Commentary on the calculations used in the self financing Model

Background

1. The self-financing model underpins the HRA self-financing Determination ("the Determination"). The model takes the year one data from the baseline model and applies to it the agreed self-financing methodology (including up-rating of allowances) to calculate the value of the business over 30 years.

2. The self-financing model calculations themselves, do not constitute the Self-Financing Determination, but illustrate some of the assumptions upon which the Determination itself is based. This commentary is intended to provide a description of the calculations in the model for those wishing to review the assumptions in more depth.

Relevant Documents

3. The calculation of each authority's stock valuation is shown in the 'self-financing model'. This commentary describes the calculations performed in the self-financing model.

4. A report on the model input, assumptions and outputs written by the financial consultants describing the background work to the financial model was published previously and is available on the DCLG website. In addition a version of the model user guide to accompany the model published in February is also available. The latest version of the self-financing model applies the same methodology as these previous versions, but updated to take account of the latest data submitted by authorities in the 2012 Base Data Return.

5. Rent levels and input cost assumptions for each authority are taken from the "baseline model". This is similar to the previous years "HRA Subsidy Determination" spreadsheet and will be familiar to authorities from previous HRA subsidy determinations. This baseline model and the associated commentary have also been published.

Terminology

A financial year is the year running from 1 April to 31 March in the following calendar year.

"pdpw" = per dwelling per week

"pdpa" = per dwelling per annum

In mathematical formulae, subscripts are used to indicate time periods throughout, e.g.:

S_t = Stock at time period t

S_{t-1} = Stock in the previous period (t-1)

The Self Financing Valuation

6. The self financing valuation is based on the surplus of rental income over the costs of running and maintaining the housing stock.

7. Rental income and costs for each local authority used for the valuation are derived from the assumptions used in the baseline model. Throughout this commentary references to rental income or to costs are to the assumed levels of rental income and assumed costs as calculated in the baseline model.

8. The valuation is calculated over 30 financial years from 2012-13 to 2041-42.

9. In each year from 1 to 30 the surplus of rental income over costs is calculated as:

$$SURPLUS_t = RENTAL\ INCOME_t - COSTS_t$$

10. Present value calculations are used to calculate the value now of amounts received in the future. The real discount rate was agreed in the comprehensive spending review of October 2010 as 6.5%, reflecting the cost of financing and the transfer of risk to authorities.

11. The present value of the surplus in each year is calculated as:

$$PV\ SURPLUS_t = SURPLUS_t / 1.065^{(t-1)}$$

Where t takes values from 1 to 30

12. The valuation, V, is equal to the sum of the PV of the surplus in each financial year:

$$V = \sum_{t=1}^{t=30} PV \; SURPLUS$$

13. Rental income and costs in each year for each authority are shown in the tab 'Debt total by LA' cells G6:AJ11. All values are in real 2012-13 pound thousands. The valuation, in NPV terms, is shown at cell C12.

Rental Income

14. Rental income is based on the average guideline rental income pdpa as calculated in the baseline spreadsheet. For each financial year, guideline rental income is calculated as:

$$RENTAL\,INCOME_t = \left(S_t \times GR_t \times 52 \times (1 - Voids)\right) - C\,\&\,L_t$$

Where:

S_t is the assumed number of dwellings for rent in the relevant financial year

GR_t is the assumed guideline rent per dwelling per week expressed in real 2012-13 pounds sterling

Voids is the assumed percentage of void dwellings. This is set at 2%.

C&L is the assumed reduction to guideline rent arising from compliance with guidance on 'Caps and Limits' in real 2012-13 pounds.

Dwelling stock in 2012-13

15. The number of dwellings in 2012-13 is taken from information provided by authorities on the 2012 Base Data Return. It is the number of dwellings including PFI schemes and shared ownership properties that were available for rent as at 1 April 2011 (recorded at cell F001DP on the Base Data Return) and excluding properties to be demolished, disposed of or appropriated in 2011-2012 before the implementation of self financing as entered by authorities on the base data return at cell SF000SR. Demolitions, disposals and appropriations that meet all requirements have been recorded in the tab 'Stock Movements'.

16. The department has included an estimate of the number of Right to Buy sales that might have taken place in the absence of the announcement of the reinvigorated Right to Buy policy.

