Actuarial Assumptions for Assessment of Broad Comparability

Background note on the differential between RPI and LPI

Introduction

1. A paper setting out the key actuarial assumptions used by the Government Actuary's Department (GAD) when assessing broad comparability between a public service pensions scheme and another defined benefit pension scheme is available on GAD's website http://www.gad.gov.uk/pensions/staff_transfers. This includes assumptions for the long-term average differential between unlimited retail price increases and annual retail price increases with limits of 5% and 2.5% pa. These assumptions are important in measuring the relative value of pensions which are fully protected against changes in retail prices and pensions receiving the minimum statutory increases under the limited price indexation (LPI) formula. Full price protection is the standard practice in the public service. LPI is the norm in the private sector and features most often in proposals for scheme designs intended to be broadly comparable to a public service scheme. LPI limited to 2.5%pa is expected to become more common following the Pensions Act 2004, as it becomes the minimum requirement for indexation of future accruals, replacing LPI limited to 5%pa.

2. The assumptions used by GAD are that unlimited retail prices will exceed:

   - Retail prices with a cap of 5% pa (LPI 5) by an average ¾% pa
   - Retail prices with a cap of 2½% pa (LPI 2.5) by an average of 1¾% pa.

3. GAD takes full professional responsibility for the assessments of broad comparability it prepares, including the assumptions it adopts for that purpose. GAD recognises the importance of these assumptions to the outcome and has prepared this note on the choice of the basis which has been made.

Context

4. The government has a long-standing policy of protecting the pension rights of public employees whose functions are transferred to the private sector. At the time of transfer of employment the new employer must provide a pension arrangement which provides broadly comparable future service rights to those of the public service pension scheme from which the employees will be transferring. The principles on which broad comparability is assessed are contained in a Statement of Practice prepared by GAD, which forms an integral part of the Fair Deal policy. http://www.gad.gov.uk/pensions/staff_transfers.

5. The intention is to be fair to both employees and employers in the assessment. The choice of methods and assumptions begins from a best estimate without prudential margins. However the purpose of the policy is employee protection. Employees are not exercising an option but are being required to leave their public service pension arrangement. There is only one opportunity to measure comparability. It follows that on assumptions which are critical to the assessment, it is appropriate to take proper account of the possibility that over the long periods in the future being considered, there may again be periods of high rates of inflation. We believe that our assumptions for LPI may anticipate some higher periods of inflation in

future compared with those adopted by many actuaries for their advice on funding of pension promises. However, assumptions used for funding can, for example, be modified at successive valuations as new information emerges whereas, as stated above, the comparability exercise is a one off event.

6. The assumption for LPI 5 replaced the previous assumption of a 1% gap in Spring 2005. GAD considers that the assessment of broad comparability is a quasi-regulatory function and that changes to the bases should be infrequent and gradual to maintain consistency of outcomes over time.

Setting assumptions

7. Pensions by their nature are very long term. Rights accruing at present might give rise to benefit payments seventy or more years from now. These timescales mean that any assumption will be subject to a wide margin of uncertainty. Rarely has the world been static for even a few years, let alone several generations.

8. There are three sources of information for setting long-term financial assumptions:
   - Past experience
   - Current financial markets
   - Theoretical models

9. These are not independent. For example, ***past experience*** over some period will underlie the development of a model. Current market behaviour will reflect the collective views of buyers and sellers, who in turn are influenced by past experience or an implicit or explicit theoretical model of the future.

10. It is possible to construct a price inflation index for long periods into the past. Graph A plots annual inflation for each of the last 250 years. In this period Britain has changed from an agricultural economy to an industrial economy and now to a service-based economy. The main point of interest are the spikes of high inflation which have been a repeated feature at different times.

11. The scope, size and sophistication of financial markets have also changed beyond recognition, even over the most recent few decades. Most relevant is the post-war period and the time since the late 1950s when most of this market development took place. This period also witnessed the advent of the global economy and free exchange rates following the major international agreements GATT and after Bretton Woods. Graph B shows annual inflation rates since 1951.

12. Graphs C and D plot moving 10 and 20 year forward averages of inflation in this post-war period, together with the corresponding equivalents of LPI 5 and LPI 2.5. While each point on a plot of moving averages is not independent, these graphs they are useful for illustrating:

   - The stability of LPI2.5
   - The stability of LPI 5, except for the last ten years
   - The impact that the spell of high inflation in the 1970s and late 1980s has had on the average uncapped RPI. This abnormality was not unique, as Graph A demonstrates. Its causes were complex but the four fold increase in oil prices can be categorised as an external shock to the system. The possibility of such

events – which can come from natural as well as man-made causes – has to be encompassed in setting assumptions.

