



**DWP** Department for  
Work and Pensions

## **OCCUPATIONAL AND PERSONAL PENSION SCHEMES**

### **REVIEW OF CERTAIN CONTRACTING-OUT TERMS**

Reports by the Government Actuary and the Secretary of State for Work and Pensions in accordance with Sections 42(1), 42B(1) and 45A(1) of the Pension Schemes Act 1993

Presented to Parliament pursuant to Sections 42(1), 42B(1) and 45A(1) of the Pension Schemes Act 1993 and Social Security (Reduced Rates of Class 1 Contributions, Rebates and Minimum Contributions) Order 2011

February 2011

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**Review of rebates and reduced rates of National Insurance contributions for members of defined benefit contracted-out pension schemes**

**Report to the Secretary of State for Work and Pensions by the Government Actuary**

Date: 21 January 2011

Author: Trevor Llanwarne

The Right Hon Iain Duncan Smith MP  
Secretary of State for Work and Pensions  
Department for Work and Pensions  
Caxton House  
Tothill Street  
London  
SW1H 9NA

21 January 2011

Dear Secretary of State

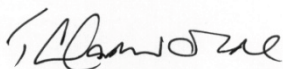
**Review of rebates and reduced rates of National Insurance contributions for members of defined benefit contracted-out pension schemes**

I am pleased to provide this report setting out my review of the rebates and reduced rates of National Insurance contributions for members of contracted-out pension schemes for the 2012 – 2017 quinquennium. This report addresses the duties in respect of contracting-out placed upon me in my role as Government Actuary by the Pensions Act 1993.

Due to the expected abolition of contracting-out on a defined contribution basis, my report focuses on the defined benefit contracted-out rebate. A supplementary report covering defined contribution contracted-out rebates will be provided separately.

My report sets out defined benefit contracted-out rebates calculated using three alternative valuation approaches. These show a range of possible outcomes for the rebate. Its intention is to enable you to make your decision on the rebate, based on the policy you wish to implement, on what you wish the rebates to deliver.

Yours sincerely



**Trevor Llanwarne**  
Government Actuary

Review of rebates and reduced rates of National Insurance contributions for members of defined benefit contracted-out pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

## 1 Overview

---

- 1.1 This report is addressed to the Secretary of State for Work and Pensions and sets out my review of the rebates and reduced rates of National Insurance contributions for members of defined benefit contracted-out pension schemes for the 2012 – 2017 quinquennium.
- 1.2 Individuals may contract out through membership of:
- > a Contracted-Out Salary Related Scheme (COSRS),
  - > a Contracted-Out Money Purchase Scheme (COMPS), or
  - > an Appropriate Personal Pension (APP).
- 1.3 Those who contract-out through the first arrangement are considered to be 'contracted-out on a defined benefit basis'. Those who contract out through the second and third arrangements are considered to be 'contracted-out on a defined contribution basis'.
- 1.4 The Secretary of State is required by statute to lay before Parliament, at intervals of not more than five years, a report setting out the Government Actuary's opinion on:
- > For COSRS, changes since the last report in the factors affecting the cost of providing benefits of equivalent actuarial value to the Additional Pension that is forgone by workers who are contracted-out, and
  - > For COMPS and APPs, the percentages required to reflect the cost of providing benefits of equivalent actuarial value to the Additional Pension that is forgone by workers who are contracted-out.
- 1.5 At the request of the Department for Work and Pensions, my report is extended to include advice on the appropriate level of the contracted-out rebate for those contracted-out on a defined benefit basis.
- 1.6 At the request of the Department for Work and Pensions, I should also propose a rate of revaluation of Guaranteed Minimum Pensions for contracted-out workers who leave pensionable service in the period 2012 to 2017.
- 1.7 My advice in this report has been informed by public consultation.
- 1.8 Enabling legislation now provides for the abolition of contracting-out on a defined contribution basis. The abolition date is expected to be 6 April 2012. Therefore, this report relates to the defined benefit contracted-out rebate, though I have also set out the current legislative position in respect of contracting-out on a defined contribution basis. I am required by legislation to propose defined contribution contracted-out rebate percentages for, as a minimum, the year 2012/13, even though it is expected that they will not come into force. These proposed rebates will be set out in a separate report.

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- 1.9 The defined benefit contracted-out rebate for 2007 to 2012 is 5.3%. This is split 1.6% employee and 3.7% employer. The rebate percentages are of earnings between the Lower Earnings Limit and the Upper Accrual Point. At the previous review the Government Actuary proposed a rebate of 5.8%, but the Secretary of State decided not to accept this proposal, and instead retained the rate of 5.3% which had been recommended and adopted for 2002 to 2007.
- 1.10 In my opinion, since the previous review the main relevant changes to the factors which affect the cost of providing benefits of equivalent actuarial value to the Additional Pension forgone by those contracted-out on a defined benefit basis are:
- > the profile of members of private sector COSRS is changing as a result of continuing defined benefit scheme closures to new entrants and new accrual,
  - > the future existence of many schemes is now likely to be curtailed which might lead to different financial considerations than those that would apply to schemes which do not plan to wind-up,
  - > the operation of the Pension Protection Fund and the Employer Debt Regulations are now more clear,
  - > state pension age has been raised for many people, which reduces the amount of Additional Pension forgone by contracted-out members each year, and means that it is deducted later,
  - > expectations of members' longevity continue to rise,
  - > a new funding regime for defined benefit schemes is now fully in place (deriving from the Pensions Act 2004),
  - > typical investment portfolios for funded pension schemes have become more prudent,
  - > developing actuarial opinion,
  - > economic conditions are noticeably different, with possible implications for expected future investment returns and inflation, and
  - > the state Additional Pension will be indexed in future by reference to the Consumer Prices Index, rather than by the Retail Prices Index.
- 1.11 In respect of my advice on the appropriate level of the defined benefit contracted-out rebate, I offer three alternative valuation approaches, depending on the policy you wish to adopt on what you wish the rebates to deliver.
- 1.12 The three alternative valuation approaches are:
- > a 'best estimate' basis, which in my view gives a number which in broad terms is equally likely to be too much as too little in the long term for the scheme to provide benefits at the level equivalent to the reduction in state pension,
  - > a 'typical funding' basis, designed to give a number consistent with a prudent approach to funding adopted by typical schemes, and



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- > a 'gilts' basis, designed to give a number consistent with a self-sufficiency approach.

1.13 Based on the assumptions outlined in this report, the derived rebates are:

Using state pension ages based on existing legislation:

- > 4.9% on a 'best estimate' basis,
- > 6.3% on a 'typical funding' basis, and
- > 10.5% on a 'gilts' basis.

Using state pension ages based on expected revisions to existing legislation:

- > 4.8% on a 'best estimate' basis,
- > 6.2% on a 'typical funding' basis, and
- > 10.4% on a 'gilts' basis.

1.14 The decision to set the rebate for 2012 to 2017 rests with the Secretary of State. I suggest that he might reach his decision by:

- > taking a view on the approach that fits the policy that it is desired to adopt for this review (for example, any of the three bases described above, or indeed any variant in between or outside the range offered here),
- > considering, if appropriate, any refinements (for example, on state pension age, the extent (if any) to which guarantee aspects should be allowed for, margins, rounding, etc.), and
- > determining the rebate and the split between employer and employee (noting that this aspect is outside of any considerations in this report).

1.15 I have also been asked to propose a rate for the revaluation of Guaranteed Minimum Pension (GMP) for contracted-out members who leave pensionable service in the period 2012 to 2017. I propose that this rate is set at 4.75% pa. This compares to a current rate of 4.0% pa.

1.16 Other than the Secretary of State for Work and Pensions, no person or third party is entitled to place any reliance on the contents of this report. Neither I nor anyone in GAD accepts any liability to any other person or third party for any act or omission taken, either in whole or part, on the basis of this report.

Review of rebates and reduced rates of National Insurance contributions for members of defined benefit contracted-out pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

## 2 Introduction to contracting out

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In this section I provide a general introduction to contracting-out, for both defined benefit and defined contribution schemes.

- 2.1 Since the introduction of the state earnings-related pension scheme (SERPS) in 1978, employees have been able to 'contract-out' – that is to give up all or part of their state Additional Pension benefits. In return they pay lower National Insurance contributions, or receive rebates of National Insurance contributions paid into their defined contribution pension schemes or personal pensions.
- 2.2 The principle of contracting-out continued after the introduction of the state second pension (S2P), which replaced SERPS in April 2002.
- 2.3 The legal background of contracting-out is set out in Appendix A. This gives the relevant statutory references and a summary of the effect on members of contracting-out.

### The contracted-out rebate

- 2.4 The 'contracted-out rebate' refers to the effective reduction of National Insurance contributions for members of pension schemes, and their employers, which are contracted-out of the state Additional Pension.
- 2.5 The contracted-out rebate is set having regard to the cost of providing benefits of equivalent actuarial value to the state Additional Pension that is forgone by workers who are contracted-out.

### COSRS, COMPS and APPs

- 2.6 Individuals may contract out through membership of:
  - > a Contracted Out Salary Related Scheme (COSRS),
  - > a Contracted Out Money Purchase Scheme (COMPS), or
  - > an Appropriate Personal Pension (APP).
- 2.7 Those who contract out through the first arrangement are considered to be 'contracted-out on a defined benefit basis'. Those who contract out through the second and third arrangements are considered to be 'contracted-out on a defined contribution basis'.
- 2.8 In respect of members of COSRS, both the employer and employee pay reduced rates of National Insurance contributions.
- 2.9 For members of APPs, HM Revenue & Customs makes payments directly to the pension scheme in respect of contracted-out members.

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- 2.10 A combination of the above occurs for members of COMPS. Reduced rates of National Insurance are paid and the employer pays the balance of the contracted-out rebates into the pension scheme. Age related top up payments are also made to the pension scheme by HMRC.
- 2.11 A single contracted-out rebate percentage is applied in respect of all members of COSRS.
- 2.12 Tables of age related rebates are applied in respect of members of COMPS and APPs.

**Abolition of contracting-out on a defined contribution basis**

- 2.13 Enabling legislation now provides for the abolition of contracting-out on a defined contribution basis. The abolition date is expected to be 6 April 2012. Therefore, this report restricts itself to determining the issues and costs relating to the defined benefit contracted-out rebate. I am required by legislation to propose defined contribution contracted-out rebate percentages for, as a minimum, the year 2012/13, even though it is expected that they will not come into force. These proposed rebates will be set out in a supplementary report which will be provided separately.

**The Government Actuary's and the Secretary of State's obligations**

- 2.14 The Secretary of State is required by statute to lay before Parliament, at intervals of not more than five years, a report setting out the Government Actuary's opinion on:
  - > For COSRS, changes since the last report in the factors affecting the cost of providing benefits of equivalent actuarial value to the Additional Pension that is forgone by workers who are contracted-out, and
  - > For COMPs and APPs, the percentages required to reflect the cost of providing benefits of equivalent actuarial value to the Additional Pension that is forgone by workers who are contracted-out.
- 2.15 At the request of the Department for Work and Pensions, my report is extended to include advice on the appropriate level of the contracted-out rebate for members of COSRS.
- 2.16 It has become established practice for the Government Actuary's advice to be informed by public consultation, as discussed in sections 3.6 to 3.10.
- 2.17 My role, as Government Actuary, is limited to providing advice on the contracted-out rebates. The power to decide and set the rebate rates (and the split between the employee and employer) is vested in the Secretary of State for Work and Pensions.
- 2.18 In addition, I have been asked by the Department for Work and Pensions to propose a rate for the revaluation of Guaranteed Minimum Pension (GMP) for contracted-out members who leave pensionable service in the period 2012 to 2017. This is covered in section 15.

Review of rebates and reduced rates of National Insurance contributions for members of defined benefit contracted-out pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

### 3 The 2012 – 2017 defined benefit contracted-out rebate review

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In this section I provide a general overview of the process I have adopted to conduct this review of the National Insurance rebates for contracted-out staff.

#### Approach to this review

- 3.1 This report relates to the contracted-out rebate for those contracted-out on a defined benefit basis (the 'defined benefit contracted-out rebate').
- 3.2 At previous reviews, the Government Actuary suggested a single set of assumptions to value the benefits forgone by contracted-out workers, which led to a single proposed value for the defined benefit contracted-out rebate.
- 3.3 Until the last review, in 2005/06, the Secretary of State had always accepted the defined benefit contracted-out rebate proposed by the Government Actuary. However, at the last review the Secretary of State instead set the rebate at a somewhat lower level than that proposed, citing the state of the public finances.
- 3.4 I have adopted a different approach for this review. Following discussions with the Department for Work and Pensions and HM Treasury and after considering the responses to the public consultation, I am advising on three alternative valuation approaches. These show a range of possible outcomes for the defined benefit contracted-out rebate, so that the Secretary of State can make his decision on its value with a better understanding of the possible approaches, outcomes and implications.
- 3.5 The three alternative valuation approaches are:
  - > a 'best estimate' basis, which in my view gives a number which in broad terms is equally likely to be too much as too little in the long term for the scheme to provide benefits at the level equivalent to the reduction in state pension,
  - > a 'typical funding' basis, designed to give a number consistent with a prudent approach to funding adopted by typical schemes, and
  - > a 'gilts' basis, designed to give a number consistent with a self-sufficiency approach.

#### Public consultation

- 3.6 As part of this review, the Government Actuary's Department issued a public consultation document that put forward possible assumptions for determining the defined benefit contracted-out rebate on 'best estimate', 'typical funding' and 'gilts' bases and invited comments on the proposals. The objective was to collect constructive evidence-based comments to help refine my proposed assumptions.
- 3.7 The public consultation is now closed. Twelve responses were received, which I have considered carefully before producing this report.

Review of rebates and reduced rates of National Insurance contributions for members of defined benefit contracted-out pension schemes

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- 3.8 The responses were generally constructive and largely supportive of my proposed approach. Detailed comments were offered on appropriate assumptions. I am grateful to all those who contributed responses to this consultation.
- 3.9 A summary of the key points from the consultation replies can be found in Appendix F.
- 3.10 The full public consultation document can be accessed on GAD's website.

Review of rebates and reduced rates of National Insurance contributions for members of defined benefit contracted-out pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

## 4 Factors affecting the cost of providing contracted-out benefits

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In this section I comment on the changes to the factors which affect the cost of providing benefits of equivalent actuarial value to the Additional Pension forgone by contracted-out workers. This addresses my statutory obligations in respect of defined benefit schemes.

- 4.1 In respect of the defined benefit contracted-out rebate, my statutory obligation is to comment on the changes to the factors which affect the cost of providing benefits of equivalent actuarial value to the Additional Pension forgone by contracted-out workers. In my opinion, the main relevant changes since the previous review are:
- > the profile of members of private sector COSRS is changing as a result of continuing defined benefit scheme closures to new entrants and new accrual,
  - > the future existence of many schemes is now likely to be curtailed which might lead to different financial considerations than those that would apply to schemes which do not plan to wind-up,
  - > the operation of the Pension Protection Fund and the Employer Debt Regulations are now more clear,
  - > state pension age has been raised for many people, which reduces the amount of Additional Pension forgone by contracted-out members each year, and means that it is deducted later,
  - > expectations of members' longevity continue to rise,
  - > a new funding regime for defined benefit schemes is now fully in place (deriving from the Pensions Act 2004),
  - > typical investment portfolios for funded pension schemes have become more prudent,
  - > developing actuarial opinion,
  - > economic conditions are noticeably different, with possible implications for expected future investment returns and inflation, and
  - > Additional Pension will be indexed in future by reference to the Consumer Prices Index, rather than by the Retail Prices Index.
- 4.2 The Pensions Act 2007 and the Pensions Act 2008 contain further reforms to the state second pension. These result in a number of technical changes to the calculation of the state second pension and contracted-out benefits. These do not have a material effect on the defined benefit contracted-out rebate percentage.
- 4.3 The factors set out in paragraph 4.1 and 4.2 are discussed further below.

## Review of rebates and reduced rates of National Insurance contributions for members of defined benefit contracted-out pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

### Member profile

- 4.4 The relevant population of contracted-out workers includes both public and private sector pension schemes. There is a trend in the private sector towards closing defined benefit schemes to new entrants. Those which remain open to accrual by existing members therefore experience a gradual increase in the average age of the members.
- 4.5 Since the value of pensions to workers in service generally increases with age, then this gradual increase in the average age of workers in the population leads to a gradual increase in the derived rebate.
- 4.6 The illustrated defined benefit contracted-out rebate values discussed in section 12 are based on a representative sample of contracted-out workers, taken from an extract from National Insurance records.

### Anticipated curtailment of defined benefit schemes

- 4.7 There is evidence highlighted by the consultation responses that many sponsors of private sector defined benefit pension schemes are considering closing their schemes to all future accrual (including that for existing members). It follows that some of these schemes may then look to buy-out their benefits with an insurance company.
- 4.8 Pension schemes targeting buy-out tend to hold less risky assets which more closely match their liabilities (gilts and corporate bonds) and hence fund for their benefits on a more prudent basis than ongoing schemes. In turn, this may cause the perceived costs of providing benefits to rise.

### Employer debt regulations and the Pension Protection Fund

- 4.9 At the previous review the Government Actuary at the time identified the introduction of the Pension Protection Fund (PPF) and revisions to the employer debt regulations as factors affecting the cost of providing benefits contracted-out on a defined benefit basis. However, the implications of these were not known at the time.
- 4.10 These factors could be considered to have changed the nature of the 'pension promise', increasing the extent to which it could be considered 'guaranteed' outside of the pension scheme and therefore potentially reducing its direct perceived cost to the sponsoring employer (or, arguably, the opposite view might be taken that this increases the perceived cost). The extent to which it is appropriate to consider the value of this guarantee in the defined benefit contracted-out rebate is discussed further from paragraph 13.8.

### Change of state pension age

- 4.11 Since the last review, state pension age for younger workers has been increased from 65, ultimately to 68 for the youngest workers. This has two effects:
- > Because the state pension (and hence the state pension forgone by contracted-out workers) is payable later, then it is less valuable in most circumstances. This is because the payments are further into the future and also payable for a shorter period, and



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- > Because of the design of the contracted-out deduction<sup>1</sup>, a later state pension age flows through to a lower rate of accrual.

- 4.12 Both these features generally lead to a reduction in the appropriate rebate.
- 4.13 As part of the 2010 spending review, the Government announced plans to accelerate the rise in state pension ages. Subject to Parliamentary approval the state pension age should rise to age 65 by 2018 and age 66 by 2020.
- 4.14 I have been asked by the Department for Work and Pensions to provide two sets of rates for the defined benefit contracted-out rebate – one set of rates based on existing legislation and the other on the assumption that the changes to state pension ages will receive Parliamentary approval.
- 4.15 Further rises to the state pension age beyond those described in paragraph 4.13 above would make the rebate more generous, all other things being equal.

#### **Expected longevity**

- 4.16 Longevity has been improving for several decades, though we cannot be certain that this trend will continue in future. Nevertheless, demographers and actuaries generally expect greater improvements in future longevity than they did previously.
- 4.17 Allowance for greater improvements in future longevity than previously anticipated leads to an increase in derived rebates.

#### **New funding regime**

- 4.18 The funding requirements of the Pensions Act 2004 came into force shortly before the previous review. While their intent was then known, their impact was unclear.
- 4.19 The Act provided for a new approach to pension scheme funding. It also introduced the Pensions Regulator, whose code of practice and guidance on funding has subsequently had a material impact on the pension industry's thinking and practice.
- 4.20 The increased emphasis on prudence in funding practice, as required by the Pensions Act 2004, may have had an effect on pension scheme investment strategy, valuation assumptions, contribution rates and technical provisions.
- 4.21 Arguably, changes in funding practice do not affect the underlying cost of the benefits being provided. However, to the extent that changes in practice do appear to have led to greater advance funding of pension benefits, or more prudence in typical funding, then the perceived cost of providing benefits will have risen in some circumstances.

#### **Typical investment portfolios**

- 4.22 Typical investment portfolios for funded pension schemes have become more prudent since the previous review.

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<sup>1</sup> The contracted-out deduction is the reduction in Additional Pension applied to individuals who have accrued pension in a contracted-out arrangement.



Review of rebates and reduced rates of National Insurance contributions for members of defined benefit contracted-out pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

- 4.23 The Purple Book 2010 (published by the PPF and the Pensions Regulator) shows (in table 7.1 on page 67) that for PPF eligible defined benefit schemes the average equity allocation has fallen from 61.1% in 2006 to 42.0% in 2010. The average gilts and fixed interest portion has increased from 28.3% in 2006 to 40.4% in 2010.
- 4.24 To the extent that more prudent investment strategies are allowed for in the assumptions that are used to derive the defined benefit contracted-out rebate, the rebate would be higher.

#### **Actuarial opinion**

- 4.25 Actuarial opinion continues to develop. This is partly due to the introduction of the new funding regime, and partly due to separate developments in the actuarial field. The tendency is for the costs of pension provision in terms of typical funding to be put onto a more prudent footing (that is to be valued more highly).

#### **Current economic conditions**

- 4.26 Economic conditions are materially different now compared with the previous review. The long-term impact of recent events (the 'credit crunch' and other significant problems in the banking system) is not yet clear. It seems that expectations of future long-term investment returns may now be lower than previously anticipated. This would increase the derived rebates.

#### **Choice of index for increases in payment**

- 4.27 At the June 2010 budget, the Chancellor of the Exchequer announced that in future the state second pension (among other things) would increase in payment in line with the Consumer Prices Index, rather than the Retail Prices Index. In general, this is expected to lead to smaller pension increases, which reduces the value of the state second pension, and hence leads to smaller derived rebates.

#### **Minor changes in Pensions Act 2007 and Pensions Act 2008**

- 4.28 The technical changes to the calculation of the state second pension are minor. For a few individuals, the deduction from state benefits as a consequence of contracting-out will exceed the state pension that they would otherwise receive, so that their actual state second pensions are reduced to zero. This does not have a material effect on the calculation of the defined benefit rebate.