The number of dwellings in each year post 2012-13

17. The number of dwellings in each year post 2012-13 takes into account stock reductions due to planned demolitions and assumed Right to Buy sales and is derived for a given year by removing from the 2012-13 stock number:

    a) the cumulative number of demolitions planned up until 31 March of the financial year prior to that for which the stock number is being calculated. This includes relevant entries in cells SF001DE to SF005DE on the base data return and these are shown in the 'Stock movements' tab.

    b) the cumulative number of assumed Right to Buy sales for the local authority in question up until 31 March of the year prior to that for which the number of dwellings is being calculated. This assumed number of Right to Buy sales in each year is calculated according to the description in the boxed text at page 14 of this commentary. The number of Right to Buy sales assumed in each year for each authority is shown in the 'Main workings' tab, cells C37:AG207.

$$S_t = S_{t=1} - DEM_{t-1} - RTB_{t-1}$$

Formula rent in 2012-13

18. Rent restructuring policy is designed to ensure similar rents for similar properties in similar areas. When convergence is achieved housing associations and local authorities will use the same formula for setting rent levels which will ensure that tenants pay similar rents for similar properties regardless of whether the landlord is an RSL or a local authority.

19. The average formula rent pdpw in 2012-13 is calculated in the baseline model and shown in the 'Rent Com' tab. In the 'Base Data' tab of the LA financial model column I is the formula rent pdpw in 2012-13 and column J is the total formula rent in 2012-13. Total formula rent is calculated by multiplying the formula rent pdpw by 52 and the number of dwellings for rent in the relevant year.

$$FR_t^{Total} = FR_t \times 52 \times S_t$$

Where FR$_t$ is the average formula rent per dwelling per week

Formula rent pdpa in each year post 2012-13

20. The average formula rent pdpw in each year is calculated as the formula rent for the previous year multiplied by 1.005 (expressed in real 2012-13 pounds), as:

$$FR_t = FR_{t-1} \times 1.005$$

21. The total formula rent is calculated by multiplying the formula rent pdpw by 52 and the stock number for the relevant year:

$$FR_t^{Total} = FR_t \times 52 \times S_t$$

22. Formula rent in each year expressed in real 2012-13 pounds is shown in the 'Main Workings' tab, cells C902:AG1072.

Guideline rental income pdpw in 2012-13

23. The average guideline rental income pdpw for each authority is calculated in the baseline spreadsheet and is shown in the 'Rent Com' tab. The guideline rent is equal to the previous year's imputed guideline rent uplifted according to inflation and any real increase plus a movement towards formula rent. This convergence term is determined by the gap between uplifted guideline rent and formula rent divided by the number of years to convergence, n.

$$GR_t = \left(GR_{t-1} \times (1 + RPI + 0.5\%)\right) + \frac{\left[FR_t - \left(GR_{t-1} \times (1 + RPI + 0.5\%)\right)\right]}{n}$$

Where:

GR_t is average guideline rent pdpw

n is the number of years to convergence

Guideline rent pdpw is shown in the 'Base Data' tab column G and gross guideline rent total is shown in Column H. This is calculated as:

$$GR_t^{Total} = GR_t \times 52 \times S_{t=1}$$

Guideline rental income pdpw in each year post 2012-13

24. Guideline rental income pdpw in each year moves towards formula rent pdpw, converging in 2015-16. Guideline rental income pdpw is calculated as:

$$GR_t = \left(GR_{t-1} \times 1.005\right) + \frac{\left[FR_t - \left(GR_{t-1} \times 1.005\right)\right]}{n}$$

25. Where n is the number of years to convergence. Once convergence is achieved in 2015-16 n is always equal to 1 and therefore from 2015-16 onwards average guideline rent pdpw is equal to average formula rent pdpw. The total gross guideline rent is calculated by multiplying the guideline rent pdpw by 52 and the stock number for the relevant year:

$$GR_t^{Total} = GR_t \times 52 \times S_t$$

26. Guideline rent before adjustment for voids and "Caps & Limits" is shown in the 'Main Workings' tab cells C1076:AG1246.

Calculation of the Reduction to Guideline Rent for Caps and Limits for 2012-13

27. Under the existing subsidy system authorities receive compensation for "Caps and Limits". Following these non-statutory policies will restrain the ability of authorities to follow rent restructuring in full. The "Cap" is a cap on the maximum Formula Rent that is calculated each year for properties according to the number of bedrooms. The "Limit" is the limit on individual tenants weekly rent increases of RPI + ½% + £2. The reduction to guideline rent for 2012-13 is the compensation paid in arrears that is due for complying with rental policy guidelines in 2011-12.

