 Covenant groups reflect those assigned in a scheme's previous (usually tranche 9) valuation. Covenant groups (CG) 1-4 are assigned at the point of initial RP reviews to facilitate prioritisation. These grades may vary to the view taken during case-level intervention, where a wider range of information is taken into account. They are defined as: covenant group 1 – strong; 2 – tending to strong; 3 – tending to weak; 4 – weak. Covenant assessments are not usually undertaken for in-surplus schemes.

3 That is to say that PBT increased by at least 3/5ths.

4 That is to say that PBT decreased by at least 2/5ths.

Similarly for Covenant group 4, the chart shows that more than one quarter of schemes experienced an increase in their sponsors' PBT by 100%⁵ or greater, while one quarter of schemes experienced a decrease in their sponsors' PBT of 93%⁶ or greater, with the remaining half falling between these two values.

For the majority of employers shown in Figure 7, there has been an increase in the reported profits across all CG rated schemes in this analysis, with the most significant increase in weaker CG3 and CG4 rated schemes – around a 25-30% increase in PBT at the median (50th percentile).

However, there is a wide distribution and there remain a number of schemes with employers reporting a decline in profits over the period. The distribution is widest (steepest) in respect of weaker CG3 and CG4 rated schemes, which may be indicative of more volatile profitability.

Table 3: Full distribution (proportion of all schemes including negative PBT categories)

Group	Proportion of all T12 schemes
Insufficient PBT data	18.1%
Included in Figure 7	81.9%
Total	100.0%

Sources: TPR, FAME published by Bureau van Dijk

Figure 7 only includes those schemes with sufficient PBT data. Around 18% are excluded due to insufficient employer PBT data, meaning that 82% of schemes are included in the analysis. The methodology underpinning this analysis differs to previous years – details can be found in the appendices.

5
That is to say that PBT more than doubled.

6
That is to say that PBT decreased by approximately 9/10ths or PBT is less than 10% of its initial value.

Employer balance sheets

Figure 8 looks at how the strength of employers' balance sheets, approximated using shareholders' funds (SHF) has changed for schemes with a Tranche 2 valuation date. SHF data for 2007 has been rebased to 100 for ease of comparison.

Figure 8: Shareholders' funds for Tranche 12 schemes

Sources: TPR, FAME published by Bureau van Dijk

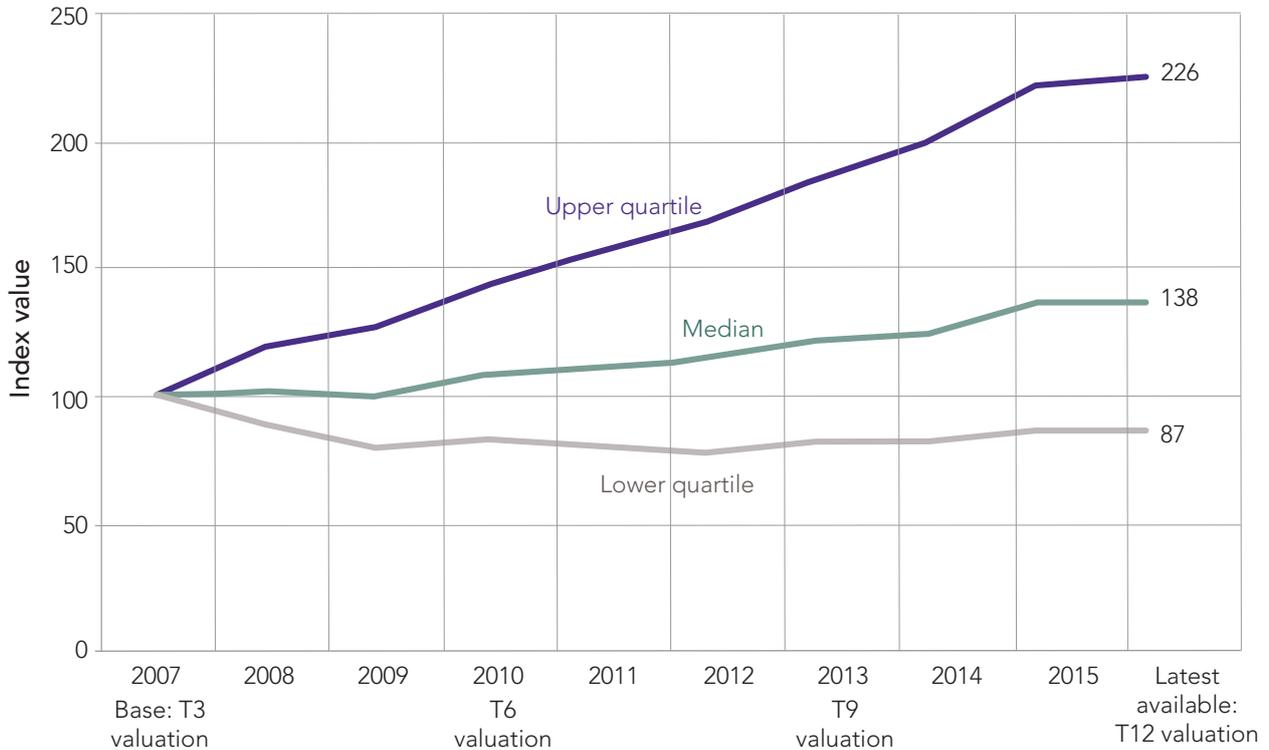


Figure 8 shows for Tranche 12 schemes the distribution of changes in employer SHF from 2007 with the quartiles of the overall distribution plotted for each year, relative to 2007.

The median of the distribution at the latest point (index value = 138) suggests that SHF have increased by more than +38% for half of the schemes in the analysis. The lower quartile of the distribution at the latest point (index value = 87) suggests that for a quarter of schemes, SHF have changed by between +38% and -13%, with a further quarter of schemes for whom SHF have reduced by more than -13%, relative to 2007. The upper quartile (latest index value = 226) suggests that for a quarter of schemes, SHF have increased by between +38% and 126%, with a further quarter of schemes for whom SHF have increased by more than 126%, relative to 2007.