Review of rebates and reduced rates of National Insurance contributions for members of defined benefit contracted-out pension schemes

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## 5 Deriving the defined benefit contracted-out rebate

In this section I explain how a rebate rate is derived. The derived rebate rate depends on:

- > the State benefits forgone by contracted-out staff,
- > the assumptions adopted to value these benefits, and
- > the method adopted to perform the valuation calculation.

### State benefits forgone by contracted-out staff

5.1 To derive a defined benefit contracted-out rebate we have to identify the benefits in the state second pension scheme which are forgone by contracted-out staff. Effectively, these are calculated in the same way as previously under the State Earnings Related Pension Scheme (SERPS). That is:

- > a percentage of earnings in a defined band,
- > payable from state pension age,
- > revalued in deferment in line with average earnings growth,
- > increased in payment in line with prices inflation, and
- > with contingent spouse's benefits of up to 50% of the contributor's pension.

5.2 Specimen benefit rates are shown in the table below:

| Year beginning | Age at beginning of year | State pension age | Annual accrual of benefits * |
|----------------|--------------------------|-------------------|------------------------------|
| 6 April 2012   | 30                       | 68                | 0.385%                       |
|                | 40                       | 67                | 0.392%                       |
|                | 50                       | 66                | 0.408%                       |
|                | 60                       | 62 (women)        | 0.588%                       |
|                | 60                       | 65 (men)          | 0.526%                       |
| 6 April 2016   | 30                       | 68                | 0.385%                       |
|                | 40                       | 67                | 0.392%                       |
|                | 50                       | 66                | 0.400%                       |
|                | 60                       | 65                | 0.476%                       |

\* based on salary between the Lower Earnings Limit the Upper Accrual Point

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### Valuation assumptions

- 5.3 In order to place a value on the state benefits forgone by contracted-out staff, we must adopt assumptions in respect of expected future demographic and financial experience. The demographic assumptions include:
- > mortality for members of contracted-out pension arrangements, both before and after state pension age (noting that longevity after state pension age is much more significant than mortality before then),
  - > mortality for surviving spouses of members of contracted-out pension arrangements,
  - > proportions of members of contracted-out pension arrangements who are either married or have a civil partner at death,
  - > probability of 'remarriage' for surviving spouses (since inherited benefits cease on remarriage), and
  - > age differences between members of contracted-out pension arrangements and their partners.
- 5.4 The financial assumptions are used to derive discount rates which are used to derive capitalised values of the expected future state benefit payments.
- 5.5 All the assumptions are applied so as to recognise that they apply for the period 2012 to 2017.
- 5.6 There are a range of assumptions which might be adopted to value benefits, depending on the purpose of the valuation. For this report, I have illustrated the rebates which would be derived from a range of assumption sets which reflect alternative approaches to valuing the state benefits forgone. These alternative valuation approaches are discussed in section 6.
- 5.7 The derivation of demographic assumptions is discussed in section 7. The derivation of discount rates is discussed in sections 8 to 11.

### Calculation methodology

- 5.8 I have derived assumptions which can be applied to value the state benefits forgone as a result of contracting out for a given individual. These state benefits vary from individual to individual, based on their sex and year of birth.
- 5.9 There is no need to make any assumptions about individuals' earnings. This is because the state benefits forgone and the National Insurance rebates are all quoted as percentages of earnings between the Lower Earnings Limit and the Upper Accrual Point. The rebate is thus the same percentage of these earnings, regardless of the size of the earnings.
- 5.10 I have therefore calculated the theoretical rebate on each of my assumption sets for men and women at each age up to state pension age. These rebates are then aggregated using weightings based on the age profile of the contracted-out workforce. This produces a single rebate value for the workforce as a whole.

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## 6 Valuation approaches / assumption sets

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In this section I explain the three separate approaches to valuing the State benefits forgone by contracted-out staff. I describe the approaches (which each reflect different sets of valuation assumptions) and comment on the implications of each.

I also discuss some alternative possible valuation approaches which I have chosen not to use in this report.

- 6.1 While there is a range of actuarial assumptions which may be used when valuing pension benefits, I propose to offer three alternative valuation approaches designed to illustrate a range of potential rebate values. These are:
- > a 'best estimate' basis, which in my view gives a number which in broad terms is equally likely to be too much as too little in the long term for the scheme to provide benefits at the level equivalent to the reduction in state pension,
  - > a 'typical funding' basis, designed to give a number consistent with a prudent approach to funding adopted by typical schemes, and
  - > a 'gilts' basis, designed to give a number consistent with a self-sufficiency approach.
- 6.2 In my view, any of these three approaches can meet the description appearing in legislation of equivalent actuarial value (see paragraph 1.4), but any rebate at a level below that derived from the best estimate approach should not be considered as such. This matter is analysed further in section 11.
- 6.3 The three bases can be described and rationalised as follows.

### Best estimate basis

- 6.4 A 'best estimate' basis is intended to lead to a rebate which is considered, in broad terms, equally likely to deliver benefits which are more or less than the state second pension forgone as a consequence of being contracted-out. A rebate on a 'best estimate' basis uses estimates of the relevant assumptions which do not include any material margins of prudence and which are applied in a way which reflects the actual investment strategies adopted by such schemes. A rebate based on a 'best estimate' basis is expected to be sufficient, half the time, to cover the cost of providing benefits equivalent to the state second pension forgone by contracted-out workers.

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### Typical funding basis

6.5 A 'typical funding' basis should include margins of prudence (relative to the 'best estimate' basis) which are consistent with the regulatory regime imposed by the Pensions Act 2004 and the Pensions Regulator's guidance. Thus, the rebate on the 'typical funding' basis represents the amount which funded defined benefit schemes would typically hold in practice in order to cover benefits of equivalent actuarial value to those forgone as a result of contracting-out (where the actuarial value is measured in the same way as technical provisions are calculated). A rebate based on 'typical funding' assumptions is expected to be more likely than not to be sufficient to cover the long-term cost of providing benefits equivalent to the state second pension forgone by contracted-out workers.

### Gilts basis

6.6 The 'gilts' basis is intended to lead to a rebate which would allow a contracted-out defined benefit pension scheme to provide benefits equal to those forgone with a high degree of certainty, by investing in gilts. It does not mirror the cost of purchasing annuities from an insurance company, nor include any additional reserves of capital to meet extreme adverse outcomes. Thus, the rebate on the 'gilts' basis represents the amount which funded defined benefit schemes could hold in order to cover benefits of equivalent actuarial value to those forgone as a result of contracting-out, if they adopted a relatively low risk investment strategy based on gilts. Some describe this approach as 'self-sufficiency', since it may be possible at this level to avoid the need for extra funding in adverse times. A rebate reflecting the 'gilts' basis is expected to be sufficient on average to allow a scheme to adopt a low risk investment strategy and still cover the forgone state benefits without the sponsor having to provide additional financial support.

### Values for the assumptions under each basis

6.7 Each basis consists of a set of assumptions that reflect the characteristics of the basis. The assumptions used for this review are summarised in Appendix C. (For comparison, the assumptions used to calculate the recommended defined benefit contracted-out rebate at the last review are included as Appendix B). The derivation of the financial and demographic assumptions is set out in sections 7 to 11 with supporting evidence in Appendix D and Appendix E. The responses to public consultation (which were substantially around assumptions and approach) are summarised in Appendix F.

### Other possible bases (which have not been adopted)

6.8 A prudent basis might replicate the assumptions that insurance companies use to price annuities. However, these are not published. Buy-out terms are also influenced by market forces as well as the expected cost of providing benefits, and have been subject to considerable volatility in recent years. Hence I have not attempted to produce figures on a buy-out basis.

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- 6.9 Four respondents to the consultation supported the inclusion of an 'accounting' basis in our final report (although two respondents explicitly rejected an 'accounting' basis). Given that accounting assumptions are intended to represent an overall best estimate basis, I have decided against the inclusion of yet another basis which might well be a duplicate.
- 6.10 A 'SCAPE'<sup>2</sup> basis was also suggested by one consultation respondent. However, because I am focusing on the 'cost' in the private sector of providing the state second pension benefits forgone, and because public sector contracting out does not impact at the employer level on the PSBR (Public Sector Borrowing Requirement), tax, or real cash costs to the economy, a SCAPE basis would have little relevance.

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<sup>2</sup> SCAPE is short for Superannuation Contributions Adjusted for Past Experience, and is the methodology used to set 'inter-Government' budget charges for the unfunded public sector pension schemes.

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## 7 Demographic assumptions

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In this section I discuss the general approach to the demographic assumptions which I have adopted. There is considerable common ground between the assumptions adopted for each of my three valuation approaches, so all are discussed together.

Assumptions for administration expenses are also discussed in this section.

- 7.1 Five specific sets of demographic assumptions are potentially needed in order to calculate the defined benefit contracted-out rebate:
- > mortality for members of contracted-out pension arrangements, both before and after state pension age (noting that longevity after state pension age is much more significant than mortality before then),
  - > mortality for surviving spouses of members of contracted-out pension arrangements,
  - > proportions of members of contracted-out pension arrangements who are either married or have a civil partner at death,
  - > probability of 'remarriage' for surviving spouses (since inherited benefits cease on remarriage), and
  - > age differences between members of contracted-out pension arrangements and their partners.
- 7.2 State pension arrangements (as they affect future accrual) make little distinction between the benefits payable to widows, widowers and surviving civil partners. 'Spouse', 'marriage' and 'remarriage' should be construed accordingly in the following discussion.
- 7.3 I consider that 'best estimate' assumptions for proportions married and spouses' age differences can also be used in the 'typical funding' basis and 'gilts' basis without causing difficulties of validity or interpretation. These are not particularly sensitive assumptions and adequate margins of prudence may be reflected in the mortality and financial assumptions.
- 7.4 I consider it appropriate that the mortality assumptions should distinguish between a 'best estimate' basis and 'typical funding' basis. I do not consider that using different mortality assumptions for the 'gilts' basis to the 'typical funding' basis would provide additional information.

### Mortality

- 7.5 The Government Actuary's Department has derived 'best estimate' mortality assumptions based on the experience of the contracted-out workforce by looking at experience from 2000/01 to 2007/08 and comparing against standard tables. I am happy that this analysis gives me a 'best estimate' fit as follows:



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|                                      | <b>Base table<sup>3</sup></b> |
|--------------------------------------|-------------------------------|
| <b>Male mortality</b>                | S1PML                         |
| <b>Female mortality</b>              | S1PFL                         |
| <b>Mortality of spouses of men</b>   | S1DFL                         |
| <b>Mortality of spouses of women</b> | S1PML                         |

Note that there is no table S1DML produced for widowers.

- 7.6 Given the limited data available on civil partners, I have used the same spouse's mortality assumptions (as above) for bereaved civil partners.
- 7.7 I have allowed for future improvements in mortality in line with the 2008-based UK principal population projections as produced by the Office for National Statistics demography unit. The standard mortality tables set out in paragraph 7.5 above were adjusted to 2008 from their base year in line with improvements in UK population mortality. While the Office for National Statistics does not express an opinion on the likelihood that this projection will be borne out in practice, I believe that it can reasonably be adopted as a best-estimate assumption consistent with many other situations where this approach is adopted.
- 7.8 For the 'typical funding' basis I have incorporated a two year age deduction from the base mortality tables, to provide a margin of prudence.
- 7.9 I have also adopted a two year offset for the 'gilts' basis.

**Proportions married (including civil partnerships)**

- 7.10 I have used proportions married assumptions based on the 2006-based projections as prepared by the Office for National Statistics for England and Wales. I consider these projections to be 'best estimate', in the absence of any better data to the contrary. Sample proportions married at death for 2014 are given in the following table:

| <b>Age</b> | <b>Men</b> | <b>Women</b> |
|------------|------------|--------------|
| <b>60</b>  | 70%        | 67%          |
| <b>65</b>  | 73%        | 67%          |
| <b>70</b>  | 75%        | 62%          |
| <b>75</b>  | 73%        | 52%          |
| <b>80</b>  | 68%        | 39%          |

<sup>3</sup> The base tables are available on the Institute and Faculty of Actuaries' website.



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**Probability of remarriage**

7.11 At previous reviews, assumptions were made in regard to the remarriage of surviving spouses (including civil partners). If the same assumptions were applied at this review, it would reduce the value of the benefits by less than 1%, which I consider is not material in this context. I have therefore omitted this assumption from all of my bases.

**Age differences**

7.12 I have assumed that spousal age differences are broadly in line with the experience of the population of Great Britain as revealed by the 2001 census, which is the latest available. Sample age differences are set out in the following table:

| Age | Men                    | Women                |
|-----|------------------------|----------------------|
| 60  | spouse 3 years younger | spouse 2 years older |
| 65  | spouse 3 years younger | spouse 2 years older |
| 70  | spouse 4 years younger | spouse 2 years older |
| 75  | spouse 4 years younger | spouse 1 year older  |
| 80  | spouse 4 years younger | spouse same age      |

7.13 At first glance it might seem surprising that the age differences for men and women are not equal and opposite, but this a natural combination of the age differences within marriages and higher male mortality rates, which lead to this result.

7.14 The 2001 census data concerns opposite sex relationships only, given its date. Of course, civil partners are on average the same age as each other (though the elder is more likely to die first on average).

7.15 I consider that the use of average spousal age differences based on the 2001 census remains satisfactory, with the passage of time and inclusion of a small proportion of civil partners and workers in Northern Ireland not causing a material issue.

**Weights**

7.16 The reduction in the National Insurance contributions for individuals contracted-out on a defined benefit basis will continue to be a single percentage of band earnings, independent of sex and age. It is necessary, therefore, to weight the derived individual age and sex related defined benefit contracted-out rebates to obtain an appropriate average rebate.

7.17 The weightings needed are to ascertain what percentage of the total population will fall into. Five-year age bands for each sex have therefore been derived.

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- 7.18 The weightings are based on sample data from the National Insurance Fund using trends in data projected over the period the new defined benefit contracted-out rebate will apply.
- 7.19 In the absence of any data specific to private sector schemes, I have been obliged to use data based on members of both private and public sector schemes. This is discussed further from paragraph 13.14.
- 7.20 The weights used at this review are given in the following table:

| Age Group    | Men           | Women         |
|--------------|---------------|---------------|
| 20-24        | 0.83%         | 1.09%         |
| 25-29        | 3.49%         | 5.03%         |
| 30-34        | 4.88%         | 5.88%         |
| 35-39        | 5.60%         | 6.04%         |
| 40-44        | 7.05%         | 7.71%         |
| 45-49        | 8.57%         | 9.89%         |
| 50-54        | 8.32%         | 9.37%         |
| 55-59        | 5.95%         | 6.09%         |
| 60-64        | 2.59%         | 1.62%         |
| <b>Total</b> | <b>47.28%</b> | <b>52.72%</b> |

**Expenses – administrative**

- 7.21 For defined benefit schemes, I am concerned with the marginal cost of contracting-out. The National Insurance rebate should allow for any specific expenses involved. There are some minor expenses incurred solely as a result of contracting-out which should be loaded onto the rebate.
- 7.22 In the absence of any evidence to the contrary, I have retained the expense allowance of 0.2% of band earnings made at the last review, for each of my bases. This assumption was considered reasonable by respondents to the consultation.

**Evidence**

- 7.23 Evidence in respect of the mortality assumptions is contained in Appendix E. Evidence provided in the response to the public consultation is discussed in Appendix F.

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## 8 Financial assumptions – asset allocation

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My proposed 'best estimate' basis requires assumptions about the average asset allocation decisions made by typical defined benefit pension schemes. In this section I discuss this preliminary issue, prior to deriving usable discount rates (in the following sections).

- 8.1 The 'best estimate' basis requires assumptions about the average asset allocation effectively adopted by typical funded defined benefit pension schemes for members of different ages. In practice, many schemes base their asset allocation on the overall mix of members. This section therefore explains how we have interpreted the available evidence in order to derive a typical portfolio relative to differing age profiles so that we can then use the age weightings derived in section 7 to set overall investment returns and discount the required assumptions.
- 8.2 The 2009 Purple Book published by the Pensions Regulator covers almost all pension schemes in the PPF eligible UK defined benefit scheme universe. Section 7.6 (Chart 7.4) of the Purple Book<sup>4</sup> shows that, broadly speaking:
- > schemes with around 90% non pensioner and 10% pensioner liabilities have an average asset allocation of approximately 65% equities and property, 30% gilts and fixed interest and 5% cash and other,
  - > schemes with around 50% non pensioner and 50% pensioner liabilities have an average asset allocation of approximately 50% equities and property, 40% gilts and fixed interest and 10% cash and other, and
  - > schemes with around 10% non pensioner and 90% pensioner liabilities have an average asset allocation of approximately 20% equities and property, 70% gilts and fixed interest and 10% cash and other.
- 8.3 Whilst not uniformly consistent, these figures are broadly consistent with an asset allocation of between 80%/20% and 90%/10% equities/bonds for non-pensioner liabilities and 100% bonds for pensioner liabilities.
- 8.4 This does not provide evidence regarding differential investment strategies within the non-pensioner group. However, anecdotally it is common to adopt a more conservative investment strategy the closer the active members are to retirement. This is also consistent with the approach adopted within defined contribution schemes where it is common to switch gradually over the immediate period (often 10 years) before retirement from an investment strategy of 100% equities 10 years or more before retirement to a strategy of 100% bonds at retirement. Assuming such a notional strategy for defined benefit schemes would give an overall asset allocation consistent with the evidence above. This is therefore the assumption I have made.

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<sup>4</sup> The recent 2010 Purple Book does not contain the equivalent evidence in a usable form.

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- 8.5 We have further assumed a split of the bond portion of the assets of 30% index-linked gilts, 30% conventional gilts and 40% corporate bonds. This is based on the evidence in Section 7.3 (Table 7.3) of the 2009 Purple Book which shows an average split of 32.6% index-linked gilts, 29.0% conventional gilts and 38.3% corporate bonds.
- 8.6 The resulting average asset allocations over the invested lifetime of individuals of different ages are given below. The consultation responses were supportive of these assumed asset allocations.

| <b>Pre-retirement asset allocation</b>                                   |  |
|--|--|
| (A differing asset allocation has been assumed dependent on term to SPA) |  |
| Just before SPA  | 60% gilts (30% index linked, 30% fixed interest), 40% corporate bonds  |
| 10 years to SPA  | Fully invested in equities 10 years from state pension age, switching to 60% gilts (30% index linked, 30% fixed interest), 40% corporate bonds over the remaining 10 years to state pension age. On average this translates approximately to 50% equities, 30% gilts and 20% corporate bonds over a 10 year term to state pension age.     |
| Over 25 years to SPA   | Fully invested in equities 25 years from state pension age, switching from this to 60% gilts (30% index linked, 30% fixed interest), 40% corporate bonds over the last 10 years to state pension age. On average this translates approximately to 80% equities, 12% gilts and 8% corporate bonds over a 25 year term to state pension age. |
| <b>Post-retirement asset allocation</b>                                  |  |
|  | 60% gilts (30% index linked and 30% fixed interest) and 40% corporate bonds.   |

- 8.7 More details on the evidence to support the analysis in this section can be found in Appendix D.

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## **9 Financial assumptions – expected future experience – typical funding basis**

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In this section I discuss assumptions relating to future financial experience and future financial conditions, and combine these assumptions to derive the discount rate assumptions which are needed to derive the contracted-out rebate rates.

This section looks at the typical funding basis, and provides assumptions which lead to a rebate of 6.3% (or 6.2% if the new State Pension Age provisions are allowed for). The next two sections consider the gilts basis and best estimate basis.

- 9.1 The key financial assumptions that are required are discount rates based on:
- > the expected return on appropriate investments after state pension age (SPA) in excess of annual increases on the state benefits forgone,
  - > the expected return on appropriate investments before state pension age in excess of the revaluation of earnings factors on state benefits forgone (by reference to national average earnings growth), and
  - > the expected nominal return on appropriate investments before state pension age (used for the year immediately prior to retirement since there is no earnings revaluation of the state benefits forgone in that year).
- 9.2 Since the nominal rate (third bullet point above) is only used for the year immediately prior to retirement, it is the net rates (first and second bullet points above) which are most important in determining the cost of provision. The nominal discount rates are set based on assumed asset allocations.
- 9.3 When formulating the financial assumptions I have considered the time frame over which they will be applied, market conditions and expectations of long run equilibriums.
- 9.4 I have derived the suggested financial assumptions using a 'building block' approach based on:
- > Consumer Prices Index (CPI),
  - > National Average Earnings (NAE),
  - > Gilt returns,
  - > Corporate bond returns,
  - > Equity returns, and
  - > Investment expenses.
- (Though not all these components are relevant for all three bases.)

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9.5 The building blocks are based on market conditions as at 31 December 2010 and have been rounded to 0.05%. I have looked at the impact of market conditions on the derived defined benefit contracted-out rebates at each month end since January 2010.

9.6 The figures used for the building blocks are set out below and described in the rest of this section. Investment expenses are implicit in the quoted discount rates.

|   |   |
|---|---|
| CPI (multi-year)  | 3.00% pa  |
| RPI (CPI + 0.75%)                                       | 3.75% pa  |
| NAE (RPI + 1.50%)                                       | 5.25% pa  |
| Fixed interest gilt returns                             | 4.65% pa  |
| Net Pre-Retirement Discount Rate                        | 1.19%   |
| Net Post-Retirement Discount Rate                       | 1.94%   |
| Excess over gilt return to derive overall discount rate | 1.85% (pre-retirement)<br>0.35% (post-retirement) |

### Net Post-Retirement Discount Rate

9.7 In determining the 'typical funding' discount rate for the periods before and after state pension age, a margin above the 'typical funding' fixed interest gilt return has been assumed. This margin aims to be reflective of the average margin employed by defined benefit pension schemes in setting their nominal discount rates for technical provisions. I have assumed that this margin is 0.35% pa post-retirement and 1.85% pa pre-retirement, based on the average derived from the figures shown in the Pensions Regulator's report set out in D.3.

9.8 For the 'typical funding' basis, allowing for a margin of 0.35% above gilt return results in a nominal post-retirement return equal to 5.00% pa.