28. The caps and limits compensation each year is the Caps and Limits compensation pdpw multiplied by the number of dwellings, multiplied by 52:

$$REDUCTION\ to\ GR_t^{Total} = C\&L_t \times S_{t=1} \times 52$$

Where C&L$_t$ = "Caps and Limits" compensation pdpw

29. The "Caps and Limits" compensation for 2012-13 is based on the information captured through the "Caps and Limits" spreadsheet and reported through the Base Data Return. "Caps and Limits" compensation is paid based on the difference between the average constrained rent and the average unconstrained rent. Unconstrained rents are the rents that would be charged by an authority following rent restructuring policy in the absence of both the formula rent caps and the £2 limit and are calculated for each property. Constrained rents are those charged under rent restructuring, following both policies in full.

30. "Caps and Limits" compensation is calculated in line with the Caps and Limits guidance issued to authorities:

   - If an LA's actual rent exceeds the average constrained transitional rent but is below the unconstrained transitional rent, the authority's guideline rent for 2012/13 will be adjusted for the difference between the average unconstrained transitional rent and the average actual rent.

   - If the average actual rent exceeds the unconstrained transitional rent then no offsetting adjustments will be made.

- If the average actual rent is less than the constrained transitional rent the offsetting adjustments for 2012/13 will be based on the difference between the unconstrained and the constrained transitional rent.

- The necessary information on the constrained and unconstrained rents is taken from the 2012 Base Data Return cells F004RI and F005RI.

Calculation of the Reduction to Guideline Rent for Caps and Limits in each year post 2012-13

31. The model calculates a forecast of the "Caps and Limits" compensation that would be due for complying with the guidelines on "Caps and Limits" in the years after implementation of self-financing.

32. Compensation for compliance with "Caps and Limits" policies for a given year is in the form of a reduction to assumed guideline rent for the following year.

33. This forecast of "Caps and Limits" compensation is based on the difference between the forecast average unconstrained weekly rent and the forecast average constrained weekly rent.

34. The forecast average unconstrained rent for each year is calculated by extrapolating the previous year's unconstrained rent towards the formula rent level:

$$UR_t = \left(UR_{t-1} \times 1.005\right) + \frac{\left(FR_{t-1} - \left[UR_{t-1} \times (1+RPI_t) \times 1.005\right]\right)}{n}$$

Where:

UR is the average unconstrained rent
FR is the formula rent
n is the number of years to convergence

35. The average constrained rent for 2012-13 is calculated by extrapolating the previous years constrained rent towards the formula rent level in line with a) the rent restructuring formula; <u>or</u>, b) RPI + 0.5% + £LIMIT, whichever is the lower.

a) $CR_{t-1} \times 1.005 + \dfrac{\left[FR_t - \left(CR_{t-1} \times (1+RPI) * 1.005\right)\right]}{n}$

b) $\left(CR_{t-1} \times (1+RPI) \times 1.005\right) + £LIMIT$

Where

RPI is:

…in 2012-13 0.056
…in each year thereafter nil

CR$_t$ = Average constrained rent

*LIMIT = the limit on weekly rent increases expressed in real 2012-13
pounds. For 2012-13 calculations (paid as reduction to 2013-14
guideline rent) the limit is £2. To reflect future inflation the limit is
reduced in line with inflation assumption in the model in each year.*

36. The caps and limits compensation per dwelling per week for 2012-13 is
the difference between the unconstrained rent and the lower of a and b
multiplied by the number of dwellings for rent in the relevant year and
multiplied by 52.

$$REDUCTION\,to\,GR_t^{Total} = (UR_{t-1} - MIN(a,b)_{t-1}) \times S_{t=1} \times 52$$

37. The caps and limits modelling does not make adjustments to stock
numbers post 2012-13. In the 'Caps and Limits 1' tab in the self
financing model:

   Unconstrained rent forecasts are shown in columns K, O, S, W
   Constrained rent forecasts are shown in columns L, P, T, X
   Formula rents are shown in columns J, N, R, V
   Caps and limits compensation is shown in columns M, Q, U, Y