Since the previous valuation date (2013) for these schemes, increases in indexed values at the upper quartile and median suggest that, for a majority of schemes, SHF have increased over the last three years.

Table 4: Full distribution (proportion of all schemes including negative SHF categories)

Group	Base (2007) (%)	2008 (%)	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)	Latest (%)
Insufficient SHF data (inc base)	12.6	13.6	14.0	14.6	14.3	13.8	14.1	14.4	15.7	12.8
Included in Figure 8	81.2	77.8	75.3	75.1	75.5	75.4	74.6	73.9	73.6	75.4
Negative SHF in base year	6.2	1.4	1.4	2.1	2.1	2.4	2.8	2.9	3.1	3.3
Negative SHF in ref year	N/A	2.4	4.7	4.3	4.2	4.7	5.3	5.6	5.0	5.6
Negative SHF in both years	N/A	4.7	4.7	4.0	4.0	3.7	3.3	3.2	2.7	2.9

Sources: TPR, FAME published by Bureau van Dijk

Figure 8 only includes schemes with employers that reported positive SHF in the years shown. The data coverage varies from around 70% to 80% across the years shown. Around 10-15% of schemes are excluded due to insufficient SHF data. The remaining 5-10% have been excluded due to either reporting negative SHF in the base year (2007) or in the reference year, or both.

Dividend trends

Figure 9a shows the distribution of the ratio of DRCs to dividends paid by employers of DB schemes in the FTSE350 (representing around 210 employers and 450 schemes) from 2011 to latest available financial year end (FYE) accounts.

Figure 9a: Ratio of DRCs to dividends (where both DRCs and dividends are non-zero) – Current FTSE350 companies sponsoring DB/hybrid pension schemes

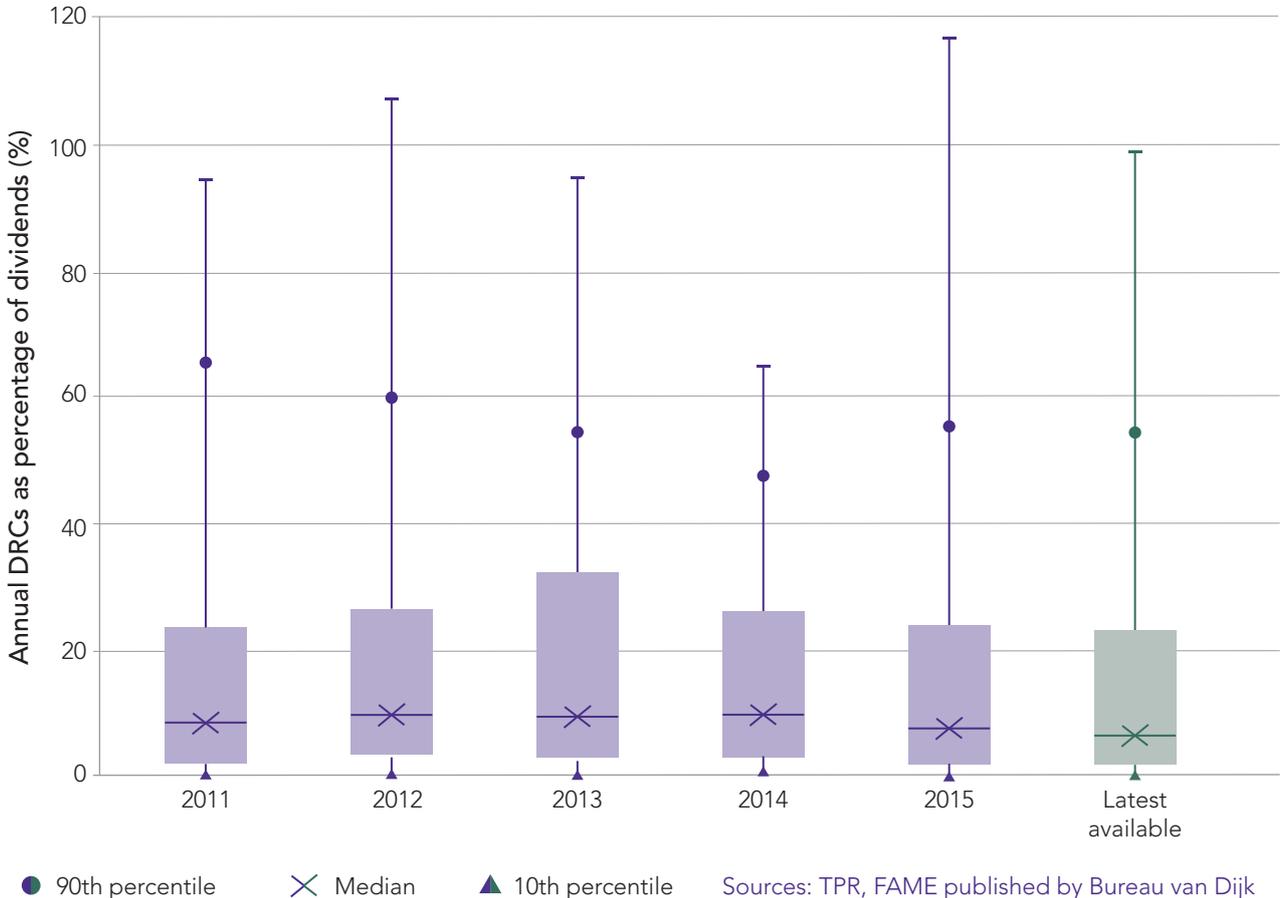
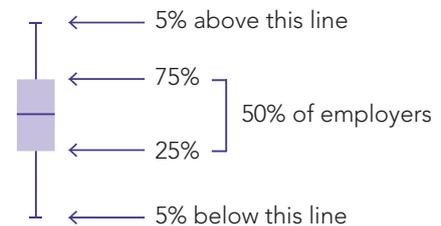


Figure 9a shows that for current FTSE350 constituents which sponsor DB pension schemes, the trend in DRCs as proportion of dividends has generally declined over the period from 2011/12. The median ratio has declined from around 10% in 2012 to just over 7% in employers' latest available accounts. This is mainly driven by the significant increase in aggregate dividends over the period, without a similar increase in contributions.