9.9 Allowing for the 'typical funding' CPI assumption of 3.00% pa, gives a net post-retirement discount rate of 1.94% pa.

9.10 Investment expenses are implicit in the above 'typical funding' nominal rate.

### Pre-Retirement

9.11 For the 'typical funding' basis, allowing for a margin of 1.85% pa above gilts, results in a nominal pre-retirement return equal to 6.50% pa.

9.12 Allowing for 'typical funding' NAE increases of 5.25% pa results in a proposed net 'typical funding' pre-retirement discount rate of 1.19% pa.

### Evidence

9.13 See Appendix D for more detail.

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## 10 Financial assumptions – expected future experience – gilts basis

In this section I discuss assumptions relating to future financial experience and future financial conditions in relation to the gilts basis. I derive assumptions which lead to a rebate of 10.5% (or 10.4% if the new State Pension Age provisions are allowed for).

- 10.1 I have derived the suggested financial assumptions using a 'building block' approach in the same way as for the typical funding basis:
- > Consumer Prices Index (CPI),
  - > National Average Earnings (NAE),
  - > Gilt returns,
  - > Corporate bond returns,
  - > Equity returns, and
  - > Investment expenses.
- 10.2 The building blocks are based on market conditions as at 31 December 2010. I have looked at the impact of market conditions on the derived defined benefit contracted-out rebates at each month end since January 2010.
- 10.3 The building blocks have been rounded to 0.05% pa.
- 10.4 The figures used for the above building blocks are set out below and described in the rest of this section.

|   |          |
|---|----------|
| Fixed interest gilt returns                             | 4.65% pa |
| Excess over gilt return to derive overall discount rate | Nil      |
| Net Pre-Retirement Discount                             | -0.9%    |
| Net Post-Retirement Discount Rate                       | 1.26%    |
| Investment expenses                                     | 0.10% pa |

### Net Post-Retirement Discount Rate

- 10.5 For the 'gilts' basis, the return on appropriate investments after state pension age is determined by reference to the gilt yields, after allowing for investment expenses of 0.1% pa. This results in a nominal return equal to 4.55% pa.
- 10.6 Allowing for the 'gilts' basis CPI assumption of 3.25% pa (based on gilts break-even inflation) gives a net post-retirement discount rate of 1.26% pa.

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### **Pre-Retirement**

10.7 For the 'gilts' basis, the return on appropriate investments before state pension age is 4.65% pa (the assumed fixed interest gilt yield). Deducting investment expenses of 0.1% pa, and allowing for 'gilts' NAE increases of 5.50% pa, results in a proposed net 'gilts' basis pre-retirement discount rate of -0.90% pa.

### **Evidence**

10.8 See Appendix D for more detail.



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## 11 Financial assumptions – expected future experience – best estimate basis

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In this section I discuss assumptions relating to future financial experience and future financial conditions in relation to best estimate. I then consider how all the assumptions for best estimate can be put together to derive a best estimate rebate of 4.9% (or 4.8% if the new State Pension Age provisions are allowed for).

- 11.1 I have derived the suggested financial assumptions using a “building block” approach in the same way as in sections 9 and 10 for typical funding and gilts:
- > Consumer Prices Index (CPI)
  - > National Average Earnings (NAE)
  - > Gilt returns
  - > Corporate bond returns
  - > Equity returns, and
  - > Investment expenses
- 11.2 In order to derive an appropriate assumption set for best estimate, I am performing an exercise which has not been attempted in previous reviews. Previously, it has been possible to allow for broad brush margins of an overall nature such that precision on selecting individual assumptions was not necessary. That lack of precision cannot fit easily with best estimate.
- 11.3 For many assumptions, principally demographic assumptions, there is little extra difficulty. But there are a few assumptions where there are legitimate grounds for considering a range of possible answers given the technical analysis, the evidence and the consultation responses. These are:
- > the assumption for CPI,
  - > allowance for the fact that pensions cannot fall in times of negative inflation,
  - > the date on which to derive yields (and other market statistics) as being appropriate for future years,
  - > the age profile difference between private sector contracted out workers and public sector (see paragraphs 4.6 and 13.14), and
  - > the remarriage assumption (see paragraph 7.11).
- 11.4 I now look at the issues around each of these in turn and then how to look at these together in an overall manner.

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### Consumer Prices Index

- 11.5 The issue: it is fully accepted by me (and the consultation responses did not disagree) that it is right to assume that the Bank of England will deliver to their 2% target on a year-by-year basis recognising that some years will be higher and some lower. But the question I have to address is the technical one of what does 2% year-on-year actually imply for the longer term.
- 11.6 For example, does 2% mean that in any one year the rate is just as likely to be above 2% as below 2% (in which case 2% is a “median” rate and the chances are that this implies a long-term accumulated rate equivalent to somewhat more than 2%). Or does it mean that if all years are looked at the most common rate to appear is 2% (in which case 2% is a “mode” rate and a similar argument applies as for median rate that the long-term equivalent is likely to be above 2%). Or if the target is actually for the rate to average at 2% over the long-term (the “mean” rate”), then the long-term accumulated rate should then be 2% but the chances would then be that the Bank of England have to adjust future targeting dependent on the past average experience so that the future may not necessarily be 2%.
- 11.7 The extreme position is that all such rates are the same. So at this extreme, the right long-term rate to use would be 2%. Away from the extreme, the right approach is to consider 2% as a minimum with no downside but with a risk of upside because of the way the mathematics will work<sup>5</sup>.
- 11.8 The evidence: the market implied rate for future inflation is considerably in excess of 2% – see Appendix D. The Bank of England produces regular forecasts for future CPI over a three year period, based around the mode of the distribution. This is part of the process by which the 2% rate is targeted. They also estimate the mean and median of this short-term distribution. However, the Bank does not publish any longer-term distributions or any views on how the median and mean of the longer-term distribution would relate to the mode, nor have they expressed any view to me over what they expect the future median and mean to be. All responses received in our consultation, where a view has been expressed on the matter, are clear that the rate equivalent to a Bank of England 2% annual target has to be higher than 2% for the mean rate.

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<sup>5</sup> When considering the cumulative rate over the future long-term, we need to consider the extent to which the distribution of future inflation rates is skewed, rather than symmetrical, and if the distribution is considered symmetrical whether it is symmetrical on a linear basis or a different basis (for example, a logarithmic scale). I understand that a number of people hold the view that “shocks to the system” can cause more significant increases to the rate of inflation than decreases, without prejudicing the annual “best estimate” of 2% year-on-year. For example, suppose in year 1 that the rate is 2%; in year 2 it doubles; in year 3 it reverts to 2%; in year 4 it halves and in year 5 it reverts again to 2%. This would be consistent with a 2% year-on-year assumption, the median and mode are both 2% but the cumulative rate over 5 years is 11.5% which is equivalent to an annual long-term (mean) rate of 2.2%. And it is the mean rate that we need for our assumption.

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- 11.9 Even so, there still remains insufficient evidence yet to support a view that the mean should be different to the mode and the Treasury has expressed this view to us. If we look for empirical evidence, then since the Bank of England started targeting 2% CPI in 2003, the mean accumulated rate over the period is 2.5% compared to a median of 2.4%. If the frequency of letters written by the Governor of the Bank of England<sup>6</sup> is examined, there have been many letters written on the upside compared to downside letters – once again suggesting that the mean will be higher than 2.0% over a long-term.
- 11.10 The range: the above analysis and evidence makes it clear that the assumption I should use has a minimum of 2.0% pa but it could be higher. If the right answer were to be higher then I have looked at how this would change the resulting rebate of 4.9%. At a 2.5% CPI assumption, which I believe to be the top end of the range, there would be an addition to the rebate of up to 0.3%.

**Benefits cannot have reductions when inflation goes negative**

- 11.11 The issue: if CPI falls below zero, pensions do not suffer negative increases. This means that the assumption for pension increases should be somewhat higher than the assumption for CPI. If CPI has a mean value higher than the 2% year-on-year target, then this issue is likely to be non-material. But if it is right to assume a symmetrical distribution (see footnote on the previous page) with a mean and median of 2%, then this issue has a bigger impact.
- 11.12 The range: indications suggest that this has an impact of between 0% and 0.1% as an addition to any resulting rebate depending on what the underlying CPI assumption is.

**The date on which to derive yields**

- 11.13 The issue: I have to make an assumption as to what the yields will be for investments made in the period from 2012 to 2017. This is achieved by making an assumption for the gilt return and the equity return for new investment in that period and that depends on market prices over that period. There are a number of ways to look at gilt returns including:
- > a survey of the views of respected experts, for example, economists,
  - > use of latest available current market data on the grounds that current rates are the latest aggregate views of buyers and sellers and if it were appropriate to assume a shift up or down, then the price would have adjusted accordingly, and
  - > use of a reasonably recent average yield on the grounds that the market view has not changed but arbitrary blips are removed. Depending on the averaging period, this does involve a view that the current price is wrong and it may well be that this means taking a view that the market view has got it wrong rather than just a view that there is a blip.
- 11.14 It is a not uncommon position of actuaries to take the middle approach on the grounds that this is consistent with other market aspects of the valuation process.

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<sup>6</sup> The Governor has to write letters when the rate is above 3% (upside) or below 1% (downside).

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- 11.15 The evidence: the majority of the consultation responses supported the adoption of the middle approach.
- 11.16 The range: using 31 December as a base date, an average approach would give a reduction in the rebate rate of 4.9% of up to 0.1% to 0.2% lower depending on the period adopted – 0.1% being the position on a six-month average view.

### Age profile

- 11.17 The issue: all the anecdotal data would suggest that the age profile in private sector will be moving higher relative to public sector due to the very few new younger members having access to a scheme in the private sector. This is due to so many private sector schemes being closed to new members.
- 11.18 The evidence: the problem here is that we are unable to gain any evidence to indicate the extent of this effect.
- 11.19 The range: in the absence of evidence, I feel this effect could increase the rebate by up to 0.3% at the top end.

### Remarriage (see 7.12)

- 11.20 Although all the consultation responses suggested to ignore this feature, it does represent an over-statement of up to 0.05% in the resulting rebate, and so I mention it here for completeness.

### Equity returns

- 11.21 The respondents to the consultation were generally comfortable with the assumption regarding future equity returns. The evidence outlined in Appendix D suggests that equities are expected to return between 2.5% to 4.0% over cash and between 1.5% and 4.0% over nominal bonds. I have assumed a return of 7.40% per annum which represents a risk premium over nominal gilts of 2.75%. at the centre of this range.
- 11.22 This implies that any potential increase in the rebate from a lower assumption is balanced by a potential decrease from a higher assumption, so that I have not considered it necessary to include this assumption in the table summarising the issues below. That said, a reasonable view would be for changes to this central rate implying up to 0.2% change in the rebate in either direction.

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### Summary of issues

| Issue                       | Base assumption                       | Effect on the rebate percentage (4.9%), if using an alternative assumption within a best estimate framework |
|-----------------------------|---------------------------------------|---|
| CPI                         | 2%                                    | Up to 0.3% extra  |
| Pensions cannot fall        | CPI will never fall below zero        | Up to 0.1% extra but total impact on rebate of this and CPI no higher than 0.3%                             |
| Date of yield determination | 31/12/2010                            | Up to 0.2% less   |
| Age profile                 | Aggregates public and private sectors | Up to 0.3% extra  |
| Remarriage                  | No remarriage                         | Up to 0.05% less  |
| Total                       |                                       | Between 0.25% less and 0.6% extra*  |

\* ignoring the equity return variability mentioned in paragraph 11.22 above.

- 11.23 It should be noted that saying that the use of 2.0% CPI is appropriate is linked to saying that the current view of “no evidence yet to justify anything less” is a logical approach and analytical feel can be ignored at present. This logic is not dissimilar to saying that the current market view on yields should have no adjustment for analytical feel. In other words, a backward looking view on yields to use an average ought to be the same as a backward looking view on CPI median/mean and this latter position would imply CPI higher than 2.0%.
- 11.24 So, for example, a selection of 2.0% CPI and a downward adjustment to the yield seems like an inconsistency in approach.
- 11.25 The other point to note is that not all of the above have equal weighting so it would be wrong to say that the best estimate is in the middle of the range.

### Conclusion

- 11.26 If I take the base assumptions, then I feel sufficiently confident that the overall result can be considered as a best estimate in view of all the uncertainty. This is not because each element is right per se but because, in the round in my estimation, the end result for the rebate feels to be in the right part of the range. Put another way, the elements of the assumptions could be changed a bit to derive another consistent set which delivers the same end result. Whilst it could be argued that taking one extreme or the other of the range for each assumption might appear to be best estimate (because each component part might be), the mathematics and logic would not allow such a conclusion in my estimation.

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- 11.27 In considering this part of my analysis, the Secretary of State will, of course, need to take into account other matters. The decision on which rebate rate to use for the five year period is not something which can or should be based solely on the actuarial analysis and so it is hoped that the three approaches I offer can assist the Secretary of State to decide whether to adopt a rate at one of the levels offered or indeed at a level between the rates offered or indeed totally outside the range.
- 11.28 Taking the above analysis into account, my view on the best estimate rebate can be determined from the following assumption set:

|  |  |
|--|--|
| CPI (annual)                                       | 2% per annum   |
| CPI (multi-year accumulation)                      | 2% per annum   |
| RPI(CPI + 0.75%)                                   | 2.75% per annum  |
| NAE (RPI + 1.5%)                                   | 4.25% per annum  |
| Index-linked gilt return<br>(RPI + real yield)     | 3.35% per annum<br>(using 31/12/10 data)                   |
| Fixed interest gilt returns                        | 4.65% per annum<br>(using 31/12/10 data)                   |
| Corporate bond returns<br>(fixed interest + 0.75%) | 5.40% per annum<br>(using 31/12/10 data)                   |
| Equity returns                                     | 7.40% per annum<br>(that is, 2.75% above gilt returns)     |
| Investment expenses                                | 0.12% pa to 0.15% pa<br>(depending on term to SPA)         |
| Net pre-retirement discount rate                   | 0.18% to 2.33% based on age<br>(see paragraph 11.35 below) |
| Net post-retirement discount rate                  | 2.39% (see paragraph 11.29 below)                          |

**Net post-retirement discount rate for best estimate**

11.29 The net post-retirement discount rate represents the return on appropriate investments after state pension age in excess of the annual increases on state benefits forgone.

11.30 After allowing for the assumed asset allocation set out in paragraph 8.6 and deducting investment expenses, the assumed return is 4.44% pa:

$$(30\% \times 3.35\% + 30\% \times 4.65\% + 40\% \times 5.40\%) - 0.12\% = 4.44\%$$

11.31 Allowing for the CPI increase assumption of 2% pa gives a net return over prices of 2.39% calculated as:

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$$(1 + 4.44\%) / (1 + 2\%) - 1 = 2.39\%$$

### Net pre-retirement discount rate for best estimate

11.32 The net pre-retirement discount rate represents the return on appropriate investments before state pension age in excess of the revaluation of earnings factors on benefits foregone (by reference to National Average Earnings growth).

11.33 The rates are expressed as single rates which apply for the whole period to state pension age (SPA). However, they are derived and calculated based on an asset allocation which varies for the individual as the individual grows older and closer to SPA.

11.34 Based on the assumed asset allocation set out in paragraph 8.6 and deducting investment expenses, the assumed gross returns are:

Just before SPA

$$[30\% \times 3.35\% + 30\% \times 4.65\% + 40\% \times 5.40\%] - 0.12\% = 4.44\%$$

10 years before SPA

$$[50\% \times 7.40\% + 30\% \times 4.00\% + 20\% \times 5.40\%] - 0.14\% = 5.84\%$$

Over 25 years to SPA

$$[80\% \times 7.40\% + 12\% \times 4.00\% + 8\% \times 5.40\%] - 0.15\% = 6.68\%$$

11.35 Allowing for the NAE growth assumption of 4.25% gives a net of earnings assumption of **0.18%** pa for those currently just before SPA. This increases to **1.53%** pa for those currently 10 years to SPA and to **2.33%** pa for those currently 25 or more years from SPA. These rates are sample rates with different rates for intermediate ages. They are calculated to apply over the whole period to SPA for any individual of the age in question.

### Evidence

11.36 See Appendix D for more detail.



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## **12 Derived defined benefit contracted-out rebates**

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In this section I set out the defined benefit contracted-out rebates which I have derived based on the assumption sets discussed earlier in this report. Rebates are stated based on State pension ages as currently defined in legislation, and also as they would be if intended changes to State pension ages are made as expected. I also provide a reconciliation showing how the rebate values have changed since the previous report (completed by my predecessor as Government Actuary and dated January 2006).

12.1 Based on the assumptions outlined in previous sections, the derived rebates are:

Using state pension ages based on existing legislation

- > 4.9% on a 'best estimate' basis,
- > 6.3% on a 'typical funding' basis, and
- > 10.5% on a 'gilts' basis.

Using state pension ages based on expected revisions to existing legislation

- > 4.8% on a 'best estimate' basis,
- > 6.2% on a 'typical funding' basis, and
- > 10.4% on a 'gilts' basis.

12.2 The rebate percentages are of earnings between the Lower Earnings Limit and the Upper Accrual Point.

### **Reconciliation of changes to the rebate value**

12.3 At the previous review, the proposed rebate of 5.8% was on a basis which included some margins of prudence compared to a best estimate, though it was not rationalised in the same way as the 'typical funding' basis proposed now. The Secretary of State then decided to set the level at 5.3% – the same as had been used for the previous five years. This was split 1.6% employee and 3.7% employer.

12.4 The following table shows the effect of the various factors which affect the derived rebates since the previous review:



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|   |             |   |
|---|-------------|---|
| <b>Rebate proposed by the Government Actuary in 2006</b>                | <b>5.8%</b> | Though the Secretary of State adopted 5.3%  |
| Change to benefits caused by increasing year of birth                   | (0.3%)      | Accrual is falling over time (-ve)<br>There is a cohort effect for women due to the SPA change to 65 (-ve)<br>Assumed mortality incorporates improvements over time (+ve) |
| <b>2010 rebate on 2005 basis</b><br>(before allowing for known changes) | 5.5%        |   |
| Change to State Pension Age<br>(from 65 to 68 for everyone)             | (0.5%)      | Longer discounting period (-ve)<br>Lower accrual (-ve)<br>Alternatively, (0.6%) if we take into account proposed further changes.   |
| Change to increases in payment  | (0.7%)      | Changed from RPI to CPI   |
| Member profile  | 0.3%        | Based on recent sample data, but including some projection assumptions  |
| <b>2010 rebate on 2005 basis</b><br>(after allowing for known changes)  | 4.6%        |   |
| Change of assumptions   | 1.8%        | financial – lower discount rates  |
|   | 0.4%        | demographic – improved longevity  |
|   | (0.5%)      | Explicit margin in the previous basis   |
| <b>Rebate in 2010 on 'typical funding' basis</b>                        | <b>6.3%</b> | Using SPAs based on existing legislation  |

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## 13 Other practical issues

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In this section I address some miscellaneous practical issues.

### Effect of contracting-out on staff and employers

- 13.1 The defined benefit contracted-out rebate is derived having regard to the average worker contracted-out on a defined benefit basis.
- 13.2 For each individual worker contracted-out on a defined benefit basis, the only direct effect of the review is if the employee portion of the rebate changes. Neither the state second pension nor occupational pension is affected directly by the contracted-out rebate review.
- 13.3 For COSRS, and their sponsoring employers, the direct effect of the review is that the contracted-out rebate they receive may change. It does not affect the pensions they are committed to provide. However, indirectly, the pension scheme is effectively substituting part of the state pension. That is, part of the occupational pension can be considered as being a replacement for the state benefits forgone, for which the scheme (and worker) receive the rebate in compensation.
- 13.4 The attractiveness of contracting-out to employers depends on the balance between the state pension forgone by contracted-out workers, and the rebate received in compensation. Different employers will have different views on the adequacy and attractiveness of the defined benefit contracted-out rebate.
- 13.5 In section 6, I outlined three alternative bases for deriving a defined benefit contracted-out rebate, which represent a range of potential rebate values. A rationale for each basis is given in Section 6.
- 13.6 Many of the consultation replies focused on the appropriate basis for calculating the rebate. Several respondents expressed concern that a rebate calculated on a 'best estimate' basis is not appropriate. Support for a 'typical funding' and 'gilts' basis was mixed.
- 13.7 I do not see it as my job to take a political view on the policy objective here. So I believe it is right to offer various bases along with analysis of what each means and leave the political decision to Ministers.

### Value of state guarantee

- 13.8 Several respondents to GAD's public consultation made various comments whose common theme was that the rebate should be based on assumptions which recognise that the state benefits given up by contracted-out workers have a strong (but not complete) government guarantee.

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- 13.9 The relevant legislation<sup>7</sup> refers to ‘the cost of providing benefits of an actuarial value equivalent to that of the benefits’ which are forgone by contracted-out workers. I do not believe that this phrase requires the rebate to explicitly recognise any value of the guarantee separate from the value of the benefits, though I accept that it would not prohibit such an approach. I note that if Parliament had intended that the rebate should include some additional value to recognise the nature of the guarantee applying to state benefits, then it could have added explicit language to the legislation to that effect.
- 13.10 It is also worth bearing in mind that in previous reviews, this specific point was not allowed for and how this plays out might be arguable. So, to me, the natural approach is to ignore this feature based on precedent and practice.

### Age of membership

- 13.11 The rebate will be less attractive to employers with a workforce which is older on average than the general contracted-out population, since pensions are generally more expensive to provide for older workers.
- 13.12 At previous reviews, a margin was included (a loading of 7.5% to the proposed defined benefit rebate) in order to address such issues.
- 13.13 The rebates derived under the three methodologies set out in this report do not include any such margin. The approach I have adopted for this review means that a range of possible rebates has been presented, along with the rationale underlying them (in particular the level of prudence). It is anticipated that, in this context, the Secretary of State can take into account issues such as cost variations between schemes in determining the defined benefit rebate to be paid to the extent he so wishes.