13. ***Current markets*** are the most sophisticated ever, with a wide range of market indicators available from which to assess the market's consensus view of the future. Market views encompass many different investors but on the whole are short-term focussed, with a view which may not be appropriate to a long-term pensions investor.

14. There are no generally available investments which provide an LPI-based return. An implied inflation assumption can be derived from the market yields on fixed interest and index-linked government bonds (both UK and overseas issues), futures and swaps markets and economic forecasts. Particularly in the index-linked market there are currently distortions from the imbalance between supply and demand.

15. The economic environment has moved on, with the emergence of a strong global trading environment and common or free-floating currencies making it more difficult for any major trading country to diverge from the general experience. In the UK we now have the Bank of England's Monetary Policy Committee (MPC) charged with managing interest rates against an inflation target, with similar constraints affecting the behaviour of the European Central Bank and the US Federal Reserve.

16. Financial ***modelling*** has developed from the autoregressive approaches characterised by the Wilkie model. Multi-state stochastic models are conceptually attractive and seem better able to reproduce the highly skewed distributions of financial outcomes which have characterised the past and which better capture the uncertainties. All models, no matter how complex, depend upon the assumptions. There is inevitably some circulatory in using a financial model to set long-term assumptions when the model is itself dependent on such assumptions. There are conflicting indicators depending upon the historical perspective adopted, which can produce widely differing outcomes. How well do models cope with the 1970s type of external shock? How much weight should be attached to such shocks?

GAD view

17. GAD believes that, if the new control structures such as the MPC are maintained, then the general level of inflation in future should be lower than the experience of the last century or over the last 50 years. There will always be scope for shocks to the system or policy failures which create new inflationary conditions. There is still uncertainty about the extent to which the new framework, which in actuarial terms has been in place for a short time, will produce a consistent outcome over the long term. Our expectation is that the gap between RPI and LPI should continue to narrow but as yet the system is young and not tested by events. These circumstances lead us to conclude that a modest reduction of ¼% from the previous 1% gap between RPI and LPI 5 is justified.

18. GAD will continue to keep all its assumptions under regular review. It may be appropriate to move the broad comparability basis in the direction of a smaller gap between RPI and LPI if the prospects for the maintenance of controlled levels of inflation in the long-term future become stronger. However, it remains our intention to make changes to the assumptions only on an infrequent basis.