For three quarters of this population in 2012, DRCs represented less than 27% of dividends. This figure is around 23% of dividends based on the latest information. Similarly, for a quarter of this population in 2012, DRCs represented less than 4% of dividends, a figure which has reduced to around 2% of dividends, based on the latest information.

**Table 5: Full distribution (proportion of around 210 employers including nil DRCs and/or nil dividends)
– FTSE350 companies sponsoring DB/hybrid pension schemes**

Group	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)	Latest (%)
DRCs and dividends both non-zero (included in the distribution in Figure 9a)	74	75	76	78	77	77
Nil DRCs	11	13	12	13	12	15
Nil DRCs and nil dividends	9	7	5	4	5	2
Nil dividends	7	4	6	5	5	5

Sources: TPR, FAME published by Bureau van Dijk

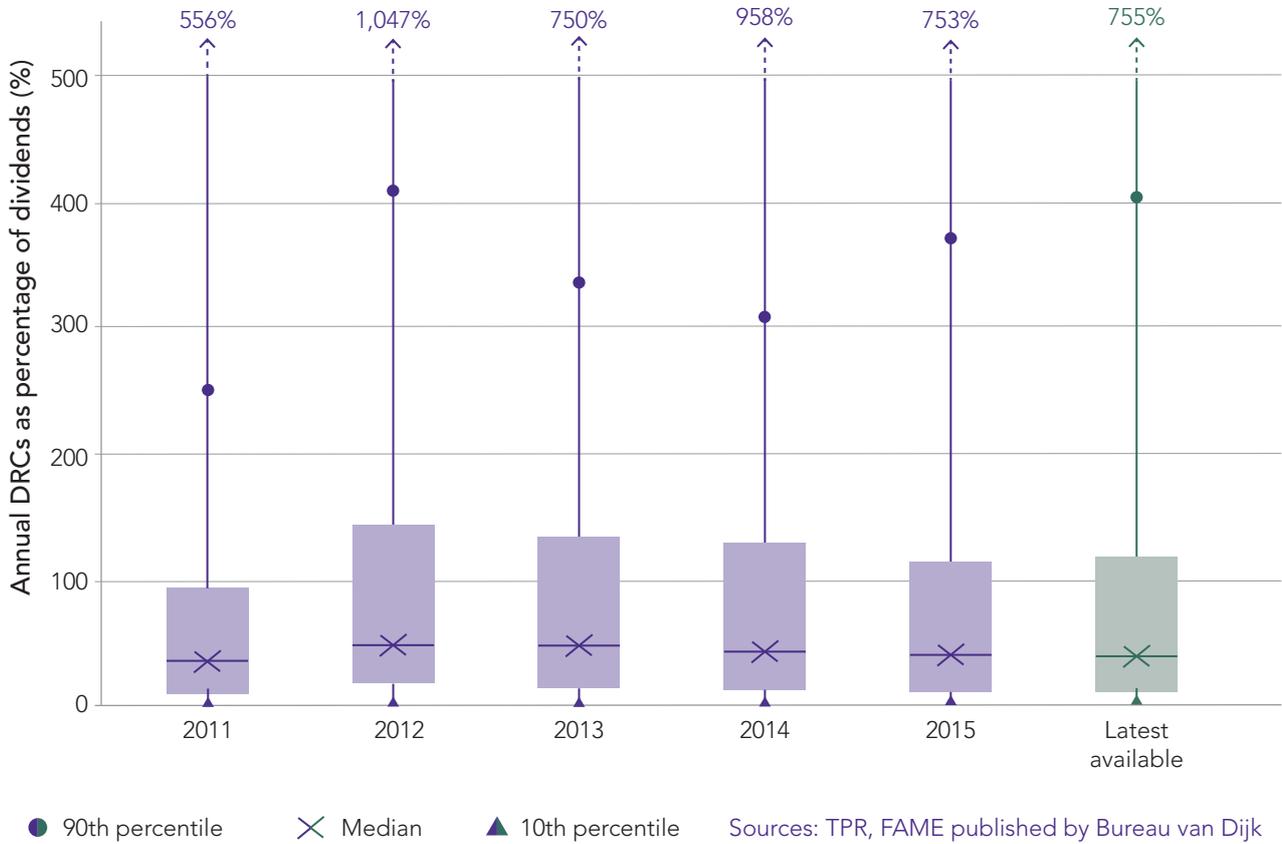
Figure 9a only includes current FTSE350 companies that sponsor a DB scheme, and where both the DRCs and dividends were non-zero in the year shown. Table 5 shows that in latest employer accounts, this amounted to 79% of the total current FTSE350 companies that sponsor a DB scheme.

The percentage of current FTSE350 companies that sponsor a DB scheme that paid no DRCs but paid dividends has increased from 11% in 2011 to 15% based on the latest accounting information.

The percentage of current FTSE350 companies that sponsor a DB scheme that paid no dividends but paid DRCs has remained broadly flat over the period analysed – between 5% and 7%.

Figure 9b overleaf shows distribution of the ratio of DRCs to dividends paid by employers of schemes outside the FTSE350 (representing around 600 employers and 800 schemes) from 2011 to the latest available FYE, who paid at least one dividend over the period 2011 to latest available accounts.