### Members affected – public sector and private sector considerations

- 13.14 The relevant population of contracted-out workers includes both public and private sector pension schemes.
- 13.15 The defined benefit contracted-out rebate values outlined in this report have been derived using assumptions and methodologies which recognise the practice of funded private sector pension schemes. Although the defined benefit contracted-out rebate also applies to members of unfunded public sector schemes (who comprise a material percentage of members contracted-out on a defined benefit basis), I have not considered this further, since the contracting-out of public sector schemes does not result in cash flow to or from the Government, except in relation to employee contributions and/or non-Central Government employers.
- 13.16 Contracted-out public servants are affected by the level of the rebate which accrues to employees. However, this is a decision taken by the Secretary of State on broader policy grounds without the need for actuarial advice.

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<sup>7</sup> Pension Schemes Act 1993 section 42 paragraph (1)(a)(ii)

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- 13.17 As I am focusing on the 'cost' in private sector schemes of providing the state second pension benefits forgone, a number of consultation respondents suggested that I also exclude public sector data on the profile of contracted-out members from the calculation of the rebate (see the assumptions on 'weights' discussed from paragraph 7.16.) There is a viable rationale for this point of view.
- 13.18 Conversely, there is a difference between determining the average cost using principles which reflect private sector scheme practice, and ignoring the profile of public sector members in the analysis used for the weights. The same defined benefit contracted-out rebate applies to both types of schemes, and it is worthwhile to derive rebates which reflect the total membership of contracted-out schemes, in both sectors.
- 13.19 In practice, data is not available to accurately allow for each sector individually. Thus any attempt to base the rebate only on the private sector would be speculative.
- 13.20 When considering the appropriate level of the defined benefit contracted-out rebate, in the context of the alternative approaches outlined, it should be borne in mind that reflecting the profile of all contracted-out members in the calculations may result in a lower contracted-out rebate.
- 13.21 The defined benefit contracted-out rebate is only relevant to schemes that are open to future accrual.
- 13.22 Notwithstanding all the above, the possible implications of the approach adopted for a best estimate rebate rate are looked at in section 11 and considered within a holistic framework.

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## 14 Process for decision

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In this section I offer a possible process to assist the Secretary of State reach his decision on the appropriate level for the defined benefit contracted-out rebate.

- 14.1 I suggest that the Secretary of State might follow a process to reach a decision on the appropriate level for the defined benefit rebate as follows:
- > consider the broad approach to valuing the state benefits given up by contracted-out staff (for example, the 'best estimate', 'typical funding' and 'gilts' bases described in this report, or indeed any variant in between or outside the range offered here). The Secretary of State should consider what he believes is the appropriate policy objective in coming to this view noting (but not necessarily taking account of, since it is not a representative cross-section of public opinion) that many consultation responses did not support a policy objective reflected by the use of a 'best estimate' approach,
  - > consider, if appropriate, any refinements such as:
    - if the rebate should include explicit allowance for the guaranteed nature of the state pension given up by contracted-out staff (see paragraph 13.8),
    - if the rebate should include a weighting to mitigate the financial effect on schemes with older than average memberships, as recommended at previous reviews (see paragraph 13.12),
    - whether or not to allow for expected changes to state pension age,
    - whether there is any further and better evidence (which would be accepted independently as 'further and better') which might suggest an assumption change but being aware of the age profile issues – see paragraph 11.17, and
    - allowance for any margins, rounding, etc.
  - > determining the rebate and the split between employer and employee (noting that this aspect is outside of any considerations in this report).
  - >

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## 15 Revaluation rate for Guaranteed Minimum Pensions

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In this section I discuss the rate of revaluation which might be prescribed for the GMPs of staff who leave pensionable service in the period 2012 to 2017.

- 15.1 I have been asked by the Department of Work and Pensions to propose a rate for the revaluation of Guaranteed Minimum Pension (GMP) for contracted-out members who leave pensionable service in the period 2012 to 2017.
- 15.2 Schemes may choose between two approaches to revaluation in this situation:
- > revalue GMPs in line with increases in National Average Earnings (as specified in annual orders), or
  - > revalue GMPs in line with a fixed rate (as specified in orders which apply for leavers in specified five year periods).
- 15.3 This section deals with the rate to be determined under the second bullet point above.
- 15.4 At previous reviews the then Government Actuary based his proposal for the latter fixed rate on the assumed rate of growth in average earnings underlying his recommended rebate value for defined benefit members, plus 0.5%. The addition of 0.5% to the expected future growth in average salaries is to compensate for the conversion of a variable rate of revaluation (linked to actual average earnings growth) to a fixed rate for which there has to be a 'price'.
- 15.5 I propose to continue to adopt this rationale. However, at this review I have provided a range of three possible rebate values, which are based (among other things) on differing assumptions in respect of average earnings growth. In my opinion, a best estimate assumption is most appropriate for the current purpose.
- 15.6 Adding 0.5% in line with previous practice, I therefore propose that the rate for the revaluation of GMP for members who leave pensionable service in the period 2012 to 2017 should be set at 4.75%. This compares to a current rate of 4.0%.
- 15.7 I recommend that this revaluation rate would be appropriate in the situation where the National Insurance rebate was set at a rate of 6% or less.
- 15.8 If a higher rebate were set, then this would imply that state benefits were considered to be more valuable than implied by my 'best estimate' bases. This might reflect a view that National Average Earnings were expected to rise more quickly than allowed for in my 'best estimate' basis. If so, that would justify a higher revaluation rate. Therefore, if the National Insurance rebate were set at a rate over 6% then I suggest that the Secretary of State should consider setting the GMP revaluation rate at 5.5%.

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## Appendix A Legal background

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### State second pension and contracting-out

- A.1 The state second pension is set out in the Social Security Contributions and Benefits Act 1992 (SSCBA 1992). The Category A pension (paid to the contributor) is described from s44. The Category B pension (inherited by the spouse of the contributor) is described from s48A. The amounts of the state second pension (and the effect of contracting-out) are set out in Schedule 4A in respect of accrual after 2002/03 and before the 'flat rate introduction year'. Accrual from the 'flat rate introduction year' is set out in Schedule 4B. The 'flat rate introduction year' has not been prescribed yet, but it is intended that it will be 2012/13.
- A.2 The amount of the state second pension forgone by those contracted-out on a defined benefit basis is defined identically in both Schedule 4A and 4B, so no difficulty arises in this regard from the uncertainty around the definition of the 'flat rate introduction year'.
- A.3 For those contracted-out on a defined contribution basis, only Schedule 4A provides definitions of contracted-out benefits, since the 'flat rate introduction year' is expected to be synchronised with the abolition of contracting-out on a defined contribution basis.

### National Insurance rebates

- A.4 The Pension Schemes Act 1993 (PSA 1993), sections 40 to 49 inclusive, makes provision for members of pension schemes who are contracted-out of the state second pension (and the sponsoring employers of those schemes) to pay reduced rates of National Insurance contributions and/or to have their pension schemes receive corresponding payments from HM Revenue & Customs (HMRC).
- A.5 PSA 1993 s42 requires a review to be carried out by the Government Actuary, at intervals of not more than five years, of the contracted-out rebate for those contracted-out on a defined benefit basis (members of COSRS). The review should report on any changes in the factors which, in the Government Actuary's opinion, affect the cost of providing benefits of an actuarial value equivalent to that of the state pension benefits which are given up by or in respect of members of these schemes. The legislation does not require the Government Actuary to recommend percentage rebates, though in practice the Department for Work and Pensions commissions GAD to provide advice on the level of rebate values (and there is no legislative bar preventing this).
- A.6 Separate requirements exist for members of Contracted-Out Money Purchase Schemes (COMPS) under PSA 1993 s42B. COMPS are occupational defined contribution schemes. Contracted-out rebates are age-related for members of COMPS. The Government Actuary must report on the percentage age-related rebates which are required in his opinion to reflect the cost of providing benefits of an actuarial value equivalent to that of the state pension benefits which are given up by or in respect of members of COMPS.



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- A.7 PSA 1993 s45A specifies age related rebates for Appropriate Personal Pensions (APPs). These rebates are paid by HMRC direct to the schemes. The Government Actuary must report on the age-related rebates which are required in his opinion to reflect the cost of providing benefits of an actuarial value equivalent to that of the state pension benefits which are given up by or in respect of members of APPs.
- A.8 The same sections of PSA 1993 require any order by the Secretary of State for Work and Pensions to vary the rate of reduction in National Insurance contributions or rebates, to which the Government Actuary's reports would relate, to be made at least one complete tax year before they come into force and to be laid within 5 years of the previous reports and draft order. Hence for new rebates to apply from 6 April 2012, the relevant orders and the Government Actuary's reports must be laid before Parliament by 28 February 2011, since the previous order was laid on 1 March 2006.

**Changes since the previous review**

- A.9 For people in contracted-out employment, section 10(3)(b) of the Pensions Act 2007 (PA 2007) provides that the state second pension moves to accrual on two bands (previously there were three bands) from 2010/11.
- A.10 Section 15(1) of PA 2007 provides that contracting-out on a defined contribution basis (via COMPS and APPs) will be abolished from a date appointed by the Secretary of State. The abolition date has not yet been set, but is expected to be April 2012, at the same time as the Band 1 accrual of the state second pension moves to a flat rate.
- A.11 Section 13 of PA 2007 provides that state pension age will rise from 65 to 68 over the period 2024 to 2046.
- A.12 At the June 2010 budget, the Chancellor of the Exchequer announced that state second pension will be increased in payment in line with the Consumer Prices Index rather than the Retail Prices Index.
- A.13 As part of the 2010 spending review, the Government announced plans to accelerate the rise in state pension ages. Subject to Parliamentary approval the state pension age should rise to age 65 for all by 2018 and age 66 by 2020.

**Reduced state pension**

- A.14 The effect of contracting-out on a member's state second pension is set out in the Social Security Contributions and Benefits Act 1992 (SSCBA 1992) Schedules 4A and 4B.
- A.15 For those contracted-out on a defined benefit basis, members give up a percentage of their earnings between the Qualifying Earnings Factor (that is, the Lower Earnings Limit expressed as an annual amount) and the Upper Accrual Point (expressed as an annual amount).
- A.16 The percentage is 20 divided by the number of 'relevant years' in the member's 'working life'. 'Working life' (defined in SSCBA 1992 schedule 3 paragraph 5(8)) is the period between the tax year the member attains the age of 16, and the tax year immediately before attaining state pension age. 'Relevant years' (defined in SSCBA 1992 s44(7)) are restricted to 1978/79 and later.
- A.17 The benefits forgone would otherwise have been payable at state pension age.



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- A.18 From the 'flat rate introduction year' the state second pension itself is amended. For a few members (older and higher earning) the state second pension is reduced to zero. That is, the specified deduction for contracted-out workers exceeds their state second pension.

#### **Inherited benefits (simplified summary)**

- A.19 Where both the contributor and the spouse (including civil partners) are over state pension age at the date of the contributor's death then the spouse generally becomes entitled to a pension equal to half of the contributor's accrued state second pension (though in some cases inheritance is capped at a maximum value).
- A.20 If the spouse is under state pension age then the inherited pension is not paid until state pension age unless there are dependent children. If the spouse is between 45 and 55 and there are no dependent children then the inherited pension is reduced, as well as being delayed until state pension age. If the spouse is under 45 and there are no dependent children then the inherited pension is eliminated.

#### **Reduced National Insurance Contributions**

- A.21 The Pension Schemes Act 1993 s41(1), (1A) and (1B) provide that the Class 1 National Insurance contributions payable in respect of the member contracted-out on a defined benefit basis should be reduced by a percentage of their earnings between the Lower Earnings Limit and the Upper Accrual Point.

#### **Defined contribution schemes**

- A.22 For the time being, COMPS have the same state pension reduction as COSRS. Members of APPs generally forgo their entire entitlement to state second pension.
- A.23 The National Insurance rebates for those contracted-out on a defined contribution basis are age related, and may differ between COMPS and APPs.

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## Appendix B Assumptions adopted at the previous review

The following assumptions were adopted at the previous review, in respect of the defined benefit contracted-out rebate.

|  |  |
|--|--|
| <b>Financial</b>   |  |
| Pre-retirement discount rate (net of earnings growth)    | 1% pa just before SPA<br>2% pa 15 yrs to SPA<br>2.5% pa >30 yrs to SPA   |
| Post-retirement discount rate (net of pension increases) | 2.00% pa   |
| Gross pre-retirement discount rate                       | 5.00% pa   |
| <b>Demographic</b>                                       |  |
| Mortality  | 85% of the projected mortality used for the UK 2004-based national population projections. The same proportion of population mortality was assumed for the widows and widowers of members. |
| Proportions 'married'                                    | In line with the 2003-based national projections.  |
| Rates of 'remarriage'                                    | In line with the 2003-based national projections.  |
| 'Marital' age differences                                | In line with the 2001 national census data.  |
| Weights  | Derived from data analysed by the Department of Work and Pensions.   |
| Administration expenses                                  | 0.2% of band earnings  |
| Contingency margin                                       | 7.5% of calculated rebate  |

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## Appendix C Assumptions adopted at this review

The following tables summarise the assumptions used to provide illustrative defined benefit contracted-out rebates for each of the three approaches discussed. The 'building blocks' of our assumptions have been rounded to 0.05% pa.

| <b>'Best estimate' basis</b>                             |  |
|--|--|
| <b>Financial</b>   |  |
| CPI (multi-year)   | 2.00% pa   |
| RPI (CPI + 0.75%)  | 2.75% pa   |
| NAE (RPI + 1.50%)  | 4.25% pa   |
| Index linked gilt return (RPI + real yield)              | 3.35% pa   |
| Fixed interest gilt returns                              | 4.65% pa   |
| Corporate bond returns (Fixed interest gilts + 0.75%)    | 5.40% pa   |
| Equity returns   | 7.40% pa   |
| Investment expenses (depending on term to SPA)           | 0.12% pa to 0.15% pa   |
| Pre-retirement discount rate (net of earnings growth)    | 0.18% pa just before SPA<br>1.53% pa 10 years to SPA<br>2.33% pa >25 yrs to SPA  |
| Post-retirement discount rate (net of pension increases) | 2.39% pa   |
| Gross pre-retirement discount rate                       | 4.44% pa   |
| <b>Demographic</b>                                       |  |
| Mortality  | Based on S1 tables, allowing for mortality improvements in line with the ONS principal UK projections of population (2008 series). |
| Proportions 'married'                                    | In line with the 2006-based national projections.  |
| Rates of 'remarriage'                                    | None   |
| 'Marital' age differences                                | In line with the 2001 national census data.  |
| <b>Other</b>   |  |
| Weights  | Derived by GAD from National Insurance sample data   |
| Administration expenses                                  | 0.2% of band earnings  |
| Contingency margin                                       | None   |

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| <b>'Typical funding' basis</b>                           |  |
|--|--|
| <b>Financial</b>   |  |
| CPI (multi-year)   | 3.00% pa   |
| RPI (CPI + 0.75%)  | 3.75% pa   |
| NAE (RPI + 1.50%)  | 5.25% pa   |
| Index linked gilt return (RPI + real yield)              | n/a  |
| Fixed interest gilt returns                              | 4.65% pa   |
| Corporate bond returns (Fixed interest gilts + 0.75%)    | n/a  |
| Equity returns   | n/a  |
| Investment expenses (depending on term to SPA)           | Implicit in discount rates   |
| Pre-retirement discount rate (net of earnings growth)    | 1.19% pa   |
| Post-retirement discount rate (net of pension increases) | 1.94% pa   |
| Gross pre-retirement discount rate                       | 5.00% pa   |
| <b>Demographic</b>                                       |  |
| Mortality  | Based on S1 tables, allowing for mortality improvements in line with the ONS principal UK projections of population (2008 series). Rates are offset by two years of age. |
| Proportions 'married'                                    | In line with the 2006-based national projections.  |
| Rates of 'remarriage'                                    | None   |
| 'Marital' age differences                                | In line with the 2001 national census data.  |
| <b>Other</b>   |  |
| Weights  | Derived by GAD from National Insurance sample data   |
| Administration expenses                                  | 0.2% of band earnings  |
| Contingency margin                                       | None   |

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| <b>'Gilts' basis</b>                                     |  |
|--|--|
| <b>Financial</b>   |  |
| CPI (multi-year)   | 3.25% pa   |
| RPI (CPI + 0.75%)  | 4.00% pa   |
| NAE (RPI + 1.50%)  | 5.50% pa   |
| Index linked gilt return (RPI + real yield)              | n/a  |
| Fixed interest gilt returns                              | 4.65% pa   |
| Corporate bond returns (Fixed interest gilts + 0.75%)    | n/a  |
| Equity returns   | n/a  |
| Investment expenses (depending on term to SPA)           | 0.10% pa   |
| Pre-retirement discount rate (net of earnings growth)    | - 0.90% pa   |
| Post-retirement discount rate (net of pension increases) | 1.26% pa   |
| Gross pre-retirement discount rate                       | 4.55% pa   |
| <b>Demographic</b>                                       |  |
| Mortality  | Based on S1 tables, allowing for mortality improvements in line with the ONS principal UK projections of population (2008 series). Rates are offset by two years of age. |
| Proportions 'married'                                    | In line with the 2006-based national projections.  |
| Rates of 'remarriage'                                    | None   |
| 'Marital' age differences                                | In line with the 2001 national census data.  |
| <b>Other</b>   |  |
| Weights  | Derived by GAD from National Insurance sample data   |
| Administration expenses                                  | 0.2% of band earnings  |
| Contingency margin                                       | None   |

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## **Appendix D Evidence in support of the financial assumptions**

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In this appendix I present and discuss some of the published evidence which is relevant to the choice of financial assumptions. This includes:

- > evidence from Pension Regulator reports in respect of discount rates adopted by funded pension schemes,
- > evidence from Pension Regulator reports and NAPF reports on the asset allocation strategy adopted by funded pension schemes,
- > research on expected prices and salary inflation,
- > research on expected asset returns,
- > comments on expected investment management expenses.

### **'Typical funding' basis considerations – evidence from Pension Regulator reports**

D.1 The Pensions Regulator's report 'Scheme funding: an analysis of recovery plans', dated November 2009, provides an overview of the first triennial cycle of the new scheme funding regime for defined benefit and hybrid pension schemes. The triennial cycle is analysed in three tranches over the period from September 2005 to September 2008.

D.2 The report states:

*'The discount rate can be broadly described by the following equation:*

$$\text{discount rate} = \text{risk free rate} + \text{risk premium}$$

*A proxy such as a government bond yield is typically used for the risk free rate, and a spread (i.e. a risk premium) over the risk free rate is assumed, typically based on:*

- *The time horizon of the liabilities*
- *The potential for additional investment return; and*
- *A prudence adjustment, based on the employer's covenant'*

D.3 The table below sets out the spread over the gilt yield of the weighted average discount rate data for those schemes that adopt different discount rates pre and post retirement.

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|   | Tranche 1 <sup>8</sup> | Tranche 2 | Tranche 3 |
|---|------------------------|-----------|-----------|
| <b>Excess of pre retirement discount rate over gilt yield<sup>9</sup></b> | 2.0% pa                | 1.6% pa   | 1.9% pa   |
| <b>Excess of post retirement discount rate over gilt yield</b>            | 0.3% pa                | 0.2% pa   | 0.6% pa   |

Source: tPR and GAD

D.4 The average pre retirement spread over the period is 1.83% pa and the average post retirement spread over the period is 0.37%.

D.5 The report notes that:

*'there has been an increase in the discount rate spread over UK gilt yields. This trend may be because schemes are adopting an increased risk premium when setting discount rates. This increase...in tranche 3 implies all else being equal, a slightly greater reliance on investment outperformance to meet scheme liabilities.'*

*Furthermore, the report refers to this 'investment outperformance' as corresponding to the increase in corporate bond spread over gilts and states that:*

*'anecdotal evidence from case work by the regulator suggests that some schemes are using corporate bond yields at least in part as a basis for setting the discount rate'.*

D.6 We consider it appropriate to base our assumptions for the pre and post retirement margins above gilt yields used for setting the typical funding discount rates on the averages given in D.3.

### Pension scheme asset allocation – NAPF and Pension Regulator evidence

D.7 The NAPF 2009 Annual Survey provides statistics on defined benefit pension schemes with assets to the value of approximately £400 billion (and tends to cover larger schemes). Notably, page 29 sets out the asset allocation of the defined benefit schemes covered by the survey. Approximately 34% of assets are shown as government and corporate bonds, of which around 15% are shown as the latter. This suggests that around 44% of the 'bond' assets held by the pension schemes covered by the survey were corporate bonds.

D.8 In respect of the split of assets between the UK and Overseas, the NAPF 2009 survey shows that the split of equities held was approximately 50:50. The vast majority of government bonds held were UK gilts.

<sup>8</sup> The tranches refer to each of the three years between September 2005 and September 2008.

<sup>9</sup> Where 'pre and post retirement discount rates' are before deduction of an inflation assumption, and gilt yield is measured as the yield on the over 15 year UK gilt index

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- D.9 The 2009 Purple Book published by the Pensions Regulator covers almost all pension schemes in the PPF eligible UK defined benefit scheme universe. Section 7.6 (Chart 7.4) of the Purple Book shows that, broadly speaking:
- > schemes with around 90% non pensioner and 10% pensioner liabilities have an average asset allocation of approximately 65% equities and property, 30% gilts and fixed interest and 5% cash and other,
  - > schemes with around 50% non pensioner and 50% pensioner liabilities have an average asset allocation of approximately 50% equities and property, 40% gilts and fixed interest and 10% cash and other, and
  - > schemes with around 10% non pensioner and 90% pensioner liabilities have an average asset allocation of approximately 20% equities and property, 70% gilts and fixed interest and 10% cash and other
- D.10 Section 7.3 of the Purple Book shows that the weighted average allocation of 'bond' assets to government bonds was 29%, to index-linked bonds was 32.6% and to corporate bonds was 38.3%.