Costs

38. The level of costs associated with running the stock is primarily based on
the allowances that were calculated each year in the HRA subsidy
determination. These allowances are calculated in the baseline
spreadsheet. The costs in each year are equal to:

   $$MAN + MNT + MRA + ORE + PREM + DME$$

   MAN is the assumed need to spend on management

   MNT is the assumed need to spend on maintenance

   *MRA is the assumed need to spend on Major Repairs and disabled
   facilities adaptations*

   ORE is costs of other reckonable expenditure such as leases

   *PREM are historic premia costs that are supported under the HRA
   subsidy system*

   DME is an allowance for debt management expenses

Management and Maintenance

Management and Maintenance costs in 2012-13

39. Management and maintenance baseline costs in 2012-13 are calculated in the baseline spreadsheet. Calculation of the baseline management allowance is shown in the 'Man Com' tab. Calculation of the baseline maintenance allowance is shown in the 'Mnt' tab.

40. The M&M allowance for 2012-13 is equal to the baseline allowance multiplied by the M&M uplift for the authority. The uplift to management and maintenance baseline allowances is shown in the 'Base Data' tab of the self-financing model at column R.

41. Baseline management allowances pdpa for 2012-13 are shown in the 'Base Data' tab column L. Baseline maintenance allowances pdpa for 2012-13 are shown in the 'Base Data' tab column N. Total M&M costs across all dwellings after the relevant uplifts have been applied are shown in the 'Base Data' tab column Q. The uplift factor is shown in column R.

M&M Allowances for each year post 2012-13

42. The management and maintenance allowances are assumed to remain constant in real terms over the valuation period. They are calculated pro-rata in line with the stock numbers that change over the period[1]. The M&M allowance for each year post 2012-13 is calculated as:

$$M_t = \frac{M_{t-1}}{S_{t-1}} \times S_t$$

Where:

M_t is the sum of management and maintenance allowances in the stated financial year

S_t is the stock level in the relevant financial year

43. M&M allowances in each year are shown in the 'Main Workings' tab cells C1424:AG1594.

---

[1] Although maintenance allowances are not payable for stock in shared ownership this is not taken into account in the adjustment to future stock numbers.

Major Repairs

MRA for 2012-13

44. The baseline Major Repairs Allowances pdpa for 2012-13 are calculated in the baseline calculation spreadsheet

45. The Major Repairs Allowances pdpa for 2012-13 is the baseline Major Repairs Allowance multiplied by the MRA uplift for the authority. The MRA uplift for each authority is shown in the 'base data' tab of the self-financing model at column V..

46. The MRA uplifts have been calculated based on work performed by the Buildings Research Establishment in their review of the Major Repairs Allowance. More information is available in the report on the model inputs and assumptions.

47. Average MRA pdpa is shown in the 'Base Data' tab column T. Uplifted allowances are shown in Column U.

Funding for disabled facilities adaptations in 2012-13

48. The allowance for disabled facilities adaptations is £114 million in real 2012-13 pounds across the entire stock. This amount is distributed across the whole stock for rent (i.e. it *includes* those dwellings which are not eligible for MRA funding because they are the subject of a PFI contract) on a simple per dwelling basis and adjusted for the relevant regional cost factor. This is approximately:

$$£66 \times S_{t=1}^{MRA} \times BCIS$$

Where BCIS is the regional cost adjustment factor shown in the 'base data' tab of the self-financing model at column X

49. Funding for disabled facilities adaptations by authority is shown in the 'Base Data' tab column W.

Stock for MRA for 2012-13

50. The stock for MRA in 2012-13 is specified by the authority in the 2012 Base Data Return It is the total stock for rent excluding shared ownership dwellings and any dwellings which are the subject of a PFI contract. Stock for MRA in 2012-13 is shown in the 'Base Data' tab column D.

Stock for MRA for each year post 2012-13

51. The stock for MRA in each year post 2012-13 is calculated as:

$$S_t^{MRA} = S_{t-1}^{MRA} + RTB_{t-1} - Stock\ Adjustments_{t-1} + PFI\ Stock\ Adjustments_{t-1}$$

Where

$S_{t=1}^{MRA}$ = *the stock for MRA in period t=1*

Provided that this results in a positive number, otherwise zero.

52. The PFI stock adjustment is positive where a PFI scheme ends before the end of the valuation period. In this case the stock adjustment is the number of units within the PFI scheme which become eligible for MRA following the conclusion of the PFI scheme.