Figure 9b: Ratio of DRCs to dividends (where both DRCs and dividends are non-zero) – non-FTSE350 companies who paid at least one dividend over the period 2011 to latest available accounts



This chart shows that, for this population, the trend in DRCs as proportion of dividends has remained more stable over the period from 2011, relative to the FTSE350, but has also seen a general decline.

The ratio of DRCs to dividends is, in general, higher than for the FTSE350. However, the median of the distribution has declined from around 47% in 2012 to around 40%, based on the latest accounting information.

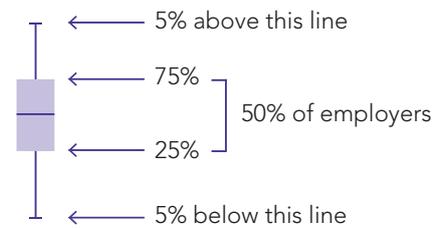


Table 6: Full distribution (proportion of all 600 employers including nil DRCs and/or nil dividends) – non-FTSE350 companies who paid at least one dividend over the period 2011-latest available accounts

Group	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)	Latest (%)
DRCs and dividends both non-zero (included in the distribution in Figure 9b)	65	58	64	67	63	66
Nil DRCs	12	15	13	14	15	16
Nil DRCs and nil dividends	4	12	8	5	8	4
Nil dividends	19	15	16	15	14	15

Sources: TPR, FAME published by Bureau van Dijk

Figure 9b only includes those dividend paying non-FTSE350 companies that sponsor a DB scheme, where the DRC and dividends in the year shown were non-zero. Table 6 shows that, in 2011, this amounted to 65% of the total non-FTSE350 companies that sponsor a DB scheme, and 66% based on latest accounting information.

The percentage of non-FTSE350 companies that sponsor a DB scheme and paid no DRCs but paid dividends in a given year, has remained relatively stable over the period shown; only varying between 12% and 16%.

The percentage of non-FTSE350 companies that sponsor a DB scheme and paid no dividends but paid DRCs in a given year, has also remained broadly stable, though it has varied from 19% in 2011 to 15% based on latest accounting information, using these two data points alone.

The methodology for the reconciliation of DRCs with dividend payments according to employers' financial year ends has changed relative to previous years' analysis. Details can be found in the appendices.

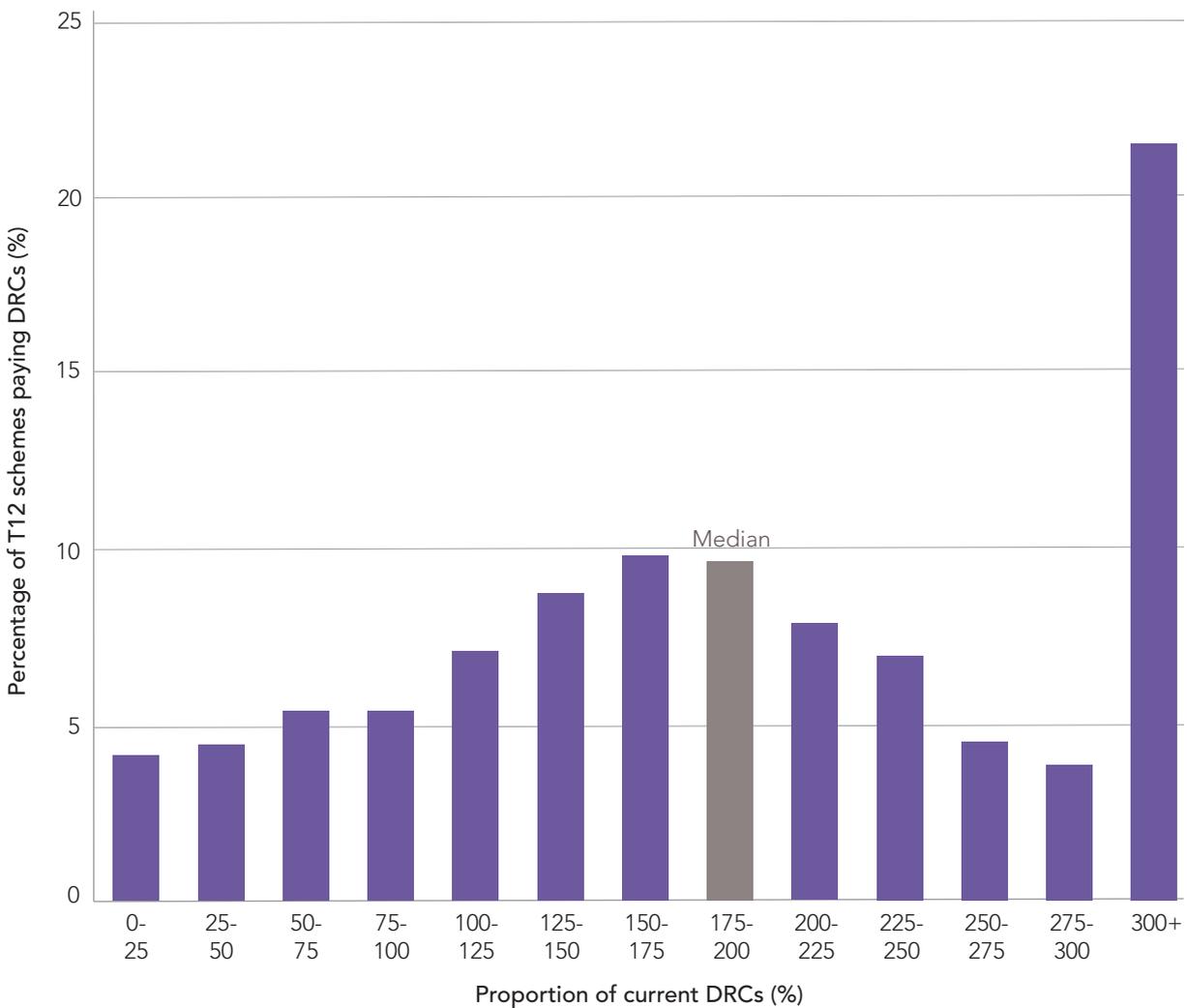
Implications for scheme funding

Our analysis above highlights that most schemes are likely to have a larger than expected deficit at their valuation date and will have to make changes to their RP. However, the trends in employers' PBT and SHF and the relative increase in dividends compared to DRCs, highlights that affordability may have increased for a number of employers, which may be of assistance in terms of possibilities for deficit management strategies.