**Consumer Prices Index (CPI) and Retail Prices Index (RPI)**

- D.11 The CPI and RPI measures of inflation differ in both their construction methods and in the items which are included. The formula for CPI uses a geometric mean to combine prices within each category. This gives a lower mean than the arithmetic method that is used for RPI. The Office for National Statistics (2003)<sup>10</sup> calculated that this formula effect meant that RPIX (which uses the same construction method as RPI) was about 0.5% greater than CPI for historic data, with an additional difference of 0.2% pa due to differences in items included. Each month, the Office of National Statistics publishes the breakdown of the difference between RPI and CPI which has shown the same formula effect of about 0.5%.
- D.12 Since 1992, when inflation targeting began, RPI has been 0.7% pa greater than CPI<sup>11</sup>. HM Treasury has often used a difference of 0.75% pa for their budget projections, for example HM Treasury (2007)<sup>12</sup>, and this is also consistent with the views of King (2007)<sup>13</sup> who said the Bank of England expected an average long run gap of about 0.7% / 0.8% pa.
- D.13 The Office for Budget Responsibility's expectations of the gap between CPI and RPI in the short-term are much higher at 1.0% -1.5%. This is likely to be due to expectations that rises in interest rates will push up RPI relative to CPI (as unlike CPI, RPI includes mortgage interest payments).

<sup>10</sup> Office for National Statistics (2003) 'The New Inflation Target: the Statistical Perspective'

<sup>11</sup> The difference in geometric means between October 1992 and March 2010 using Office for National Statistics data

<sup>12</sup> HM Treasury (2007) 'Budget 2007'

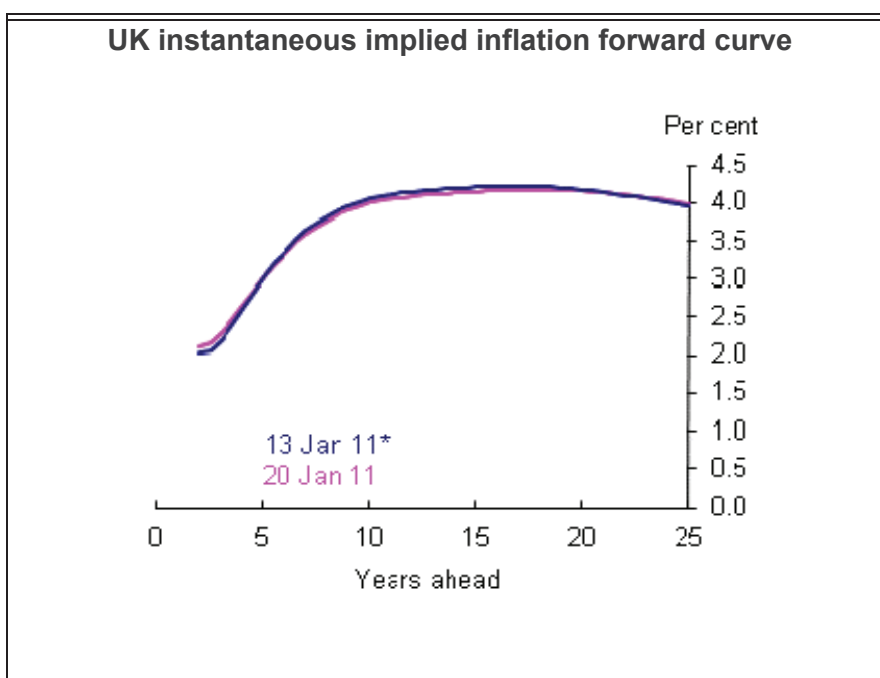
<sup>13</sup> King, Mervyn (2007) 'Inflation report press conference – 16 May 2007'



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- D.14 Over the period 1900 to 2000 Dimson, Marsh and Staunton (2002)<sup>14</sup> found that the geometric average inflation has been 4.1% pa in the UK and 3.2% pa in the US. However, the average inflation rate is very dependent on the period chosen. Since October 1992, when the UK adopted an inflation targeting regime, inflation has been lower. Between October 1992 and March 2010 the geometric average of RPI inflation has been 2.7% pa<sup>15</sup>.
- D.15 An alternative method of estimating future inflation is to look at the inflation required so that the return on index linked bonds is the same as that on nominal bonds.



Source: Bank of England

- D.16 However such breakeven rates may also contain risk premia and these must be removed to calculate the expected inflation. Generally, it is considered that the risk premium for nominal bonds is positive which is consistent with investors demanding an additional expected return to compensate them for the risk that their real return is eroded by periods of high inflation. The inflation risk premium is difficult to estimate and may vary by term and through time. A good summary of studies investigating the size of the inflation risk premium can be found in Hördahl (2008)<sup>16</sup>, which has been quoted below.

<sup>14</sup> Dimson, Marsh and Stauton (2002) 'Triumph of optimists, 101 years of global investment returns'

<sup>15</sup> Calculated using data from the Office for National Statistics

<sup>16</sup> Hördahl (2008)<sup>16</sup> 'The inflation risk premium in the term structure of interest rates', BIS Quarterly Review September 2008

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*'The available empirical evidence on the properties of inflation risk premia is somewhat mixed. Studies that cover very long sample periods and that do not include information from index-linked bonds to help pin down the dynamics of real yields often report sizeable inflation risk premia. For example, using a structural economic model, Buraschi and Jiltsov (2005) find that the 10-year US inflation risk premium averaged 70 basis points from 1960.<sup>17</sup> They also find that the inflation premium was highly time-varying, and that by the end of their sample it had fallen to relatively low levels. Ang et al (2008) estimate a term structure model in which inflation exhibits regime switching using US inflation and nominal yield data, and report a large and time-varying inflation risk premium (on average, around 115 basis points for the five-year maturity over their 1952–2004 sample).*

*In papers that focus on more recent periods and in those that utilise information embedded in index-linked bonds, inflation risk premium estimates tend to be relatively small, although still mostly positive. Durham (2006) estimates a no-arbitrage model using US Treasury inflation-indexed bond data and finds that the 10-year inflation premium hovered around a slightly positive mean from 2003 onwards.<sup>18</sup> D'Amico et al (2008) apply a similar model to data from 1990 onwards, and report a moderate-sized positive 10-year inflation premium (around 50 basis points on average) that is relatively stable. However, they also find that their results are sensitive to the choice of date from which index-linked bond data are included.*

*The available empirical evidence relating to euro area data is more limited. In fact, apart from the papers on which this article is based, there appears to be only one study focusing on the euro area.<sup>19</sup> García and Werner (2008) apply a term structure model similar to that used by D'Amico et al (2008) on euro real and nominal yields, supplemented with survey data on inflation expectations. Their estimates suggest that the inflation premium at the five-year horizon has averaged around 25 basis points since the introduction of the euro, and that it has fluctuated only mildly over time. Hence, their results seem to be in line with those of Durham (2006) and D'Amico et al (2008), which point to a relatively modest, but positive, long-term inflation risk premium in recent years.'*

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<sup>17</sup> All quantitative risk premium estimates mentioned are in terms of (annualised) yield, rather than for example holding period returns.

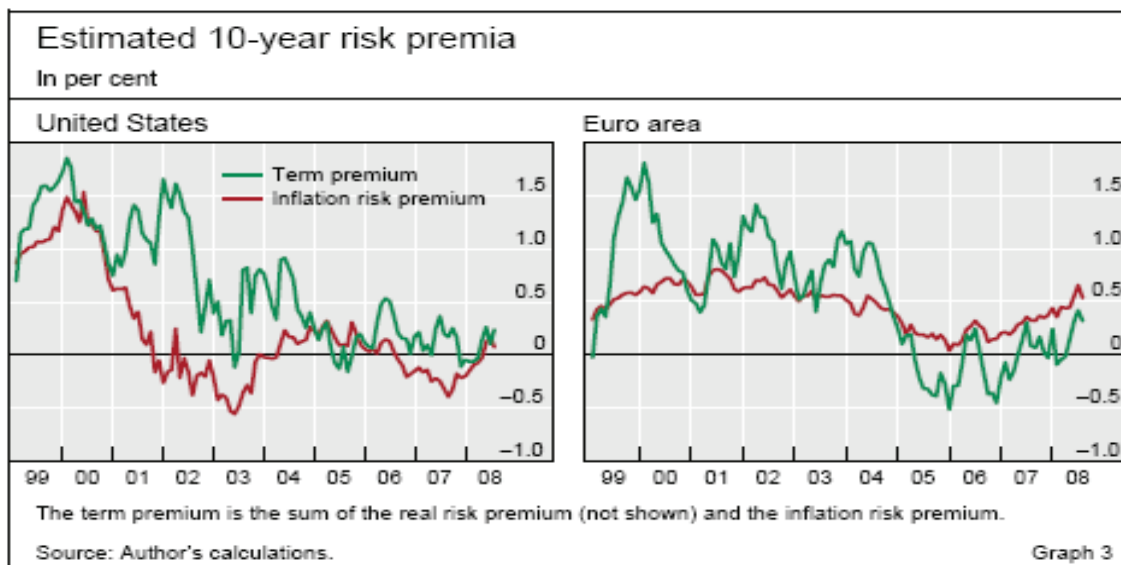
<sup>18</sup> Prior to 2003, Durham (2006) obtains a 10-year inflation premium that was mostly negative. This is probably due to sizeable liquidity premia in this part of the sample period, which would have tended to raise the index-linked bond yield and therefore produce negative inflation premia to fit the resulting low level of break-even inflation rates.

<sup>19</sup> Prior to 2003, Durham (2006) obtains a 10-year inflation premium that was mostly negative. This is probably due to sizeable liquidity premia in this part of the sample period, which would have tended to raise the index-linked bond yield and therefore produce negative inflation premia to fit the resulting low level of break-even inflation rates.

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- D.17 Hördahl (2008) estimates the inflation risk premium using a dynamic term structure model based on an explicit structural macroeconomic model. Using this model he estimated that in 2008 the inflation risk premium on 10-year bonds in the Euro area was about 0.5% pa but that it was lower in the US (about 0.1% pa), as illustrated by the graphs<sup>20</sup> below:



Source: Hördahl (2008)

- D.18 PricewaterhouseCoopers (2007)<sup>21</sup> reviewed investment return projection rates for the FSA, and suggested an appropriate assumption of 2.75% pa for RPI assuming that the inflation targeting regime by the Bank of England continued. In coming to this conclusion they considered both the breakeven inflation (which was then about 3.15% pa) as well as the Bank of England's target.
- D.19 The forward breakeven RPI inflation rate<sup>22</sup> between 4 and 44 years time is 4.00% pa. An assumed future gap between RPI and CPI of 0.75% implies using a forward CPI rate of 3.25% pa. The Bank of England produces regular forecasts for future CPI over a three year period, based around the mode of the distribution. This is part of the process by which the 2% rate is targeted. They also estimate the mean and median of this short-term distribution. However, the Bank does not publish any longer-term distributions or any views on how the median and mean of the longer-term distribution would relate to the mode.

<sup>20</sup> Hördahl (2008) 'The inflation risk premium in the term structure of interest rates', BIS Quarterly Review September 2008

<sup>21</sup> PricewaterhouseCoopers (2007) 'Review of FSA Projection Rates'

<sup>22</sup> Calculated using the Bank of England nominal gilt forward curves from 31 December 2010 and extrapolating beyond the 25 years that these are available for, by assuming that the forward rate is constant.

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- D.20 At first sight it may appear that the perspective of investors which leads to such a breakeven inflation rate is incompatible with the perspective of economic forecasters who believe that the 2.0% pa Bank of England target for CPI provides an appropriate best estimate for future inflation. However, this is not necessarily the case as the following argument demonstrates.
- > Beyond the immediate term, the best estimate of CPI inflation in any one year is 2.0%, in line with the Bank of England target and independent forecasts.
  - > In practice there will inevitably be variation around the target level (that is, there is a distribution of possible outturns each year).
  - > When carrying out inflation modelling, the Bank of England's central forecast is the mode of their distribution. This implies that the most likely outturn for CPI in any year is 2.0%.
  - > However, the magnitude of possible deviations from the target level may be greater on the upside than the downside, as has been demonstrated by past 'inflation shocks'. Hence the distribution of annual inflation may be positively skewed and so may have a mean greater than 2.0%. Whilst there is unlikely to be consensus on the shape of this forward-looking distribution, a reasonable assessment of the distribution might have a mean in the range of 2.0% to 2.5%.
  - > Long-term investors are naturally concerned about the mean outcome for inflation over the term of their investment and not just year by year. Hence they are interested in the multi-year distribution for inflation and not just the single-year distribution. This is complicated by the fact that there is likely to be some positive serial correlation in annual inflation figures as a future inflation shock may take more than one year to eliminate. Combined with any skew in the single-year distribution, this means that the median annualised inflation figure from the multi-year distribution may exceed the median inflation figure from the single-year distribution. For example I have analysed the impact of compounding one reasonable single-year distribution with a median of 2.0% and mean of 2.5% and found the resulting multi-year distribution over 10 or 20 years to have both a median and a mean of around 2.5%.
  - > Hence the 'best estimate' CPI assumption relevant to investors and consistent with the Bank of England target may be in the range 2.0% pa to 2.5% pa.
  - > This implies a 0.75% inflation risk premium in the gilt forward curves which is within the range of empirical estimates quoted above.
- D.21 Since July 1997 (when the Bank of England gained independence) the mean percentage change in CPI over the previous 12 months is 1.9% pa. The corresponding median is 1.7%.
- D.22 Since December 2003 (when CPI targeting commenced) the mean percentage change in CPI over the previous 12 months is 2.5% pa. The corresponding median is 2.4%

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### National Average Earnings (NAE)

- D.23 There is evidence to suggest that earnings increase faster than prices over the long term. However, in the short term there can be large fluctuations which may be driven by business cycle fluctuations.
- D.24 Since 1970 wages have increased by 1.7% pa more than prices<sup>23</sup>. However, the rate of real earnings growth appears to have fallen in recent years and has averaged 1.1% pa since the introduction of inflation targeting in 1992.
- D.25 PricewaterhouseCoopers (2007)<sup>24</sup> carried out statistical analysis and recommended a 1.5% pa real earnings growth was used for the projection of investment illustrations. However, they also noted a number of uncertainties surrounding this and estimated the plausible range of real earnings growth to be around 1.0% to 2.0% pa.

### Gilt returns

- D.26 The expected return on fixed interest gilts bought in 4 years' time will be equal to the yield on gilts at that point in time. The market consistent expectation of this is the forward rate on gilts in 4 years' time for the term of the gilt bought. Considering 40 year gilts, the forward nominal rate between 4 and 44 years' time on fixed interest gilts is about 4.66% pa<sup>25</sup>.
- D.27 Similarly, the expected return on index-linked gilts bought in 4 years time will be equal to the yield on gilts at that point in time. Again, the market consistent expectation of this is the forward rate on gilts in 4 years time for the term of the gilt bought. Considering 40 year gilts, the forward real rate between 4 and 44 years time on index linked gilts is about 0.62% pa<sup>26</sup>.

### Corporate bond returns

- D.28 Corporate bonds are exposed to the risk of default and so the expected return is lower than their 'promised' gross redemption yield. Part of the spread between government and corporate bonds is due to the expected loss due to default, part reflects a risk premium for the uncertainty in return and the residual is a non-credit related premium (for example, to compensate for lower liquidity). Dimson, Marsh and Staunton (2002)<sup>27</sup> found that the geometric mean return of US high grade corporate bonds between 1900 and 2000 was 2.11% pa which was 0.48% pa higher than government bonds. They then went on to comment:

<sup>23</sup> This is the difference in the geometric averages of RPI and the UK earnings index between January 1970 and February 2010.

<sup>24</sup> PricewaterhouseCoopers (2007): 'Review of FSA Projection Rate'

<sup>25</sup> This has been calculated using the Bank of England nominal gilt forward rate curves from 31 December 2010 and extrapolating beyond the 25 years that these are available for by assuming that the forward rate is constant.

<sup>26</sup> This has been calculated by using Bank of England nominal gilt forward rate curves from 31 December 2010 and extrapolating beyond the 25 years that these are available for by assuming that the forward rate is constant.

<sup>27</sup> Dimson, Marsh and Staunton (2002) 'Triumph of the optimists, 101 years of global investment returns'

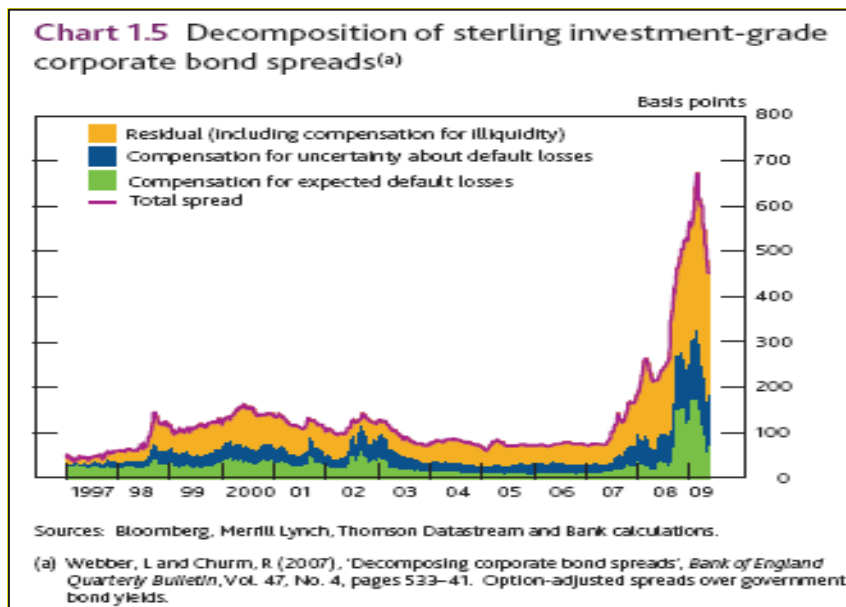


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*'High-grade corporates typically trade on redemption yields about one percentage point higher than on government bonds. This suggests that about half the 'promised' yield differential fails to materialize because of defaults, downgrades, and early calls, while around half represents the achieved risk premium.'*

- D.29 PricewaterhouseCoopers (2007)<sup>28</sup> used two methods to estimate the expected return on corporate bonds. Their first based on the credit default swap market estimated an expected return of 0.75% pa above government bonds for bonds rated higher than BBB. Their second method was to use the principles underlying CAPM and multiplied an empirical debt beta by their equity risk premium of 3% - 4% pa to produce expected additional returns in the range of 0.3% - 0.8% pa, on top of which there was the possibility of a liquidity premium.
- D.30 Historical expected defaults and recovery rates can be found in documents issued by ratings agencies such as Standard and Poor's (2010)<sup>29</sup> and Moody's (2010)<sup>30</sup>. These can then be used to estimate future expected losses and hence expected returns on corporate bonds.
- D.31 The Bank of England use a structural credit risk model calibrated to historical default frequencies to separate the credit spread into its constituent parts. This model was the result of studies by Churm and Panigirtzoglou (2005)<sup>31</sup> and Bank of England (2007)<sup>32</sup>. This model uses option pricing methodology in a similar way to the model by Merton (1974)<sup>33</sup> to value the payoff to equity and bond holders. The results from this model are illustrated in the following Bank of England (2009) graph.



<sup>28</sup> PricewaterhouseCoopers (2007) 'Review of FSA Projection Rates'

<sup>29</sup> Standard and poor's (2010) 'Default, Transition and Recover: 2009 Global Corporate Default Study and Ratings Transitions'

<sup>30</sup> Moody's (2010) 'Corporate Default and Recovery Rate 1920 – 2009'

<sup>31</sup> Churm and Panigirtzoglou (2005) 'Decomposing credit spreads' Bank of England Working Paper no. 253

<sup>32</sup> Bank of England (2009) 'Financial Stability Report June 2009'

<sup>33</sup> Merton (1974) 'On the pricing of corporate debt: the risk structure of interest rates'

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D.32 In setting the expected corporate bond return assumptions it is important to also consider current corporate bond spreads which were 1.3% for AA bonds as at 30 November 2010<sup>34</sup>.