Andrew Johnston
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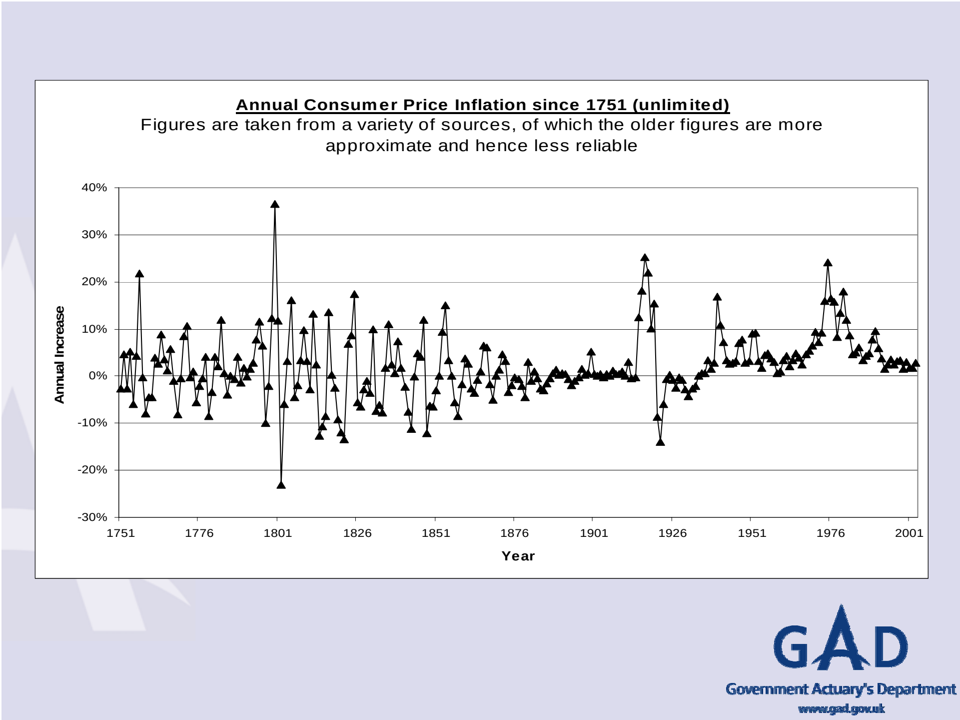
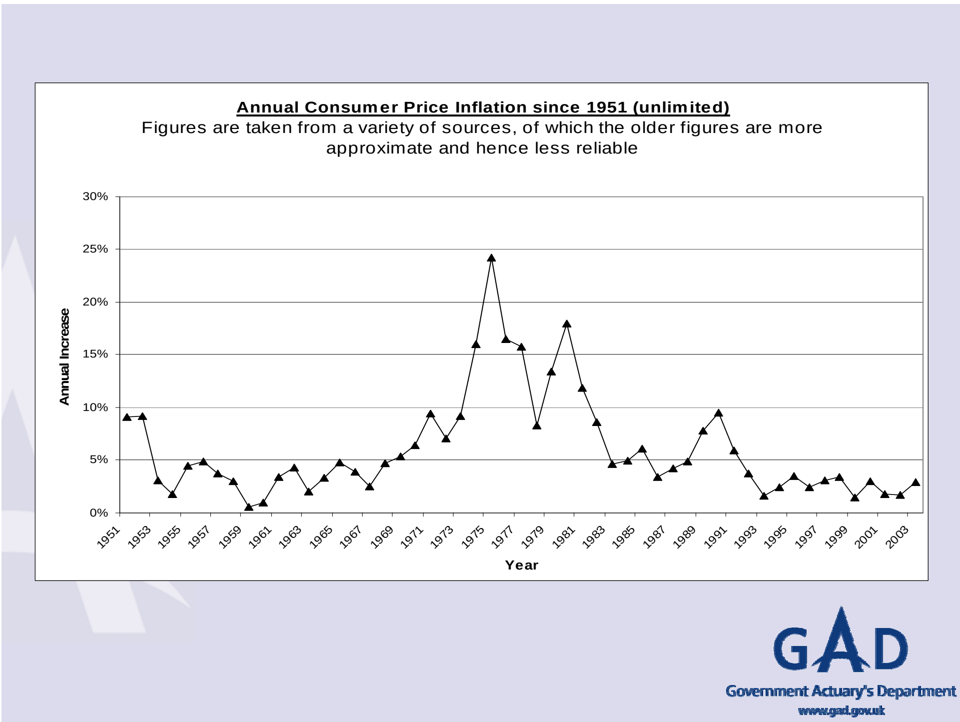
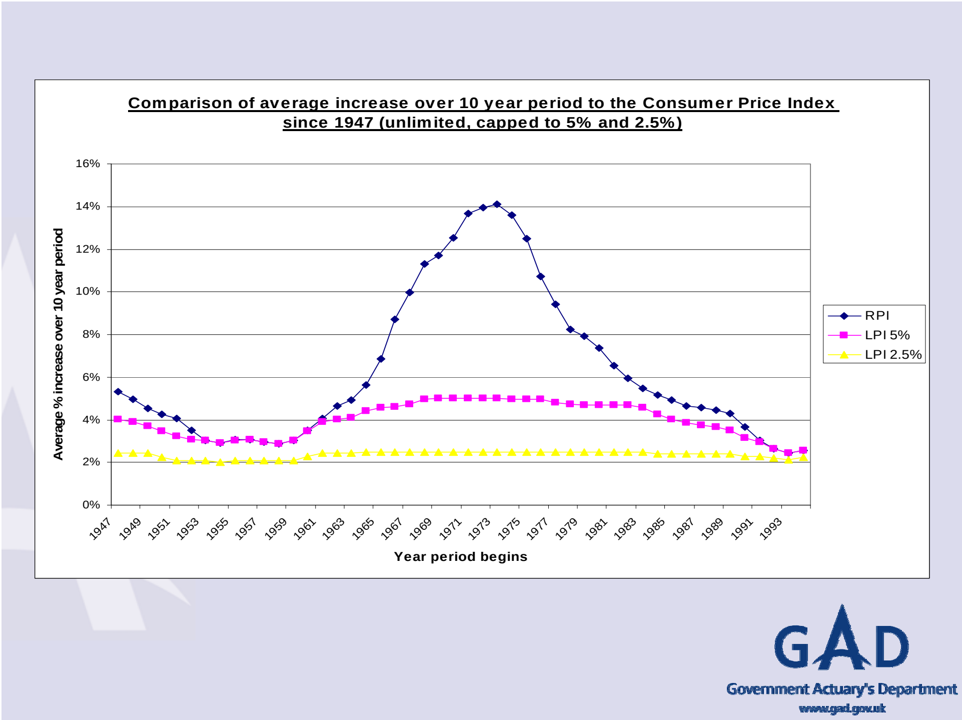
GRAPH A



GRAPH B



GRAPH C



GRAPH D