Potential impact on DRCs

Figure 10 below illustrates the potential impact on DRCs for Tranche 12 valuations, expressed as a percentage of the level of current DRCs (ie what was agreed in Tranche 9 valuations). We have assumed, for the purpose of illustration and to remove the distorting impact of short remaining periods, that each scheme aims to eliminate the deficit over the higher of five years and the remaining term of the RP agreed at the last valuation.

Figure 10: Modelled Tranche 12 DRCs as a proportion of current DRCs – based on same RP end date as last valuation, or 5 years if longer



On these assumptions, about 20% of schemes would be able to retain their DRCs at the same level or less, either because of an improvement in their funding position or, for those schemes nearing the end of their recovery plan, the possibility of a moderate increase in the recovery plan length. Around 35% of schemes would see an increase of between 0-100%, and the remainder would need to increase DRCs by more than 100%, including a significant minority (over 20%) who would need to increase their DRCs to more than three times their current levels. However, further examination of the schemes in the last category showed that the majority of them are supported by strong employers who may be able to utilise other flexibilities in the system to agree appropriate funding plans.

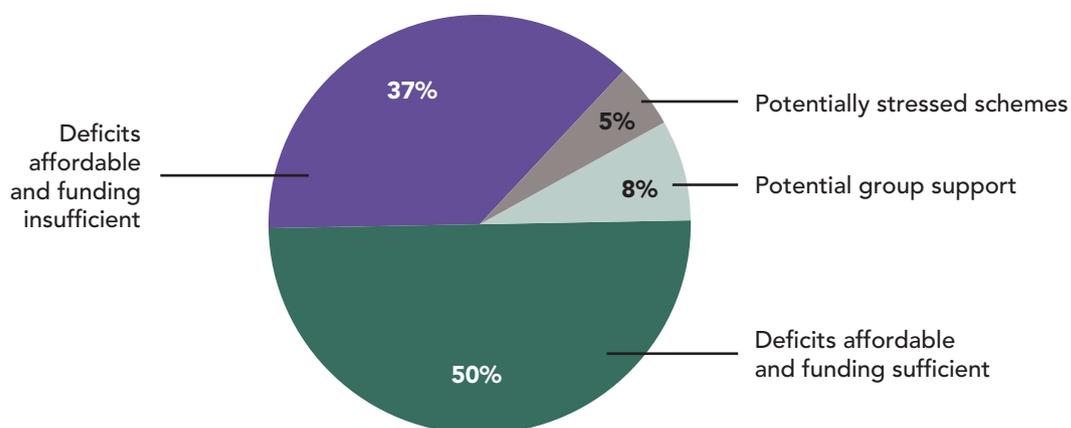
For some of these schemes, the apparently large increase may be due to current DRCs which are small compared to the size of the scheme and employer – we have not investigated these any further.

Comparing these impacts to the employer’s affordability

A key factor for trustees and employers when agreeing an appropriate RP is the affordability position of the employer and whether the proposed contributions may have an unreasonable impact on their plans for sustainable growth.

The analysis below, summarised in Figure 11, looks at one way in which the affordability position⁷ could be assessed and suggests that the percentage of Tranche 12 schemes that have the potential to be facing significant affordability issues is relatively small.

Figure 11: Segmentation of Tranche 12 schemes by affordability assessment



⁷ See 'Methods, assumptions and limitations' for more information.

In our assessment, 50% of Tranche 12 schemes are either in surplus or have a covenant adequate to support the scheme, and they have in place funding and investment strategies which are deemed adequate under current circumstances. It is very likely that most of these schemes can continue to maintain the same pace of funding and many will be able to increase their contributions if the circumstances of the scheme require it.

A further 37% of Tranche 12 schemes also have strong covenants which we deem to be adequate to support the scheme without affordability constraints. However, in our assessment their current contributions are low relative to their affordability and/or investment risk is high. We consider them to be vulnerable to the risk of significant underperformance from investments, or covenant weakening in the long term. These are unnecessary longer term risks since they have the affordability and may be mitigated by an increased pace of funding now combined with a reduction in the level of risk (where appropriate).

Among the remaining schemes, 8% of the Tranche 12 schemes have the potential to benefit from wider group support – either from a UK or global entity. It may be the case that this wider group has no legal obligation to support the scheme. Relying on non-legally binding support from the employer exposes such schemes to risks which are covered in paragraphs 66-75 of the DB code at www.tpr.gov.uk/code3, and the section 'Reliance on informal support' and Example 6 of our guidance at www.tpr.gov.uk/covenant-guidance. These risks may be mitigated by crystallising this group support one way or another.

This leaves 5% of Tranche 12 schemes where the prospect of additional support from the employers is uncertain and minimal. These schemes may have limited or no ability to use the flexibilities in the scheme funding regime. Subject to evidence of other appropriate measures, the least detrimental impact for members' benefits may be for the scheme to continue to take a reasonable level of unsupported risk.

DRCs compared to employers' PBT in Tranche 9 and 12

Table 8 illustrates the significance of DRCs compared to employers' PBT at the last valuation, compared to the modeled DRCs for schemes in Tranche 12 – assuming no change in current RP end-dates (subject to five year minimum). Due to limitations on availability of appropriate data this table analyses only those schemes where reliable PBT data is available (for about 60% of Tranche 12 schemes⁸).