### Equity Returns

D.33 The table below shows the return on equities, bonds and bills, together with the rate of inflation and GDP (where readily available) over 1900 to 2000 and 1900 to 2009:

|   |           | UK   |         | US   |         | World |                    |
|---|-----------|------|---------|------|---------|-------|--------------------|
|   |           | Real | Nominal | Real | Nominal | Real  | Nominal            |
| <b>Returns<br/>% pa<br/>1900 - 2000</b> | Equities  | 5.8  | 10.1    | 6.7  | 10.1    | 5.8   | 9.2                |
|   | Bonds     | 1.3  | 5.4     | 1.6  | 4.8     | 1.2   | 4.4                |
|   | Bills     | 1.0  | 5.1     | 0.9  | 4.1     | 0.9   | 4.1 <sup>(2)</sup> |
|   | Inflation |      | 4.1     |      | 3.2     |       | 3.2 <sup>(2)</sup> |

|   |           | UK   |                    | US              |                    | World |                    |
|---|-----------|------|--------------------|-----------------|--------------------|-------|--------------------|
|   |           | Real | Nominal            | Real            | Nominal            | Real  | Nominal            |
| <b>Returns<br/>% pa<br/>1900 - 2009</b> | Equities  | 5.3  | 9.4                | 6.2             | 9.3                | 5.4   | 8.6                |
|   | Bonds     | 1.3  | 5.3                | 1.9             | 5.0                | 1.7   | 4.7                |
|   | Bills     | 1.0  | 5.0                | 0.9             | 3.9                | 0.9   | 3.9                |
|   | Inflation |      | 3.9 <sup>(1)</sup> |                 | 2.9 <sup>(1)</sup> |       | 3.0 <sup>(1)</sup> |
|   | GDP       |      |                    | 2.1<br>p/capita |                    |       |                    |

D.34 The table below shows the excess return on equities over each of bonds, bills, GDP and inflation (where readily available), from 1900 to 2000 and 1900 to 2009:

|  |                | UK  | US  | World |
|--|----------------|-----|-----|-------|
| <b>Excess of<br/>Equity Return<sup>(1)</sup><br/>1900-2000</b> | Over bonds     | 4.4 | 5.0 | 4.6   |
|  | Over bills     | 4.8 | 5.8 | 4.9   |
|  | Over inflation | 5.8 | 6.7 | 5.8   |

<sup>34</sup> The option adjusted spread on BofA Merrill Lynch AA Sterling Corporate Index (UR28) was 128bps at at 30/11/2010

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|  |                | UK  | US  | World |
|--|----------------|-----|-----|-------|
| <b>Excess of Equity Return<sup>(1)</sup> 1900-2009</b> | Over bonds     | 3.9 | 4.2 | 3.7   |
|  | Over bills     | 4.2 | 5.2 | 4.4   |
|  | Over inflation | 5.3 | 6.2 | 5.4   |

Sources:

Dimson, Marsh and Staunton: 'Triumph of the Optimists: 101 Years of Global Investment Returns', Princeton University Press

Dimson, Marsh, Staunton and Wilmot: 'Credit Suisse Global Investment Returns Yearbook 2010'

(1) calculated by GAD using information from the above sources

(2) US data

- D.35 The Equity Risk Premium (ERP) is the excess of the expected return over the 'risk free' rate.
- D.36 When assessing the 'risk-free' rate, the option of using the return on bonds or bills needs to be considered. Dimson, Marsh and Staunton (2002)<sup>35</sup> state 'of these two only treasury bills can be considered risk free.'
- D.37 The historic information above shows that UK and US equities have returned 4.2% and 5.2% pa above their respective country treasury bills, whereas 'world' equities have returned 4.4% pa over 'US' treasury bills.
- D.38 The 'world' estimate is suggested by PricewaterhouseCoopers (2003)<sup>36</sup> as the most appropriate measure when providing an estimate of prospective ERP for UK retail investors.
- D.39 The historical returns may not give a good estimate of the current ERP required by investors and this causes much debate about what the prospective ERP really is. Many (such as Globob and Bishop (1997)<sup>37</sup>, Siegel (1999)<sup>38</sup>, Cornell (1999)<sup>39</sup>, Dimson, Marsh and Staunton (2002), Brigham, Eugene and Ehrhardt (2002)<sup>40</sup>) suggest that future returns are likely to be lower than in the past.
- D.40 The two main reasons for this are summarised by PricewaterhouseCoopers (2003):
- '(a) Many markets will simply have performed better than investors expected in the past. Observed returns will be larger than those investors actually required to justify them investing in equities. This is the case for the US in particular, which in the 20th century experienced a sustained period of political stability and economic growth.'*

<sup>35</sup> Dimson, Marsh and Staunton (2002) 'Triumph of the optimists, 101 years of global investment returns'

<sup>36</sup> PricewaterhouseCoopers (2003) 'Rates of Return for FSA prescribed projections'

<sup>37</sup> Globob and Bishop (1997) 'What long-run returns can investors expect from the stock market?'

<sup>38</sup> Siegel (1999) 'The Shrinking Equity Risk Premium'

<sup>39</sup> Cornell (1999) 'The Equity Risk Premium'

<sup>40</sup> Brigham, Eugene and Ehrhardt (2002) 'Financial Management'



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*(b) The ERP will have fallen over the historical period as equity markets became more diversified and efficient while investors' confidence in the future grew. The result of this would be a significant re-rating of equities upward, which is unlikely to be repeated in future.'*

D.41 I have summarised estimates of the prospective ERP in the table below from a number of studies.

|                                 | <b>Dimson, Marsh and Staunton (2002)</b> | <b>Carhart and Winkelmann (2003)<sup>41</sup></b> | <b>PWC (2007)<sup>42</sup></b> | <b>Graham and Harvey (2009)<sup>43</sup></b> | <b>Fama and French (2002)<sup>44</sup></b>   | <b>Siegel (1999)</b>              |
|---------------------------------|--|---|--------------------------------|--|--|-----------------------------------|
| <b>Prospective ERP Estimate</b> | 2.5% to 4% over cash                     | 3%* over US treasury bonds                        | 3% to 4% over bonds            | 3.46%* over US treasury bonds                | 2.55% to 4.32% over 6 month commercial paper | Less than 1.5% to 2.5% over bonds |

\* US ERP estimate only

**Investment expenses**

D.42 If no allowance is made for active management outperformance in assumed asset class returns then it is consistent to consider passive investment management fees when setting investment expenses assumptions.

D.43 The fees in the wholesale passive investment management space are very competitive and therefore there is usually little observed difference between the various managers. The typical fees are summarised in the table below:

| <b>Asset Class</b>  | <b>Annual Passive Management Fee</b> |
|---------------------|--------------------------------------|
| UK Equities         | 0.05% to 0.1%* pa                    |
| Overseas Equities   | 0.13% to 0.22%* pa                   |
| UK Gilts (FI or IL) | 0.03% to 0.1%* pa                    |
| UK Corporate Bonds  | 0.08% to 0.15%* pa                   |

\* depending on size of funds under management

D.44 It should be noted that the Pensions Regulator scheme funding analysis dated November 2009 reports on additions over the risk free rate that are net of expenses.

<sup>41</sup> Carhart and Winkelmann (2003) 'The Equity Risk Premium, Modern Investment Management'

<sup>42</sup> PricewaterhouseCoopers (2007) 'Review of FSA Projection Rates'

<sup>43</sup> Graham and Harvey (2009) 'The Equity Risk Premium amid a Global Financial Crisis'

<sup>44</sup> Fama and French (2002) 'The Equity Premium'

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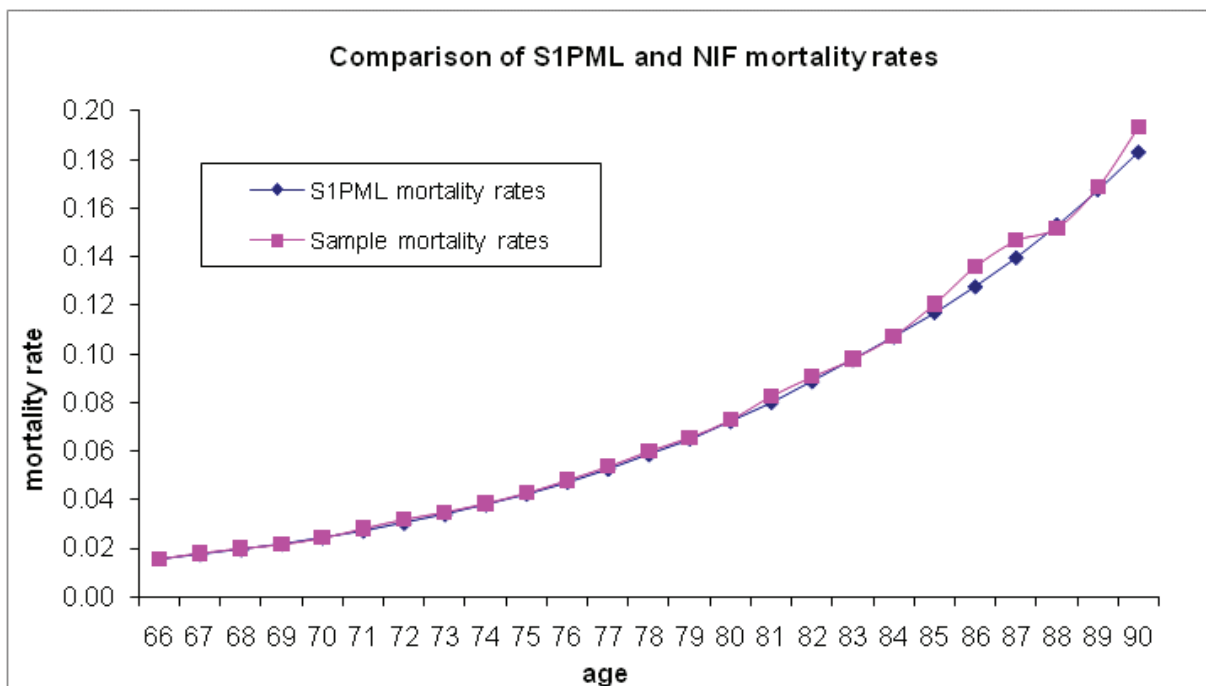
**Appendix E Evidence in support of the mortality assumptions**

E.1 The Government Actuary's Department has derived 'best estimate' mortality assumptions based on the experience of the contracted-out workforce. These can be expressed by reference to standard tables as follows:

|                                      | <b>Base table<sup>45</sup></b> |
|--------------------------------------|--------------------------------|
| <b>Male mortality</b>                | S1PML                          |
| <b>Female mortality</b>              | S1PFL                          |
| <b>Mortality of spouses of men</b>   | S1DFL                          |
| <b>Mortality of spouses of women</b> | S1PML                          |

Note that there is no table S1DML produced for widowers.

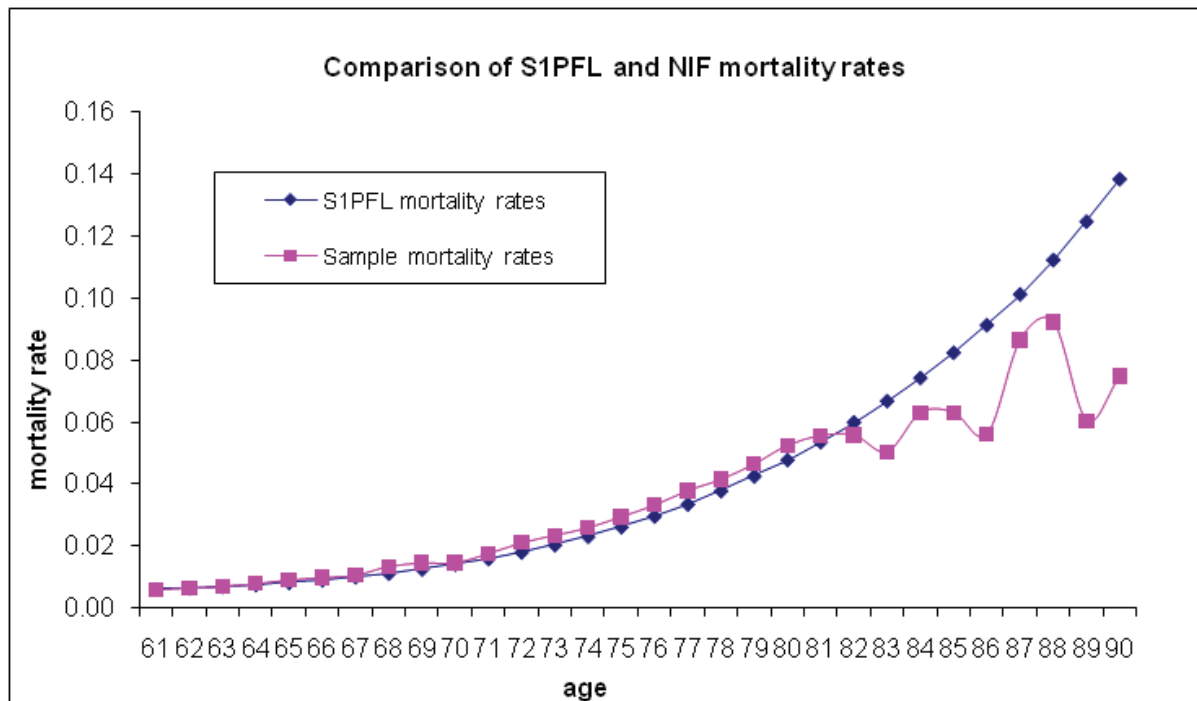
E.2 In order to determine the 'best estimate' assumptions, I compared mortality rates derived from experience data representing a 1% sample of the National Insurance Fund over the period 2000/01 to 2007/08 to standard mortality tables. The graphs below show that the data were a good fit to the tables listed above. The experience of women over 80 is erratic because it is based on limited data.



<sup>45</sup> The base tables are available on the Institute and Faculty of Actuaries' website.

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E.3 Since the previous review, these SAPS tables have become established in general use. These tables are based on the experience of defined benefit pension schemes, so it is perhaps unsurprising that they show a good fit with the National Insurance Fund contracted-out experience.

E.4 The state second pension forgone is accrued up to the Upper Accrual Point only. Any amounts effect (the higher longevity exhibited by those receiving higher incomes) for contracted-out workers is limited by this cap on band earnings.

**Relevant information from Pension Regulator’s guidance and reports**

E.5 In relation to scheme funding, the Pensions Regulator’s guidance highlights the importance of a prudent approach to setting mortality assumptions for both the base table and future improvements. The Pensions Regulator’s report, ‘Scheme Funding: an analysis of recovery plans’ dated November 2009, indicates that over the three years covered by the report, scheme funding valuations showed a significant shift towards the use of 00 series tables, with a notable number of schemes using the S1 series tables for 2007/2008 valuations.

E.6 The report also showed that half of the 2007/2008 valuations applied either an age rating or percentage adjustment to the base tables. A year of use approach to projecting future improvements was used almost exclusively for 2007/2008 valuations.

E.7 Over the three year period covered by the report, there was a shift towards applying the long cohort adjustment (32% in 2007/08). For 2007/2008 62% of valuations also applied an underpin to their mortality improvement rates.

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## **Appendix F Response to consultation**

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- F.1 The Government Actuary's Department's (GAD's) public consultation, on the proposed assumptions to inform my advice on the calculation of contracted-out rebates for the period 2012 to 2017, closed on 15 November 2010.
- F.2 The consultation document put forward possible assumptions for determining the rebate and invited comments on the proposals. The objective was to collect constructive evidence based comments to help refine the proposed assumptions.
- F.3 Twelve responses to the public consultation were received<sup>46</sup>. The responses were generally constructive and largely supportive of my proposed approach. The key points made in response to each of the consultation questions are summarised below, along with our response. I would like to thank those who replied to the consultation.
- F.4 The full public consultation document can be accessed on GAD's website.

### **Question 1**

*Do you agree that we have correctly identified the main relevant changes in the factors affecting the cost of providing benefits of an actuarial value equivalent to the benefits forgone by staff who are contracted-out on a defined benefit basis? What other factors do you consider relevant?*

- F.5 There was general agreement from respondents that the factors identified were correct. Some extra suggestions were also made:
- > One respondent commented that socio-economic factors have become important in estimating future mortality changes.
  - > One respondent suggested that the introduction of the Pension Protection Fund and the Employer Debt Regulations are relevant as these have changed the nature of the pension promise, increasing the extent to which it can now be considered guaranteed. Although these factors were identified at the last review, the implications of these are now clearer.
  - > Comment was made that the future existence of many schemes is now likely to be curtailed, pointing to significantly different financial considerations than those that would apply to schemes which do not plan to wind-up.
- F.6 Overall, there was no consistent clear messages suggesting any change in our view on the factors.

### **Question 2**

*Do you agree that we are planning to advise on a sufficient range of bases? Please suggest, with reasons, any additional basis that you think we should include. In particular, do you consider that extra information would be provided by inclusion of an 'accounting' basis?*

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<sup>46</sup> Aon Hewitt Associates Limited, the Association of Consulting Actuaries, BBS Consultants and Actuaries Limited, Buck Consultants Limited, the Confederation of British Industry, First Actuarial LLP, Hymans Robertson LLP, JLT Benefit Solutions Limited, Mercer Limited, the National Association of Pension Funds, the Society of Pension Consultants and Towers Watson Limited.

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- F.7 Four respondents supported the inclusion of an 'accounting' basis, although two respondents explicitly did not.
- F.8 A 'SCAPE'<sup>47</sup> basis (one respondent) and a 'buy-out' basis (two respondents) were also suggested.
- F.9 Many respondents' replies focused on what the appropriate basis for calculating the rebate is. Several respondents expressed concern that a rebate calculated on a 'best estimate' basis is not appropriate. Support for a 'typical funding' and 'gilts' basis was mixed.
- F.10 Comments included:

'GAD should recognise that contracting out transfers a significant portion of risk (investment risk, mortality risk, etc.) from the Government to the private sector. In our view, the 'best estimates' option does not sufficiently reward private sector schemes for taking on this risk. It would be more appropriate for the rebate to be set within the 'typical funding' basis to 'gilts' basis range.'

'If it is assumed that the state second pension is a Government-backed promised entitlement, then a risk free basis of valuation is, in our view, the most appropriate starting point. Although some downward adjustment to the rebate is determined on this basis can be justified on the grounds that not all aspects of the S2P are sacrosanct ..., such an adjustment would fall short of a 'best estimate' basis... To the extent that the rebate is below the cost of funding the benefits under the statutory funding regime, an employer who contracts out is suffering an immediate 'strain'.'

'We have concerns over the Government Actuary's intention to offer a range of figures to the Secretary of State, particularly such a wide range, as we believe that this will almost inevitably lead to the Secretary of State choosing a rebate figure towards the lower end of the range. Contracting back in is not really an option for many defined benefit schemes ... In our view it would be wrong to exploit this position by basing rebates on anything less than the full economic cost of providing the benefits concerned.'

'We are concerned that, partly given the experience at the last review, the Government will seek to choose a rate no higher than the current rebate of 5.3% and plump for a best estimate basis... The 'correct answer' is to grant a rebate accorded to the security of the government guaranteeing the alternative SERPS, namely a gilts basis.'

'[We] believe that neither a 'best estimate' nor a 'gilts' basis value would accurately reflect the cost to employers of contracting out benefits. An estimate calculated on a typical funding basis, on the other hand, does take into account margins of prudence not found on a 'best estimate' basis which are consistent with the regulatory regime imposed by the Pensions Act 2004. Thus, the rebate calculated on this basis would accurately cover the amount which funded DB schemes would typically hold themselves to cover benefits of equivalent actuarial value to those forgone as a result of contracting out.'

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<sup>47</sup> SCAPE, short for Superannuation Contributions Adjusted Allowing for Past Experience, is the methodology used to set contribution rates for the unfunded public sector pension schemes.

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'The calculation of a rebate for contracting-out is much closer to a transaction or pricing exercise than a funding/ budgeting exercise, however, so use of either the 'best estimate' or 'typical funding' involves an explicit transfer of economic value from the private sector to the government (and risk in the other direction.)'

- F.11 On the specific issue of extra bases, we have not seen any strong arguments for further bases. In relation to the wider point as to which basis should be selected, these points should be addressed to the Secretary of State and I do not see them as an issue for me.

**Question 3**

*Our proposed financial assumptions are influenced by market conditions as at end March 2010. Given that the rebates calculated will be applied in the future, do you consider it appropriate for us to update the financial assumptions when we finalise our report?*

- F.12 The majority of respondents to this question thought that market conditions should be updated if any changes were significant.

**Question 4**

*Do you agree with the asset allocation underpinning our calculation of the 'best estimate' discount rates? If not, what alternative asset allocations would you suggest (please provide a rationale and evidence)?*

- F.13 All respondents who supported the inclusion of a 'best estimate' basis agreed with the asset allocation underpinning our calculation of the discount rates.

**Question 5**

*Within the range 2.0% pa to 2.5% pa, what do you consider an appropriate 'best estimate' assumption for CPI. Please provide a rationale and evidence to support your view.*

- F.14 All respondents that commented on the appropriate 'best estimate' assumption for CPI indicated that this should be at the top end of the 2.0% pa to 2.5% pa range, if not higher. Various reasons for this were cited:
- > Future inflation shocks may be greater on the upside than the downside and take a number of years to be eliminated. Government policy could change in future and there is a greater chance that the inflation target would be revised upwards rather than downwards.
  - > An effective inflation risk premium in the range 1.0% to 1.5% pa, as implied by a 2% CPI assumption, is too high.
  - > If the proposal to include housing costs within an extended CPI is reflected in the Government's headline measure of inflation, this would narrow the gap between the RPI and CPI assumptions.
  - > The Government may not continue to use the CPI measure for inflation in the long term.



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- > The OBR projections and the conclusions drawn by the Bank of England's inflation report are likely to be influenced by the Government target.

F.15 One respondent suggested an RPI assumption of 3.75% pa and a CPI assumption of 3.00% pa.

F.16 I cover my response to this in some depth in section 11.

### Question 6

*Do you agree with our estimates of the building blocks for deriving the financial assumptions? If not, please provide alternative assumptions and evidence or a rationale to support these.*

F.17 Various criticisms were made about individual assumptions.

F.18 One respondent commented that it is not possible to forecast gilt yields accurately.

F.19 Comments were made that the NAE assumption of 1.5% pa and the gilt yield assumption of 5.0% pa are at the higher end of the reasonable range. In support of this, one respondent (a firm of consulting actuaries) cited the range of assumptions made by its clients' schemes.

F.20 One respondent made the following points:

- > Fixed interest gilts are currently below 5.0% pa over the whole range of the yield curve.
- > The gap between index-linked and fixed-interest gilt real yields of 1.0% pa is too high, based on current market conditions.
- > The corporate bond returns assumption is 0.5% too high based on current yields of AA bonds.
- > Even the top end of the equity assumption range is below current market expectations.

F.21 A couple of respondents did not agree with the method used. One respondent commented:

'We find the building block approach as described and applied in this paper somewhat flawed. For the average assumptions to 'add up' and produce an appropriate average rebate level, there must be a significant number of further assumptions made and explanations and justifications given about volatilities and degrees of association between the variables. We suggest that the GAD either uses a fuller model with such explanations or, uses something more simplified and overtly so.'

F.22 Overall, the balance of responses were mildly supportive but with challenges on individual assumptions. We see the approach as having deficiencies but consistent with pensions reviews and with no clear stand-alone alternative. That said, the approach I have adopted for best estimate does move in the sort of direction implied in the above.

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### Question 7

*Do you agree that taking a margin of 0.35% pa above the nominal gilt yield is appropriate to determine the 'typical funding' post-retirement discount rate? If not, what alternative method and / or margin would you suggest (please provide a rationale and evidence)?*

F.23 If respondents were happy with our inclusion of a 'typical funding' basis then they were generally in agreement that taking a margin of 0.35% pa above the nominal yield is appropriate.