53. The PFI stock adjustment is negative where a PFI scheme begins after the start of the valuation period (although the contract must have been signed before the start of Self Financing). In this case the stock adjustment is the number of units within the PFI scheme which cease to be eligible for MRA since this is funded via the PFI allowance. PFI schemes in procurement that have not yet reached financial close are not taken account of in the self financing model. Any scheme that signs before the final self financing determination will be reflected in the final self financing determination.

54. Stock for MRA in each year post 2012-13 is shown in the 'Main Workings' tab cells D1772:AG1942. These numbers are then adjusted for stock adjustments and RTB assumptions in cells C729:AG899. Details of PFI schemes are included in the 'PFI' tab.

MRA & disabled facilities adaptations for each year post 2012-13

55. The MRA allowance for each year post 2012-13 is calculated as the Stock for MRA for the relevant year multiplied by the MRA per dwelling for 2012-13.

56. The Disabled Adaptations allowance is the same in each year as for 2012-13. It is not adjusted for changes to the level of stock. MRA (including disabled adaptations) in each year is shown in the 'Main Workings' tab cells C1598:AG1768.

Other Reckonable Expenditure

57. Authorities have submitted data on the other reckonable expenditure over 30 years (e.g. leases) that is currently supported through the existing HRA subsidy system under headings 1-6 and these costs will

therefore be reflected in the self financing valuation. This information is taken form the 2012 Base Data Return cells SF001O to cells SF030O.

58.   The expenditure in each year has been adjusted to take into account inflation and the results are shown in the 'ORE & historic premia' tab cells B362:AG532.

Premiums

59.   The HRA subsidy system provides support for treasury management decisions taken by authorities. Where the general fund of the authority has met a premium cost associated with repaying a loan the HRA share can be amortized over 10 years and this amount would be eligible for subsidy.

60.   The total remaining value of premiums outstanding as at 1 Feb 2011, less any discounts for the early repayment of debt, has been included as a one-off cost in 2012-13. This information is taken directly from the 2012 Base Data Return cell SF001P.

61.   This information is shown in the self financing model in the 'ORE & historic premia' tab cells B183:B353.

Debt Management Expenses

62.   As under the HRA subsidy system support is included for debt management expenses. The level of Debt Management expenses is dependent on the level of debt assumed and has therefore been calculated using a two stage process. This process avoids a circular calculation (since the level of debt management expenses are determined by the valuation and the valuation is determined by the level of debt management expenses).

63.   In the first stage the valuation is calculated without debt management expenses to give the stage one valuation.

64.   The level of debt management expenses is calculated using the same formula as under the subsidy system; a fixed level of cost plus an additional variable amount based upon the level of debt to be managed. The level of debt management expenses is therefore calculated as:

$$£40,444 + \frac{488}{1,000,000} \times (Stage\,one\,Valaution)$$

65.   The stage two valuation includes the debt management expenses as an additional cost line. Debt management expenses are assumed to be the same in real terms in each year. The stage two valuation will therefore always be lower than the stage one valuation.

The assumed number of Right to Buy sales

Following the announcement that the government intended to continue pooling 75% of receipts from Right to Buy sales, the February policy document outlined a proposal to reduce the assumed level of stock over the period. This provides compensation for authorities for the income lost when these properties are sold.

The assumed number of Right to Buy sales for an authority in each year is calculated as:

$$RTB_t^{LA} = RTB_t^{NATIONAL} \times K$$

Where:

RTB^{LA} is the number of Right to Buy sales assumed for an authority in a given year

$RTB^{NATIONAL}$ is the total number of Right to Buy sales assumed nationally in the year in question.

K is the allocated proportion of national Right to Buy sales for the authority in question shown at Annex C and calculated as:

$$K = N \times \frac{S_{t=1}^{LA}}{S_{t=1}^{reg}}$$

Where:

N is the proportion of total national Right to Buy sales taking place in the relevant region in the last three years according to DCLG data

$S_{t=1}$ is the total number of dwellings in 2012-13 for the authority in question

S^{Reg} is the total number of dwellings in 2012-13 for all authorities in that region

The allocation proportion of national Right to Buy sales apportioned to each authority is shown in 'Base Data' tab column E. There is more detail on these calculations in the 'Report on Model Input and Assumptions'.

The forecast of future Right to Buy sales

The national level forecast of future Right to Buy sales is input by DCLG. The national RTB projection is shown in the 'RTB stock Adj' tab column E.

The number of RTB sales assumed in each year for each authority is shown in the 'Main Workings' tab cells C37:AG207.