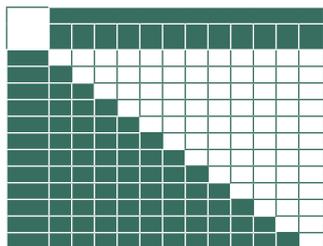
⁸ 1,171 out of 1,901 schemes included, after excluding 379 schemes with negative PBT and 351 schemes with unreliable or unavailable data.

The rows correspond to DRCs agreed in Tranche 9 as a proportion of employers' three year average PBT to FYE2013 (the information that would have been relevant at Tranche 9 valuation dates). The columns correspond to the modelled DRCs for Tranche 12 as a proportion of employers' three year average PBT to the latest available FYE.

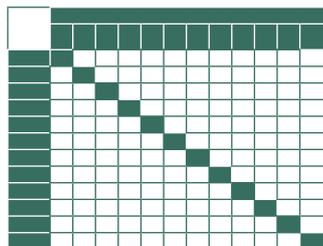
For example, our modelling estimates that 46 schemes agreed DRCs in Tranche 9 that were between 0-10% of employers' PBT at that time, and under the modelled scenario for Tranche 12, DRCs are estimated to be between 10-20% of employers' latest available PBT.

Table 8: DRCs compared to employer's PBT in Tranches 9 and 12

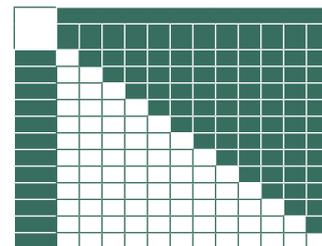
		Modelled T12 DRCs as a percentage of latest PBT (%)											
		0	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100+
Tranche 9 DRCs as a percentage of 2013 PBT (%)	0	170	109	17	8	6	6	2	1	0	1	1	13
	0-10	34	181	46	20	20	11	4	1	2	1	2	10
	10-20	8	24	27	13	17	15	6	2	3	3	3	9
	20-30	5	7	11	8	13	8	9	5	1	4	4	8
	30-40	6	4	3	7	4	1	4	2	3	1	2	10
	40-50	2	2	3	3	5	3	4	3	3	0	0	13
	50-60	1	2	2	3	1	1	1	3	0	3	0	10
	60-70	4	0	1	0	1	2	0	2	2	1	0	12
	70-80	0	0	0	0	0	1	0	1	0	1	2	8
	80-90	0	0	1	1	1	0	0	1	1	0	0	4
	90-100	0	0	0	2	0	0	1	0	0	0	1	3
	100+	13	1	3	5	4	5	4	3	4	6	1	74



Group A



Group B



Group C

Table 8 shows:

- ▶ Schemes in Group A are those where the ratio of modeled Tranche 12 DRCs as a proportion of employers' PBT is estimated to be less than that ratio in Tranche 9. This represents around 20% of schemes shown in the table. For these schemes, the indication is that modelled DRCs may be more affordable than at the scheme's last valuation.
- ▶ Schemes in Group B are those where the ratio of modeled Tranche 12 DRCs as a proportion of employers' PBT is estimated to be in the same range as that ratio in Tranche 9. This represents around 40% of schemes shown in the table. For these schemes, the indication is that the modelled DRCs may be similarly affordable to those agreed at the scheme's last valuation
- ▶ Schemes in Group C are those where the ratio of modeled Tranche 12 DRCs as a proportion of employers' PBT is estimated to be greater than that ratio in Tranche 9. This represents around 40% of schemes shown in the table. For these schemes, the indication is that the modelled DRCs may be less affordable than at the scheme's last valuation. However, for more than a third of scheme in this group, the modeled DRCs are less than 20% PBT.

Table 8 also shows that we estimate 15% of Tranche 12 schemes will require DRCs greater than 50% of PBT in order to maintain the pace of funding agreed at their previous actuarial valuation. Further examination showed that the majority of them (12% of Tranche 12) are supported by strong employers who may be able to utilise other flexibilities in the system to agree appropriate funding plans. An additional characteristic of this group is that many schemes are large in proportion to the sponsoring company and therefore their exposure to interest rate risk is high, relative to PBT. Consequently, a limitation of our analysis is that if they are managing a high proportion of this risk through hedging strategies which are materially different from those we have assumed, then our estimated position of their funding may not be reflective of their actual circumstances. Additionally, the use of PBT as an indicator of short term covenant support may not be appropriate for all employers; in practice schemes would be expected to use more appropriate indicators of formally assessed covenant strength and affordability, and these may, among other things, vary by type of employer.

Methods, principal assumptions and limitations

Scheme data

We rely solely on the information supplied to us via scheme returns, which may not be the most up to date or contain the level of detail that would be available to scheme actuaries when advising their clients. This inevitably leads to many more simplifications and approximations in the methods we use to estimate aggregate and individual funding positions, compared with the more robust calculations carried out for formal valuation and RP reporting by scheme trustees.

Many of these assumptions or simplifications have been driven by data limitations. For example, we have used index-tracking of major asset classes, made no allowance for changes in asset strategy since the previous valuation, and made only a broad allowance for the effect of hedging instruments to mitigate interest rate or inflation risk. Additionally, we have made assumptions about scheme liabilities in aggregate that may not accurately reflect the underlying liabilities of individual schemes.

The baseline for estimating the current deficit of each scheme is based on the results reported to us following its last valuation, adjusted approximately for contributions paid and movements in assets and liabilities in line with appropriate indices. Our analysis relies upon point-in-time valuations of schemes' assets and liabilities. For estimating the impacts on RPs, we have used the simplifying assumption that all Tranche 12 schemes have their next actuarial valuation as at 31 March 2017. The methodology we have employed implicitly assumes that the mortality and longevity assumptions used by the scheme actuary at the last valuation remain unchanged.

We have assumed that the discount rate used to measure the liabilities of each scheme will change broadly in line with the net effect of the movement in gilt yields between these two dates and our view of the relative change in prudent expected returns over gilt yields from the portfolio of return-seeking assets held by each scheme. While the overall resulting discount rates have on average a higher margin over gilt yields than that assumed by the scheme actuaries at the previous valuation, the nominal (or real) discount rates are lower on average.