### Question 8

*Do you agree that taking a margin of 1.85% pa above the nominal gilt yield is appropriate to determine the 'typical funding' pre-retirement discount rate? If not, what alternative method and / or margin would you suggest (please provide a rationale and evidence)?*

F.24 If respondents were happy with our inclusion of a 'typical funding' basis then they were generally in agreement that taking a margin of 1.85% pa above the nominal yield is appropriate.

### Question 9

*Do you agree that the 'gilts' basis post-retirement discount rate should be determined with reference to the assumed fixed interest gilt return?*

F.25 Respondents to this question tended to agree that the discount rate should be determined with reference to the assumed fixed interest gilt return.

F.26 One respondent considered it strange that index-linked gilts were not used given that S2P benefits are linked to earnings and inflation.

F.27 One respondent questioned whether we are considering the yield on gilts of an appropriate duration, given that many schemes are likely to wind-up during the time period under consideration.

F.28 Overall, there was general agreement with the proposition in the question.

### Question 10

*For the Best Estimate basis, do you agree with our term-dependent approach to setting the pre-retirement discount rate? If not, what would you suggest (please provide a rationale and evidence)?*

F.29 There was some agreement amongst respondents to this question that the term-dependent approach to setting the pre-retirement discount rate is appropriate for the 'best estimate' basis.

F.30 One respondent commented that, given many schemes are likely to wind-up in advance of the 40 year time horizon envisaged, this may not be appropriate.

F.31 Overall, once again, there was general support to the proposition and whilst there may be some validity in the point raised about winding up, there is little or no general evidence that this is being taken into account yet for open schemes which do not intend to cease accrual in the near future.



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### Question 11

*Are you content with the way that the 'gilts' basis pre-retirement discount rate is determined with reference to the fixed interest gilt yield?*

- F.32 There was general agreement amongst respondents to this question that the discount rate should be determined with reference to the assumed fixed interest gilt return.
- F.33 Just one respondent considered it strange that index-linked gilts were not used given that S2P benefits are linked to earnings and inflation (although there was no objection).

### Question 12

*Do you agree that it is appropriate for the mortality assumptions to be framed in terms of the suggested SAPS lives tables? If not, please suggest an alternative with a rationale and evidence.*

- F.34 The majority of respondents agreed that it is appropriate for the mortality assumptions to be framed in terms of the suggested SAPS lives tables.
- F.35 Comment was made that socio-economic factors have become important factors in estimating future mortality changes.
- F.36 One respondent asked why GAD had not derived its own table.
- F.37 One respondent suggested there will be some 'amounts' effect, albeit limited by the cap on band earnings, which suggests that use of the lives table may slightly understate the cost.
- F.38 Overall, we feel that there is sufficient support for our proposals notwithstanding one or two minor queries.

### Question 13

*Do you feel that mortality improvements in line with the 2008-based UK principal population projections are suitable? If not, please suggest an alternative with a rationale and evidence.*

- F.39 There was general agreement that mortality improvements in line with the 2008-based UK principal populations are suitable.

### Question 14

*For the 'typical funding' mortality assumption, the margin of prudence is a somewhat arbitrary assumption and we welcome comments on actual practice and our proposed two year offset.*

- F.40 Our proposed two year offset was considered reasonable.
- F.41 Only one respondent offered any hint of dissent, commenting that this approach does not distinguish properly between the base table and future improvement assumptions. They suggested that it would be more transparent to introduce a scaling factor to the base table or an explicit margin to future improvements.

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### Question 15

*Do you feel that the information provided to the Secretary of State by the 'gilts' basis could be improved if different mortality assumptions (to the 'typical funding' basis) were used? If so, please suggest alternative assumptions with a rationale and evidence.*

F.42 There was little support for using a different mortality assumption for the 'gilts' basis.

### Question 16

*Do you consider our proportions married assumptions appropriate for all three bases?*

F.43 All respondents to this question agreed that the proportions married assumptions were appropriate for all three bases.

### Question 17

*Do you agree with our proposal to omit any remarriage assumption?*

F.44 All respondents to this question agreed with our proposal to omit any remarriage assumption.

### Question 18

*Are you content for the proposed age difference assumptions to be adopted for all three bases? If not, please suggest alternatives with a rationale and evidence.*

F.45 All respondents to this question were content for the proposed age difference assumptions to be adopted for all three bases.

### Question 19

*Do you agree that a 0.2% addition to the rebate is an appropriate allowance for administrative expenses? If not, please suggest an alternative with evidence.*

F.46 The clear majority of respondents considered a 0.2% addition to the rebate to be an appropriate allowance for administrative expenses.

F.47 Only two respondents also suggested that a small increase in the addition could be justified.

### Question 20

*Do you have any comments about the approach to deriving the weights or the weights themselves?*

F.48 As we are focusing on the 'cost' in private sector schemes of providing the S2P benefits forgone, a number of respondents suggested that we exclude public sector data when calculating the weights.

F.49 One respondent suggested that if it is not possible to exclude public sector data from the weights, this should be made explicit so that a contingency margin can be included, if considered appropriate.

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F.50 The points are well made and have been brought into account in the holistic analysis described in section 11 for best estimate where the point is most critical.

### Question 21

*When viewed as a whole do you feel that the 'best estimate' basis is in line with the definition set out? If not, please explain, and provide an alternative with evidence and rationale.*

F.51 Most respondents were happy with the concept of the 'best estimate' basis and how it is constructed, although many of the criticisms made elsewhere were repeated in this section.

F.52 Several respondents were clear that while they accept our definitions and analysis they do not consider it appropriate for the rebate to be calculated on a 'best estimate' basis.

F.53 Just one comment was made that the 'best estimate' basis will not reflect the actual investment strategy of many schemes.

F.54 Overall, there were no new points raised here not made elsewhere and probably majority support.

### Question 22

*When viewed as a whole do you feel that the 'typical funding' basis is in line with the definition set out? If not, please explain, and provide an alternative with evidence and rationale.*

F.55 Most respondents were happy with the concept of the 'typical funding' basis and how it is constructed, although some of the criticisms made elsewhere were repeated in this section.

F.56 Some respondents did not consider (as above) it appropriate for the rebate to be calculated on a 'typical funding' basis.

F.57 One comment was made that, due to the scheme specific funding regime, it is not possible to determine a scheme funding basis that would apply to contracted-out pension schemes as a whole.

F.58 Overall, there was majority support, in general, for what we suggested.

### Question 23

*When viewed as a whole do you feel that the 'gilts' basis is in line with the definition set out? If not, please explain, and provide an alternative with evidence and a rationale.*

F.59 Most respondents were happy with the concept of the 'gilts' basis and how it is constructed. There were fewer objections to the technicalities or use of this basis.

### Question 24

*Do you have any comments on our proposed approach to defined contribution schemes?*

F.60 There were no objections to our proposed approach to defined contribution schemes.

Review of rebates and reduced rates of National Insurance contributions for members of defined benefit contracted-out pension schemes

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### Question 25

*Do you have any other comments on this review of the contracted-out rebates for 2012 to 2017?*

- F.61 Several respondents made various comments about the different considerations for private and public sector schemes. (See question 20 above.)
- F.62 A number of respondents commented that the smaller the rebate the lower the incentive to contract out and a low rebate could ultimately lead to closure of defined benefit pension schemes.
- F.63 Comments were made that this review is being carried out against a backdrop of uncertainty about the future of contracting out and anticipated closure of many defined benefit pension schemes.
- F.64 These comments are potentially valid but outside the scope of my review but, through publication of this report, will be passed onto the Secretary of State for him to consider.

### Summary of the key responses

- F.65 In general, the majority of respondents were broadly content with my proposal to provide the Secretary of State with rebates calculated on a number of alternative bases, in order to demonstrate that there is a range of potential approaches and rebates which might be considered satisfactory. The majority were broadly content with the assumptions which I had proposed. It should be noted that the best estimate rate as offered in this report is at the top end of that shown in GAD's consultation document (dated 23 August 2010) in part due to the comments received.

**Review of rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes**

**Report to the Secretary of State for Work and Pensions by the Government Actuary**

Date: 25 January 2011

Author: Trevor Llanwarne

The Right Hon Iain Duncan Smith MP  
Secretary of State for Work and Pensions  
Department for Work and Pensions  
Caxton House  
Tothill Street  
London  
SW1H 9NA

25 January 2011

Dear Secretary of State

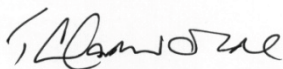
**Review of rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes**

I am pleased to provide this report setting out my review of the rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes for the period from 2012. This is supplementary to my main report, dated 21 January 2011, regarding the rebates for defined benefit schemes.

This report includes recommended rebate rates for defined contribution schemes for 2012/13. It has been produced solely to satisfy the statutory obligations set out in the Pension Schemes Act 1993. Of course, it is expected that contracting-out on a defined contribution basis will be abolished from April 2012, so the rebates set out in this report will not have effect.

I recommend that if the decision to abolish contracting-out on a defined contribution basis is reversed, then you should seek my further advice on the rebates which may be appropriate in that situation.

Yours sincerely



**Trevor Llanwarne**  
Government Actuary

Review of rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

## 1 Overview

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- 1.1 This report sets out my review of the rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes for the period from 2012. It is supplementary to my main report dated 21 January 2011, which covers defined benefit schemes.
- 1.2 Individuals may contract out through membership of:
- > a Contracted-Out Salary Related Scheme (COSRS),
  - > a Contracted-Out Money Purchase Scheme (COMPS), or
  - > an Appropriate Personal Pension (APP).
- 1.3 Those who contract-out through the first arrangement are considered to be 'contracted-out on a defined benefit basis'. Those who contract out through the second and third arrangements are considered to be 'contracted-out on a defined contribution basis'.
- 1.4 The Secretary of State is required by statute to lay before Parliament, at intervals of not more than five years, a report setting out the Government Actuary's opinion on:
- > For COSRS, changes since the last report in the factors affecting the cost of providing benefits of equivalent actuarial value to the Additional Pension that is forgone by workers who are contracted-out, and
  - > For COMPS and APPs, the percentages required to reflect the cost of providing benefits of equivalent actuarial value to the Additional Pension that is forgone by workers who are contracted-out.
- 1.5 This report covers COMPS and APPs only. My advice in respect of COSRS is provided in my report dated 21 January 2011.
- 1.6 Section 15(1) of the Pensions Act 2007 provides that contracting-out on a defined contribution basis (via Contracted-out Money Purchase Schemes (COMPS) and Appropriate Personal Pensions (APPs)) will be abolished from a date appointed by the Secretary of State. The abolition date has not yet been set in legislation, though it is intended to be 6 April 2012.
- 1.7 Legal advice is that even if an order is laid confirming the abolition date, the Government Actuary's statutory obligation to provide a report recommending rebate percentages would still be in force. The obligation will remain until the primary legislation (Pension Schemes Act 1993 sections 42B and 45A) is repealed, which will not happen before the report for the current review is due.
- 1.8 Therefore, I must produce a report recommending the percentage rebates for COMPS and APPs, even though these rebates are not expected to have effect.

Review of rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

- 1.9 In Appendix B and Appendix C I provide recommended rebate rates for COMPS and APPs, for the year 2012/13. They have been produced on the basis that they will not be used in practice, or at most for the year 2012/13 and then on the basis of no structural or material changes to the way in which the forgone benefits are determined in a defined contribution contracting-out environment. Should the decision to abolish contracting-out on a defined contribution basis be reversed, I recommend that you should seek my further advice on the rebates which may be appropriate for years 2013/14 onwards and to the extent that there are structural or material changes, I recommend that you seek my further advice in wider terms.
- 1.10 Other than the Secretary of State for Work and Pensions, no person or third party is entitled to place any reliance on the contents of this report and GAD has no liability to any person or third party for any act or omission taken, either in whole or part, on the basis of this report.



Review of rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

## 2 Introduction to contracting out

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- 2.1 Since the introduction of the state earnings-related pension scheme (SERPS) in 1978, employees have been able to 'contract-out' – that is to give up all or part of their state Additional Pension benefits. In return they pay lower National Insurance contributions, or receive rebates of National Insurance contributions paid into their defined contribution pension schemes or personal pensions.
- 2.2 The principle of contracting-out continued after the introduction of the state second pension (S2P), which replaced SERPS in April 2002.
- 2.3 The legal background of contracting-out is set out in Appendix A. This gives the relevant statutory references and a summary of the effect on members of contracting-out.

### The contracted-out rebate

- 2.4 The 'contracted-out rebate' refers to the effective reduction of National Insurance contributions for members of pension schemes, and their employers, or to the rebate paid to pension schemes, where these schemes are contracted-out of the state Additional Pension, or to a combination of the two.
- 2.5 The contracted-out rebate is set having regard to the cost of providing benefits of equivalent actuarial value to the state Additional Pension that is forgone by workers who are contracted-out.

### COSRS, COMPS and APPs

- 2.6 Individuals may contract out through membership of:
  - > a Contracted Out Salary Related Scheme (COSRS),
  - > a Contracted Out Money Purchase Scheme (COMPS), or
  - > an Appropriate Personal Pension (APP).
- 2.7 Those who contract-out through the first arrangement are considered to be 'contracted-out on a defined benefit basis'. Those who contract out through the second and third arrangements are considered to be 'contracted-out on a defined contribution basis'.
- 2.8 In respect of members of COSRS, both the employer and employee pay reduced rates of National Insurance contributions.
- 2.9 For members of APPs, HM Revenue & Customs (HMRC) makes rebate payments directly to the pension scheme in respect of contracted-out members.
- 2.10 A combination of the above occurs for members of COMPS. Reduced rates of National Insurance contributions are paid and the employer pays the balance of the contracted-out rebates into the pension scheme. Age related top up payments are also made to the pension scheme by HMRC.
- 2.11 A single contracted-out rebate percentage is applied in respect of all members of COSRS.
- 2.12 Tables of age related rebates are applied in respect of members of COMPS and APPs.

Review of rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

### **Abolition of contracting-out on a defined contribution basis**

- 2.13 Section 15(1) of the Pensions Act 2007 provides that contracting-out on a defined contribution basis (via Contracted-out Money Purchase Schemes (COMPS) and Appropriate Personal Pensions (APPs)) will be abolished from a date appointed by the Secretary of State. The abolition date has not yet been set in legislation, though it is intended to be 6 April 2012.
- 2.14 Legal advice is that even if an order is laid confirming the abolition date, the Government Actuary's statutory obligation to provide a report recommending rebate percentages would still be in force. The obligation will remain until the primary legislation (Pension Schemes Act 1993 sections 42B and 45A) is repealed, which will not happen before the report for the current review is due.
- 2.15 Therefore, I must produce a report recommending the percentage rebates for COMPS and APPs, even though these rebates are not expected to have effect.

### **The Government Actuary's and Secretary of State's obligations (COMPS and APPs)**

- 2.16 The Secretary of State is required by statute to lay before Parliament, at intervals of not more than five years, a report setting out the Government Actuary's opinion on the percentages required to reflect the cost of providing benefits of equivalent actuarial value to the Additional Pension that is forgone by workers who are contracted-out.
- 2.17 My role, as Government Actuary, is limited to providing advice on the contracted-out rebates. The power to decide and set the rebate is vested in the Secretary of State for Work and Pensions.

Review of rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

### 3 Deriving the defined contribution contracted-out rebates

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#### Calculation methodology

- 3.1 To derive a contracted-out rebate we have to identify the benefits in the state second pension scheme which are forgone by contracted-out individuals. Effectively, these are calculated in the same way as previously under the State Earnings Related Pension Scheme (SERPS). That is:
- > a percentage of earnings in a defined band,
  - > payable from state pension age,
  - > revalued in deferment in line with average earnings growth,
  - > increased in payment in line with prices inflation, and
  - > with contingent **spouse's** benefits of up to 50% of the contributor's pension.
- 3.2 The measures of earnings growth and prices inflation are set out in orders.
- 3.3 I have derived rebates using the assumptions below for a range of ages and for both sexes. For the recommended rebates, I have selected the higher of each sex's derived rebate rate. This is consistent with the 2006 approach.
- 3.4 Appendix B sets out the scale of age-related rebates for COMPS, including the flat-rate element. In the past, the flat-rate element of the rebate has been determined as the lowest rebate applicable for any individual. For the year 2012/13 this is the rebate applicable for someone aged 15, i.e. 2.4% of upper band earnings.
- 3.5 The rates shown in Appendix B (COMPS) and Appendix C (APPs) are before the application of any "cap" on rebates.
- 3.6 I have been asked by DWP to produce rebate rates which are appropriate for the year 2012/13, solely to meet statutory obligations and noting that the rebates are not expected to be used in practice given the expected abolition of contracting-out on a defined contribution basis. If abolition were to be rescinded, I recommend that you seek my further advice on the rebates which may be appropriate for years 2013/14 onwards and to the extent that there are structural or material changes, I recommend that you seek my further advice in wider terms.

#### Valuation assumptions

- 3.7 In this context, it is appropriate for me to identify assumptions to derive the rebates by taking the assumptions used at the last review (in 2006) and updating them to reflect current economic and demographic conditions. A more rigorous analysis is not appropriate in the circumstances, and therefore the assumptions adopted here should not be considered as setting any precedents for any other analysis.
- 3.8 In order to place a value on the state benefits forgone by contracted-out individuals, we must adopt assumptions in respect of expected future demographic and financial experience.

Review of rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

3.9 The principal assumptions used for the 2007 – 2012 quinquennium were:

|   |   |
|---|---|
| Pre-retirement discount rate (net of earnings growth) | 1.0% - 2.5% pa depending on term to state pension age                     |
| Post-retirement discount rate (net of RPI)            | 2.0% pa   |
| Pre-retirement mortality                              | None  |
| Post-retirement mortality                             | In line with standard mortality tables and projections in use at the time |
| Contingency margin                                    | 7.5% of calculated rebates  |
| State pension ages                                    | Allowance for increase in SPA ultimately to age 65 for women.             |

A full description of the assumptions used is given in Appendix D.

3.10 I have concluded that the assumptions adopted in 2006 are appropriate for deriving the rebate rates for 2012/13 given the context of this review, with the following exceptions:

- > Post-retirement discount rate changes from 2% pa net of RPI to 1.75% pa net of CPI,
- > The 7.5% contingency margin is reduced to 4%, and
- > Allowance is made for the increases in state pension ages ultimately to age 68 for the youngest workers (as discussed from section 3.17).

3.11 My rationale for these changes is given below.

3.12 In my opinion, the values adopted for the assumptions in 2006 remain broadly appropriate in the circumstances of a one year view and I have retained them as far as is reasonable for this review.

3.13 The pre-retirement discount rates adopted in 2006 represented an estimate of average long-term investment returns for defined contribution investors adopting a typical investment strategy, to cover periods of time with a wide mix of market conditions. I therefore consider these assumptions to remain appropriate for this review.

3.14 The main post-retirement assumptions are:

- > Post-retirement discount rate
- > Post-retirement mortality, and
- > A margin.

3.15 In 2006, values were adopted for these parameters which were considered to be broadly consistent with the retail market price of annuities at the time. These were:

- > A 2% pa discount rate (net of RPI)
- > Mortality in line with the standard tables PMA92 / PFA92 with medium cohort improvements
- > A margin of 7.5% of calculated rebates

Review of rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes

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3.16 It seems reasonable to retain this approach to setting these assumptions at this review in the circumstances of a one year view. I have tested these assumptions against recent retail market annuity rates and have concluded that by changing the discount rate to 1.75% pa (net of CPI), retaining the same mortality and changing the margin to 4% I would obtain annuity values broadly consistent with the pricing of the current market (noting that CPI-linked annuities are not widely available). I do not need to take a view on the reasons for this broad consistency, nor to speculate how annuity rates might change in future, and so I have not done so.

**Change of state pension age**

3.17 Since the last review, state pension age for younger workers has been increased from 65, ultimately to 68 for the youngest workers. This has two effects:

- > Because the state pension (and hence the state pension forgone by contracted-out workers) is payable later, then it is less valuable in most circumstances. This is because the payments are further into the future and also payable for a shorter period, and
- > Because of the design of the contracted-out deduction<sup>1</sup>, a later state pension age flows through to a lower rate of accrual.

3.18 Both these features generally lead to a reduction in the appropriate rebate.

3.19 Specimen benefit rates are shown in the table below:

| Year beginning | Age at beginning of year | State pension age | Annual accrual of benefits * |
|----------------|--------------------------|-------------------|------------------------------|
| 6 April 2012   | 30                       | 68                | 0.385%                       |
|                | 40                       | 67                | 0.392%                       |
|                | 50                       | 66                | 0.408%                       |
|                | 60                       | 61 (women)        | 0.588%                       |
|                | 60                       | 65 (men)          | 0.526%                       |
| 6 April 2016   | 30                       | 68                | 0.385%                       |
|                | 40                       | 67                | 0.392%                       |
|                | 50                       | 66                | 0.400%                       |
|                | 60                       | 65                | 0.476%                       |

\* based on salary between the Lower Earnings Limit and the Upper Accrual Point

<sup>1</sup> The contracted-out deduction is the reduction in Additional Pension applied to individuals who have accrued pension in a contracted-out arrangement.

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### Applying the APP Rebate Table

- 3.20 The state second pension moved to accrual on two bands – 10% and 40% (previously there were three bands – 10%, 20%, and 40%) from 2010/11. The APP rebates in Appendix C are expressed as the percentage rebate for the 20% band, even though it no longer exists.
- 3.21 In order to calculate the rebate from the table, the percentage in the table should be doubled for the 40% accrual band and halved for the 10% accrual band.
- 3.22 The figures have been expressed in terms of the 20% band to enable comparison to previous reports.

### Results

- 3.23 Appendix B and Appendix C set out recommended rebate rates for COMPS and APPs, for the year 2012/13. The rates recommended for 2011/12 are also shown for comparison.
- 3.24 The rebate rates at each age have fallen. The fall ranges from around 20% at the youngest ages to 3% at the oldest ages. The reasons for this are set out below:
  - > The contingency margin applied has fallen causing the rates to fall. This affects the rebate rates by the same percentage at all ages.
  - > The net post retirement discount rate used to calculate the rates has fallen, causing the rebate rates to increase. This affects the rebate rates by broadly the same percentage at all ages.
  - > As discussed from section 3.17, increases to state pension age result in a lower value pension and a lower rate of accrual. This causes the rebate rates at affected ages to fall. Recent changes to state pension age have been greater at younger ages and so there is a greater reduction in the rates at these ages.
  - > At older ages the accrual rate falls with year of birth. This reduces the rebates for the ages effected.