This reflects our view that the general outlook for future investment returns is that they will be lower than those in the past and will persist for a longer period. In practice, schemes may use different approaches to setting discount rates and may also have different views on prudent expected returns from the same portfolio. For the purposes of our aggregate analysis, we have assumed that 15% of liabilities are hedged against interest rate movements and 20% against inflation.

This is not an exhaustive list of actuarial assumptions. The assumptions we have made may be a significant source of difference when compared with formal valuation results at the individual scheme level. In particular, for individual schemes, the results will be highly dependent on the following:

- ▶ The exact date of valuation.
- ▶ The scheme's asset strategy, including any changes made during the inter-valuation period.
- ▶ The extent of hedging against interest rates and inflation.
- ▶ Any changes to its mortality and longevity assumptions to reflect new information and emerging experience.
- ▶ The scheme's assessment of the appropriate discount rate to measure its liabilities.

If, collectively, trustees choose to use discount rates which are lower than we have assumed, then the estimated liabilities and deficits are likely to be higher than those modelled in this analysis, and vice versa.

Employer data and methodology

We rely solely on the information supplied to us via scheme returns to identify our employer population, which may not be the most up to date or contain the level of detail that would be available to covenant advisers when advising their clients. This inevitably leads to many more simplifications and approximations in the methods we use to estimate aggregate and individual covenant support.

Much of the data underlying the analyses relies on an evaluation of the ownership of participating employers by other group entities.

Ownership is defined as where a company is the UK-domiciled Domestic Ultimate Owner (DUO) of a participating employer, with a minimum controlling stake or interest of 50.01% in that employer. In some cases we do not have sufficient data to identify the DUO of a subject company (participating employer).

We have used the latest published corporate financial data available from our sources as at 1 April 2017 in respect of statutory employers to which more than one DB membership is directly attributable – the most recent data primarily relating to accounting years ending in 2015 or 2016.

For some employers (and therefore some schemes), the required data was not available – mainly SMEs, public/third sector or overseas companies – and therefore the analyses may not be representative of these schemes and/or sectors.

In order to estimate the available covenant support we have made certain assumptions and simplifications. The principal ones (though not an exhaustive list) are as follows:

- ▶ Where an employer participates in more than one scheme and/or a scheme is sponsored by more than one employer, we have made assumptions about the division and aggregation of an employer's financial support among the pension schemes in which it participates, based on the relative size of each scheme's deficit, and the number of members in each scheme attributable to each employer.
- ▶ Where corporate financial information for statutory employers was not available individually, where appropriate we have used consolidated accounts for the relevant group, thus potentially overstating the covenant support available.
- ▶ Where corporate financial information was not available for all statutory employers to a scheme, we have used information aggregated over only those employers for whom the relevant data was available, thus potentially understating the covenant support available.

Any of these assumptions, made to overcome data limitations, may be a significant source of error at the individual scheme/employer level. However the purpose of this analysis is to provide a picture across the DB landscape and we do not believe that these have a material effect relative to that purpose.

The methodology for the calculation of the change in employers' PBT by covenant group is as follows:

$$\text{Change in PBT} = (\text{PBT}_{\text{Latest}} - \text{PBT}_{2013}) / \text{ABS}(\text{PBT}_{2013})$$

which includes schemes reporting negative PBT in Tranche 9 (employers' financial year end 2013) and/or in the current tranche (employers' latest available financial year end), which differs to the methodology underpinning this analysis in previous years' statements.

The information on DRCs we collect covers DRCs expected in each year of the associated RP, with additional information as to the date the RP commenced, and ends.

Previously, DRCs were assumed to be paid at the mid-point of each year of the RP – for instance if the RP commenced on 01/01/2014 then the DRCs in year one of the RP were assumed to be paid on 02/07/2014. This single lump-sum payment was then compared with the dividends paid during the respective financial year corresponding to the employer's (DUO's) reporting period.

In this 2017 analysis, DRCs are assumed to be paid continuously – for instance in respect of the previous example: 1/365th of DRCs in year one of the RP are assumed to be paid on every day of 01/01/2014 through 31/12/2014. These daily payments are then aggregated over the financial year corresponding to the employer's (DUO's) reporting period. This results in a materially differing distribution of DRCs across financial years than previously.

Other non-methodological differences relate to, amongst other elements: changes in group ownership structures, changes to historic and current DRCs attributable resulting from the submission of revised RPs covering historic periods (due to the 15 month window for submission to us); and changes to the population under analysis.

Affordability assessment

The approach taken to this analysis segments all schemes by a number of different indicators that relate to how likely the scheme is to be in a position to pay members' benefits in full, and filters schemes down to reach a more refined estimate as to how many members are in schemes that are potentially challenged.

Key elements of this approach include an assessment of those schemes where the covenant is deemed adequate to support the scheme (assessed either through our covenant group approach or using publicly available employer data), whether the scheme is in surplus, whether it has a PPF approved guarantee and whether the scheme has in place a funding and investment strategy which is deemed adequate under current circumstances.

As part of the analysis, various assumptions have been made to determine whether there is adequate covenant support, which in combination with the funding and investment strategies that are in place would suggest whether affordability is constrained. These assessments are based on a range of information including our internal risk indicators.

This analysis is based on modelling outputs and assumptions and should be viewed with a degree of caution. However, it does help to identify schemes where there may be affordability to withstand increased contributions, or where there may be sufficient covenant support for the risks taken, as well as to identify potential affordability issues.

Employer covenant

The strength of the employer covenant is an important element in scheme funding and a key part of the risk assessment process. We use a number of metrics relating to employers to determine the covenant risk. However, it is recognised that this is a highly complex area and that a one-size-fits-all approach to looking at the employer covenant would miss the many complexities and nuances of individual employers. For these reasons, we combine the use of metrics with professional judgement when assessing covenant.