Review of rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

## Appendix A Legal background

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### State second pension and contracting-out

- A.1 The state second pension is set out in the Social Security Contributions and Benefits Act 1992 (SSCBA 1992). The Category A pension (paid to the contributor) is described from s44. The Category B pension (inherited by the spouse of the contributor) is described from s48A. The amounts of the state second pension (and the effect of contracting-out) are set out in Schedule 4A in respect of accrual after 2002/03 and before the 'flat rate introduction year'. Accrual from the 'flat rate introduction year' is set out in Schedule 4B. The 'flat rate introduction year' has not been prescribed yet, but it is intended that it will be 2012/13.
- A.2 The amount of the state second pension forgone by those contracted-out on a defined benefit basis is defined identically in both Schedule 4A and 4B, so no difficulty arises in this regard from the uncertainty around the definition of the 'flat rate introduction year'.
- A.3 For those contracted-out on a defined contribution basis, only Schedule 4A provides definitions of contracted-out benefits, since the 'flat rate introduction year' is expected to be synchronised with the abolition of contracting-out on a defined contribution basis.

### National Insurance rebates

- A.4 The Pension Schemes Act 1993 (PSA 1993), sections 40 to 49 inclusive, makes provision for members of pension schemes who are contracted-out of the state second pension (and the sponsoring employers of those schemes) to pay reduced rates of National Insurance contributions and/or to have their pension schemes receive corresponding payments from HM Revenue & Customs (HMRC).
- A.5 PSA 1993 s42 requires a review to be carried out by the Government Actuary, at intervals of not more than five years, of the contracted-out rebate for those contracted-out on a defined benefit basis (members of COSRS). The review should report on any changes in the factors which, in the Government Actuary's opinion, affect the cost of providing benefits of an actuarial value equivalent to that of the state pension benefits which are given up by or in respect of members of these schemes. The legislation does not require the Government Actuary to recommend percentage rebates, though in practice the Department for Work and Pensions commissions GAD to provide advice on the level of rebate values (and there is no legislative bar preventing this).
- A.6 Separate requirements exist for members of Contracted-Out Money Purchase Schemes (COMPS) under PSA 1993 s42B. COMPS are occupational defined contribution schemes. Contracted-out rebates are age-related for members of COMPS. The Government Actuary must report on the percentage age-related rebates which are required in his opinion to reflect the cost of providing benefits of an actuarial value equivalent to that of the state pension benefits which are given up by or in respect of members of COMPS.



Review of rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

- A.7 PSA 1993 s45A specifies age related rebates for Appropriate Personal Pensions (APPs). These rebates are paid by HMRC direct to the schemes. The Government Actuary must report on the age-related rebates which are required in his opinion to reflect the cost of providing benefits of an actuarial value equivalent to that of the state pension benefits which are given up by or in respect of members of APPs.
- A.8 The same sections of PSA 1993 require any order by the Secretary of State for Work and Pensions to vary the rate of reduction in National Insurance contributions or rebates, to which the Government Actuary's reports would relate, to be made at least one complete tax year before they come into force and to be laid within 5 years of the previous reports and draft order. Hence for new rebates to apply from 6 April 2012, the relevant orders and the Government Actuary's reports must be laid before Parliament by 28 February 2011, since the previous order was laid on 1 March 2006.

**Changes since the previous review**

- A.9 For people in contracted-out employment, section 10(3)(b) of the Pensions Act 2007 (PA 2007) provides that the state second pension moves to accrual on two bands (previously there were three bands) from 2010/11.
- A.10 Section 15(1) of PA 2007 provides that contracting-out on a defined contribution basis (via COMPS and APPs) will be abolished from a date appointed by the Secretary of State. The abolition date has not yet been set, but is expected to be April 2012, at the same time as the Band 1 accrual of the state second pension moves to a flat rate.
- A.11 Section 13 of PA 2007 provides that state pension age will rise from 65 to 68 over the period 2024 to 2046.
- A.12 At the June 2010 budget, the Chancellor of the Exchequer announced that state second pension will be increased in payment in line with the Consumer Prices Index rather than the Retail Prices Index.
- A.13 As part of the 2010 spending review, the Government announced plans to accelerate the rise in state pension ages. Subject to Parliamentary approval the state pension age should rise to age 65 for all by 2018 and age 66 by 2020.

**Reduced state pension**

- A.14 The effect of contracting-out on a member's state second pension is set out in the Social Security Contributions and Benefits Act 1992 (SSCBA 1992) Schedules 4A and 4B.
- A.15 For those contracted-out on a defined benefit basis, members give up a percentage of their earnings between the Qualifying Earnings Factor (that is, the Lower Earnings Limit expressed as an annual amount) and the Upper Accrual Point (expressed as an annual amount).
- A.16 The percentage is 20 divided by the number of 'relevant years' in the member's 'working life'. 'Working life' (defined in SSCBA 1992 schedule 3 paragraph 5(8)) is the period between the tax year the member attains the age of 16, and the tax year immediately before attaining state pension age. 'Relevant years' (defined in SSCBA 1992 s44(7)) are restricted to 1978/79 and later.
- A.17 The benefits forgone would otherwise have been payable at state pension age.



Review of rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

- A.18 From the 'flat rate introduction year' the state second pension itself is amended. For a few members (older and higher earning) the state second pension is reduced to zero. That is, the specified deduction for contracted-out workers exceeds their state second pension.

**Inherited benefits (simplified summary)**

- A.19 Where both the contributor and the spouse (including civil partners) are over state pension age at the date of the contributor's death then the spouse generally becomes entitled to a pension equal to half of the contributor's accrued state second pension (though in some cases inheritance is capped at a maximum value).
- A.20 If the spouse is under state pension age then the inherited pension is not paid until state pension age unless there are dependent children. If the spouse is between 45 and 55 and there are no dependent children then the inherited pension is reduced, as well as being delayed until state pension age. If the spouse is under 45 and there are no dependent children then the inherited pension is eliminated.

**Reduced National Insurance Contributions**

- A.21 The Pension Schemes Act 1993 s41(1), (1A) and (1B) provide that the Class 1 National Insurance contributions payable in respect of the member contracted-out on a defined benefit basis should be reduced by a percentage of their earnings between the Lower Earnings Limit and the Upper Accrual Point.

**Defined contribution schemes**

- A.22 For the time being, COMPS have the same state pension reduction as COSRS. Members of APPs generally forgo their entire entitlement to state second pension.
- A.23 The National Insurance rebates for those contracted-out on a defined contribution basis are age related, and may differ between COMPS and APPs.

Review of rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

**Appendix B Contracted-out rebates – COMPS**

Rebates proposed for members of contracted-out money purchase pension schemes

*Percentage of upper band earnings, with no cap*

| Age last birthday on last day of preceding tax year | Tax year        |                  |
|---|-----------------|------------------|
|   | 2011-12 Current | 2012-13 Proposed |
| 15  | 3.0%            | 2.4%             |
| 16  | 3.0%            | 2.5%             |
| 17  | 3.1%            | 2.5%             |
| 18  | 3.2%            | 2.6%             |
| 19  | 3.3%            | 2.7%             |
| 20  | 3.4%            | 2.7%             |
| 21  | 3.4%            | 2.8%             |
| 22  | 3.5%            | 2.9%             |
| 23  | 3.6%            | 2.9%             |
| 24  | 3.7%            | 3.0%             |
| 25  | 3.8%            | 3.1%             |
| 26  | 3.9%            | 3.1%             |
| 27  | 4.0%            | 3.2%             |
| 28  | 4.1%            | 3.3%             |
| 29  | 4.2%            | 3.4%             |
| 30  | 4.3%            | 3.4%             |
| 31  | 4.4%            | 3.5%             |
| 32  | 4.5%            | 3.6%             |
| 33  | 4.6%            | 3.7%             |
| 34  | 4.7%            | 4.1%             |
| 35  | 4.8%            | 4.2%             |
| 36  | 5.0%            | 4.3%             |
| 37  | 5.2%            | 4.4%             |
| 38  | 5.3%            | 4.5%             |
| 39  | 5.5%            | 4.7%             |
| 40  | 5.6%            | 4.8%             |
| 41  | 5.8%            | 5.0%             |
| 42  | 6.0%            | 5.1%             |
| 43  | 6.1%            | 5.7%             |
| 44  | 6.3%            | 5.9%             |
| 45  | 6.5%            | 6.0%             |
| 46  | 6.6%            | 6.2%             |
| 47  | 6.8%            | 6.3%             |
| 48  | 7.0%            | 6.5%             |
| 49  | 7.3%            | 6.6%             |
| 50  | 7.6%            | 6.9%             |
| 51  | 8.0%            | 7.3%             |
| 52  | 8.4%            | 8.2%             |
| 53  | 8.8%            | 8.6%             |
| 54  | 9.2%            | 9.0%             |
| 55  | 9.6%            | 9.4%             |
| 56  | 10.5%           | 9.8%             |
| 57  | 11.6%           | 10.8%            |
| 58  | 12.9%           | 12.0%            |
| 59  | 14.3%           | 13.3%            |
| 60  | 11.8%           | 11.5%            |
| 61  | 12.2%           | 11.9%            |
| 62  | 12.7%           | 12.4%            |
| 63  | 13.2%           | 12.8%            |

Review of rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

**Appendix C Contracted-out rebates – APPs**

Contracted-out rebates proposed for members of appropriate personal pension schemes

*Percentage of earnings applicable to band 3 (“20% accrual rate band”), with no cap*

| Age last birthday on last day of preceding tax year | Tax year        |                  |
|---|-----------------|------------------|
|   | 2011-12 Current | 2012-13 Proposed |
| 15  | 4.7%            | 3.8%             |
| 16  | 4.7%            | 3.9%             |
| 17  | 4.8%            | 4.0%             |
| 18  | 4.9%            | 4.0%             |
| 19  | 5.0%            | 4.1%             |
| 20  | 5.0%            | 4.1%             |
| 21  | 5.1%            | 4.2%             |
| 22  | 5.2%            | 4.3%             |
| 23  | 5.2%            | 4.3%             |
| 24  | 5.3%            | 4.4%             |
| 25  | 5.4%            | 4.5%             |
| 26  | 5.5%            | 4.5%             |
| 27  | 5.6%            | 4.6%             |
| 28  | 5.6%            | 4.6%             |
| 29  | 5.7%            | 4.7%             |
| 30  | 5.8%            | 4.8%             |
| 31  | 5.9%            | 4.8%             |
| 32  | 6.0%            | 4.9%             |
| 33  | 6.1%            | 5.0%             |
| 34  | 6.1%            | 5.4%             |
| 35  | 6.3%            | 5.5%             |
| 36  | 6.4%            | 5.6%             |
| 37  | 6.6%            | 5.7%             |
| 38  | 6.7%            | 5.8%             |
| 39  | 6.9%            | 5.9%             |
| 40  | 7.0%            | 6.1%             |
| 41  | 7.1%            | 6.2%             |
| 42  | 7.3%            | 6.3%             |
| 43  | 7.4%            | 6.9%             |
| 44  | 7.5%            | 7.0%             |
| 45  | 7.6%            | 7.1%             |
| 46  | 7.8%            | 7.3%             |
| 47  | 7.9%            | 7.4%             |
| 48  | 8.0%            | 7.5%             |
| 49  | 8.3%            | 7.6%             |
| 50  | 8.6%            | 7.9%             |
| 51  | 8.9%            | 8.2%             |
| 52  | 9.3%            | 9.1%             |
| 53  | 9.6%            | 9.4%             |
| 54  | 10.0%           | 9.7%             |
| 55  | 10.3%           | 10.0%            |
| 56  | 11.1%           | 10.4%            |
| 57  | 12.1%           | 11.3%            |
| 58  | 13.1%           | 12.3%            |
| 59  | 14.3%           | 13.4%            |
| 60  | 12.1%           | 11.7%            |
| 61  | 12.4%           | 12.1%            |
| 62  | 12.8%           | 12.4%            |
| 63  | 13.1%           | 12.7%            |

*The percentage in the table should be doubled for the “40% accrual band” and halved for the “10% accrual band”.*

Review of rebates and reduced rates of National Insurance contributions for members of contracted-out defined contribution pension schemes

Report to the Secretary of State for Work and Pensions by the Government Actuary

**Appendix D Assumptions adopted at the previous review**

|  | <b>COMPS</b>   | <b>APPs</b>  |
|--|--|--|
| <b>Financial</b>   |  |  |
| Pre-retirement discount rate (net of earnings growth)    | 1% pa just before SPA<br>2% pa 15 yrs to SPA<br>2.5% pa >30 yrs to SPA | 1% pa just before SPA<br>2% pa 15 yrs to SPA<br>2.5% pa >30 yrs to SPA |
| Post-retirement discount rate (net of pension increases) | 2% pa  | 2% pa  |
| Gross pre-retirement discount rate                       | 5% pa  | 5% pa  |
| <b>Demographic</b>                                       |  |  |
| Pre-retirement mortality                                 | None   | None   |
| Post-retirement mortality                                | PMA92 / PFA 92 medium cohort   | PMA92 / PFA 92 medium cohort   |
| Proportions 'married'                                    | 100% at SPA  | 100% at SPA  |
| 'Marital' age differences                                | In line with the 2001 national census data                             | In line with the 2001 national census data                             |
| Administration expenses                                  | 0.2% of band earnings  | 1% a year pre retirement (reduces discount rate)                       |
| Contingency margin                                       | 7.5% of calculated rebate  | 7.5% of calculated rebate  |
| Rationale for contingency margin                         | To cover loadings in annuity prices                                    | To cover loadings in annuity prices                                    |
| State Pension Ages                                       | Allowance for increase in SPA ultimately to age 65 for women           | Allowance for increase in SPA ultimately to age 65 for women           |

**Report by Secretary of State for Work and Pensions in accordance with sections 42(1)(b), 42B(1)(b) and 45A(1)(b) of the Pension Schemes Act 1993**

**Report by Secretary of State for Work and Pensions in accordance with sections 42(1)(b), 42B(1)(b) and 45A(1)(b) of the Pension Schemes Act 1993**

1. In accordance with the Pension Schemes Act 1993, I am laying before Parliament my report on the reduced rates and rebates of National Insurance contributions applicable in respect of members of contracted-out occupational pension schemes and appropriate personal pension schemes.

2. This report, the accompanying draft Order and the Government Actuary's report address the percentage reduction in National Insurance contributions applicable to employers and employees of salary related contracted-out schemes (defined benefit schemes) and money purchase schemes (defined contribution schemes); and the rebates applicable to members of money purchase schemes and approved personal pension schemes (APPs).

3. However, it is planned to abolish contracting-out on a defined contributions basis on 6 April 2012. When the enabling legislation for abolition (section 15(1) of the Pensions Act 2007 and provisions in primary and secondary legislation which make consequential amendments) is brought into force, sections 42B and 45A of the Pension Schemes Act 1993 will be repealed. However, until that date, my responsibility under sections 42B and 45A of the Pension Schemes Act 1993 that defined contribution rebates are reviewed at least every five years remains. But because these figures are not expected to be used, they are only provided for one tax year.

4. This report will therefore focus primarily on the reduction in National Insurance applicable to those contracted out on a defined benefit basis. That reduction is expected to reflect the cost to schemes of providing benefits of equivalent actuarial value to the State Pension that is foregone by employees who are contracted out.

**(1) Pension Schemes Act 1993 section 42(1)(b)  
Reduced rate of Class 1 National Insurance Contributions for members  
of salary-related contracted-out schemes**

5. The first part of my report, required by Section 42(1)(b) of the Pension Schemes Act 1993 concerns the level of reduction in National Insurance for employers and employees within salary-related contracted out occupational pension schemes. Currently Section 41(1A) and (1B) of the Pension Schemes Act 1993 (which incorporates rebates from the last Rebate Order<sup>1</sup>), provides for a reduction in the combined employer and employee contributions by a total of 5.3% of relevant earnings (split as 1.6% primary (employee) and 3.7% secondary (employer)).

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<sup>1</sup> The Social Security (Reduced Rates of Class 1 Contributions, Rebates and Minimum Contributions) Order 2006 (SI2006/1009)

6. Since the last report the definition of relevant earnings has changed and now refers to earnings between the lower earnings level and the upper accrual point. This is a point of detail, however, rather than a material fact which affects the Rebate.

7. In a departure from previous reports, the Government Actuary has provided three alternative approaches for valuing the cost of the benefits foregone by contracted-out workers in salary-related schemes: a “best estimate” basis, a “typical funding” basis, and a “gilts” basis.

8. I welcome the advice provided by the Government Actuary which has informed my decisions on the level of the rebate. The reduction in National Insurance contributions is provided at considerable current cost to the tax payer. The Government has a duty, therefore, to ensure that the rebates are set at a level which is fair to all. In view of those considerations, I believe that adopting the best estimate basis is the correct approach.

9. In calculating the best estimate rate which should apply to earners in salary-related schemes, I have considered the changes affecting the cost of providing benefits of equivalent actuarial value to the SERPS foregone which the Government Actuary has detailed in his report, for example, the assumptions made concerning changes in membership details, increased longevity, the future change in indexation of the State Additional Pension by the Consumer Price Index, rather than the Retail Price Index, and current economic conditions. In my view, the assumptions made by the Government Actuary are justifiable.

10. The Government Actuary has also helpfully provided two rebate rates for each approach; one which takes into account the existing arrangements for State Pension Age, and one which takes into account the proposed changes the Government will be legislating for which will see State Pension age rise to age 66 from April 2020. I have decided that the proposed rise in State Pension age to 66 needs to be reflected in the revised rebate rate. I have therefore decided, in line with the Government Actuary’s best estimate approach, to decrease the reduction in the rate of National Insurance contributions to 4.8% of relevant earnings. If, for any reason, the proposed changes to State Pension age are not implemented, I will consider the need to conduct a further review of rebate rates before the end of a further 5 year period – the time by which I must review rebate rates again.

11. I propose broadly to maintain the division of the reduction in the level of primary and secondary contributions. This will therefore mean that the level in the reduction of primary contributions will be reduced to 1.4% and the reduction in the secondary contribution will be reduced to 3.4%.



**(2) Pension Schemes Act 1993 section 42B(1)(b)**

**Determination and alteration of reduced rates of contributions and rebates for members of money purchase contracted-out schemes applicable under Section 42A of that Act**

12. The second part of my report, required by Section 42B(1)(b) of the Pension Schemes Act 1993 deals with the appropriate percentages of the relevant earnings which need to be specified for members of money purchase contracted-out schemes.

13. The Government Actuary's report sets out, by reference to the age of the individual, the percentage of relevant earnings which he considers reflects the cost of providing benefits of an actuarial value equivalent to the State Second Pension foregone. The percentage is delivered in two parts – a flat-rate element (which takes the form of a reduction in Class 1 National Insurance contributions) and an age-related rebate paid to the scheme after the end of the tax year to which it relates.

14. This part of the report is, however, provided simply to meet an existing legal requirement which will be repealed before these proposed rates have effect, on account of the proposed abolition of contracting-out on a defined contributions basis on 6 April 2012. It is not expected that these rates should be used. Hence the Government Actuary has provided rebate rates for one year only.

15. With this in mind, I see no reason to alter the rates provided by the Government Actuary in his report. I have therefore decided to decrease the flat rate element for contracted out money purchase schemes to 2.4% of relevant earnings for members of contracted-out money purchase schemes. I propose to split the flat-rate rebate between the primary contribution at 1.4% and the secondary contribution at 1.0%.

16. I have also decided to decrease the level of the age-related element of the rebate as the Government Actuary recommends. I have also concluded that the rebates should continue to be subject to a cap. The current level of this cap is 7.4% of relevant earnings. I have decided to maintain this at 7.4%.

**(3) Pension Schemes Act 1993 section 45A(1)(b)**

**Determination and alteration of rates of minimum contributions for those with appropriate personal pensions applicable under Section 45 of that Act**

17. The third part of my report, required by section 45A(1)(b) of the Pension Schemes Act 1993 deals with the age-related percentages of the relevant earnings which need to be specified for members of appropriate personal pension schemes.

18. As for members of contracted-out money purchase schemes, the Government Actuary's report sets out, by reference to the age of the individual, the percentage of relevant earnings which he considers reflects the cost of providing benefits of an actuarial value equivalent to the State Second Pension foregone.

19. For the reasons I have already given concerning the abolition of contracting-out on a defined contribution basis on 6 April 2012, I, again, see no reason to alter the rates provided by the Government Actuary in his report. I have therefore decided to decrease the age-related rebates for holders of appropriate personal pensions in line with the Government Actuary's report.

20. As with contracted-out money purchase schemes, these age-related rebates are subject to a cap, currently set at 7.4%. I have decided to maintain the cap for appropriate personal pensions and set it also at 7.4%. The figures (and therefore the cap) in Schedule 2 of the Order take account of the change from the 2010/11 tax year to two accrual bands of 10% and 40%, but are based on the 20% accrual band provided in the Government Actuary's report.

#### **(4) Revaluation of Guaranteed Minimum Pensions (GMPs)**

21. The final part of the Government Actuary's defined benefit report recommends the percentage by which GMPs should be revalued for contracted-out members who leave pensionable service in the period 2012 to 2017 where the scheme has adopted the fixed rate revaluation method (currently 4.0% a year compound for those leaving since April 2007). The Government Actuary has proposed a rate of 4.75% compound based on national average earnings growth of 4.25% with the addition of 0.5%. The addition of 0.5% is to compensate for the conversion of a variable rate of revaluation (linked to actual average earnings growth) to a fixed rate for which there has to be a price.

22. I welcome the Government Actuary's assumptions. We will consider whether to make a further change to the existing regulations later in the year.



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