The assessment of covenant, being the outlook and plans for sustainable growth, seeks to understand the ability of the employer to provide funding to the scheme if required and how the scheme may affect the employer. The principles below set out at a high level some of the factors taken into account, although it is recognised that for different types of employers the application of these principles may differ (for example not-for-profit employers and multi-employer schemes):

- ▶ The strategic outlook for the sector and the position of the employer within the industry including the age, brand and public profile of the employer (ie its intellectual property).
- ▶ The income streams, cash generation and profitability of the employer, and the trends in these over time. The ability to fund future increases in pension contributions and any adverse impact this may have on these.
- ▶ The level of reinvestment of profits/cash/income within the business to ensure sustainability.
- ▶ The level of debt of, or secured by, the employer, and the ability to service this comfortably from income streams and cash generation within the business.
- ▶ The strength of the balance sheet and its ability to withstand trading shocks or decreases to its income streams.
- ▶ The size and value of the balance sheet and assets in comparison with the size of the pension liabilities and deficit and their availability to reduce deficits, including, where the employer is considered weak, the likely asset cover in insolvency.

- ▶ Any restrictions on income, assets or reserves.
- ▶ The level and sustainability of dividends (or other analogous distributions, for example distributions to members of limited partnerships), as a proportion of profitability and cash generation.

Limitations of covenant metrics

The assessment of how affordable pension scheme contributions are to a particular employer is not an exact science and we make a number of high-level assumptions to determine which categories of employers might be deemed to be reasonably able to support their schemes, leaving a pool where no such positive evidence exists. Note that this does not mean that all employers in this residual pool will have affordability issues, but rather that this group is where we might expect affordability to be most constrained.

Within our affordability analysis, a comparison of DRCs to PBT has been undertaken. The ratios of DRCs to PBT as used for this analysis should be taken as indicative of a sponsoring employer's affordability. For example, looking at PBT in isolation may not be an appropriate methodology for assessing affordability due to inaccurate, misleading or absent data resulting from a complex group structure within which one or more employer(s) sits. Additionally, DRCs may be funded by other companies within the employer's group. However, it is a consistent methodology for considering general trends across the spectrum of DB schemes.

Elsewhere in the analysis we have used certain accounting-based metrics as indicators of covenant support to compare with actuarially assessed liabilities, deficits or contributions. In practice, other measures may provide more appropriate indicators of formally assessed covenant strength and these may vary, among other things, by type of employer. Accordingly this analysis, or the metrics, should not be seen as a substitute for such bespoke assessments.

Glossary

Deficit repair contributions (DRCs)

These are contributions made by employers to the scheme in order to address any deficit in the value of the assets compared to the TPs, in line with the Schedule of Contributions and the RP. For the purpose of this analysis, we have assumed current contributions to be those in year 4 of the RP agreed at the Tranche 8 valuation, except for RPs which were shorter than four years where we have assumed that the contributions paid in the last full year of the plan have continued. Throughout this analysis we have used DRCs in the context of the value the scheme receives without making any allowance for any tax benefit the sponsoring employer may receive.

Dividends

A sum of money paid by a company to its shareholders. Dividends shown are total dividends paid in each respective year, including any special dividends but excluding share buy-backs. We have not made any adjustments for any bias due to large payouts from a small number of companies.

Profit before tax (PBT)

Profit before tax is a profitability measure after deduction of all operating expenses, interest on debt and depreciation but before the deduction of corporate tax. Except for Figure 6 (which shows trends in profitability since 2006), we use the average of the last available three years' profits for all of our analysis as a reasonable indicator of cash generation after debt service and maintenance capital expenditure (capex). We make no adjustments to remove the impact of any pension items already included in the reported figure.

Recovery plan (RP)

Under Part 3 of the Pensions Act 2004, where there is a funding shortfall at the effective date of the actuarial valuation, the trustees must prepare a plan to achieve full funding in relation to the TPs. The plan to address this shortfall is known as a recovery plan.

RP length

The RP length is the time that it is assumed it will take for a scheme to eliminate any shortfall at the effective date of the actuarial valuation, so that by the end of the RP it will be fully funded in relation to the TPs.

Section 179 liabilities (s179)

This refers to a valuation of PPF compensation benefits under section 179 of the Pensions Act 2004, for PPF levy purposes. This measure is designed to be a close approximation to the liability measure that would be used to decide whether the PPF would need to take on the scheme were the employer to become insolvent. In contrast to TPs, the assumptions to be used in an s179 valuation are prescribed by the PPF and are standard across all schemes. They are designed such that s179 is close to the cost of securing the value of PPF compensation level of benefits with an insurance company at the valuation date.

Shareholders' funds

Shareholders' funds are an estimate of a firm's total assets minus its total liabilities. No adjustment is made to remove the impact of any pension accounting items already included in the reported figure.

Technical provisions (TPs)

The funding measure used for the purposes of Part 3 valuations. The TPs are a calculation undertaken by the actuary of the assets needed at any particular time to make provision for benefits already considered accrued under the scheme using assumptions prudently chosen by the trustees – in other words, what is required for the scheme to meet the statutory funding objective. These include pensions in payment (including those payable to survivors of former members) and benefits accrued by other members and beneficiaries, which will become payable in the future.

Tranches

'Tranche' refers to the set of schemes which are required to carry out a scheme-specific funding valuation within a particular time period. Schemes whose valuation dates fall between 22 September 2015 and 21 September 2016 (both dates inclusive) are in Tranche 11. Because scheme-specific funding valuations are generally required every three years, these schemes (with a few exceptions) had their last formal valuation in Tranche 8 (valuation dates between 22 September 2012 and 21 September 2013).

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Tranche 12 analysis

A review of defined benefit pension schemes with valuation dates between September 2016 and September 2017 (Tranche 12)

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