

**Fraud and Error in Housing Benefit
April 2002 to March 2006**

Technical Appendix

INFORMATION DIRECTORATE

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1. Introduction

1.0 This Technical Appendix is a companion volume to 'Fraud and Error in the Benefits System April 2005 to March 2006', giving detailed background information on how the estimates for Housing Benefit are produced, and the uncertainties that surround them. It provides broad descriptions of quality issues and methods that relate to the whole series of HB Fraud and Error releases.

1.1 This report consists of the following sections:

- Section 2 describes the Housing Benefit Review (HBR) methodology, from sample selection through to the interview and the subsequent data management.
- Section 3 discusses the uncertainties and limitations surrounding the HBR results. In particular, it discusses sampling uncertainties and measurement process imperfections.
- Section 4 discusses data quality and compliance with HBR processes.
- The tables summarise aspects of the derivation of the headline results based on the sample data.

1.2 The main report includes the tables of headline results and a summary of the main findings, with annexes on the Housing Benefit assessment and the definitions used in the report.

1.3 All reports on this subject can be accessed on the internet at

http://dwp.gov.uk/asd/asd2/fraud_error.asp

2. The HBR Methodology

2.1 This section provides details of the main parts of the Housing Benefit Review methodology. Although most of the details remain the same at the time of publication, the past tense is used to reflect the fact that a number of small improvements have been implemented. Improvements affecting the published results have been highlighted in this section.

The Sample Selection

2.2 The HBR sample consists of around 14,000 cases for the latest year. Cases are selected from each Local Authority (LA) within the UK, with the exception of the Isles of Scilly and the Western Isles. Claimants are stratified into four types:

- Working Age in receipt of Income Support (IS) or Pensioner Credit (Guarantee Credit) (PC(GC))¹;
- Working Age not in Receipt of IS or PC(GC);
- Pensioners in receipt of IS or PC(GC);
- Pensioners not in receipt of IS or PC(GC).

2.3 For most LAs, samples of between 20 and 40 cases were selected. For larger LAs samples of around 60 to 80 were selected and for the very largest between 100 and 180 cases were sampled. From April 2004, the sample size moved towards a target of 14,000 cases per year, so LAs that were reviewed during 2004/5 have larger sample sizes that better reflect the relative sizes of individual LAs.

2.4 Cases for the HBR sample were selected randomly on a monthly basis from the Housing Benefit Matching Service (HBMS), which collates caseload information from each Local Authority into a single database, primarily for use in countering fraud and error via data-matching.

¹ Technically PC(GC) should not be paid to a working age claimant or couple. However if an erroneous payment of PC(GC) has occurred or the claimant has been categorised erroneously as being of working age when they are, in fact, a pensioner receiving PC(GC) the sampling algorithm will place them in the same group as working age claimants on Income Support.

- 2.5 For a small number of Local Authorities, the information held by HBMS was out of date (considered to mean more than 8 months old); of poor quality; or non-existent (not provided by the LA to HBMS). For these LAs, the Review Officers selected the random sample by hand, from paperwork provided by the LA.
- 2.6 For operational reasons (mainly to simplify the visiting schedule for the Review Officers), each LA was visited in a certain month of the year, in a sequence that can be regarded as roughly random. The sample was taken from HBMS five weeks in advance of the visiting month, to give time for it to be checked and for background information to be gathered on each case.

Discarding Exceptional Cases

- 2.7 Of the cases that were sampled, there were some exceptional cases that were explicitly excluded from the HBR sample. Cases that fell into this category included:
- Terminally ill claimants;
 - Claimants who had been visited less than six weeks earlier by the LA for other reasons, where the Review Officer (RO) will have left the LA before the end of the six-week period;
 - Claimants temporarily not living in the property, but still being paid HB specifically for reasons allowable in the regulations;
 - From April 2003 until March 2005, cases where the LA received notification of change of circumstances during the period between sample selection and interview. See paragraph 3.57 for details of how these types of cases are treated after March 2005.
 - Claimants who were no longer being paid HB. This was a relatively common occurrence because of delays between obtaining HBMS data and the Review Officer eventually visiting the claimant.
 - Certain specific cases where the HBR methodology was not followed correctly and it was considered that the results would be biased if they were included.
- 2.8 When such cases occurred in the sample, they were 'abandoned and replaced' by another case, in the same LA and client group, from a reserve list. However for a small number of abandoned cases replacement was not possible for practical reasons (such as the Review Officer having already left the LA).

Before the Interview

- 2.9 The LA was notified in advance of the cases that were in the sample, so that they could provide the necessary background information on each case. Information was also obtained from Jobcentre Plus, The Pension Service, Child Support Agency and HMRC² for any benefits, entitlements, child maintenance or Tax Credits that were in payment.
- 2.10 Data collection for the HBR is conducted by specially trained Review Officers employed by the DWP specifically for the purpose of carrying out benefit reviews. The RO 'previewed' all the information held by LA and DWP systems for each case. This was both to prepare for the visit and to identify any errors in the processing of the HB claim or highlight where there may be claimant fraud or error. This information was recorded on a questionnaire, to be compared with the claimant's answers during interview.
- 2.11 If the claim was already under investigation when the RO previewed the case, an interview was not carried out, although the RO would follow up the results of the investigation and the case would be included in the review database.

The Interview

- 2.12 The RO then conducted an interview with the claimant. Normally this was done in the claimant's home and without prior notification. However, if two un-notified visits were unsuccessful, or in certain other exceptional circumstances, a visit was notified (i.e. the claimant was requested to be at home at a certain time on a certain day). All interviews with Pensioner claimants were notified in advance. If a notified visit was also unsuccessful, a request was issued to the claimant to attend an interview at the Local Authority offices.
- 2.13 During the interview, the claimant was required to provide supporting evidence for their claim, including identification and information confirming income, capital, and receipt of any other benefits.
- 2.14 At the end of the interview, the RO explored any discrepancies observed during the interview, for instance to determine if a change of circumstances had been recent and if the LA had been informed. However, whilst suspicion of fraud may have been probed, on the judgement of the RO, it would have been focused on gathering information only, and would not have taken the form of a fraud investigation.

² Her Majesty's Revenue and Customs, formerly Inland Revenue.

After, or instead of, the Interview

- 2.15 The RO could refer the claim for fraud investigation by either LA fraud investigators, or Jobcentre Plus fraud investigators for some passported cases, if any of the following circumstances applied:
- The process failed to generate an interview with the claimant (e.g. if no contact was made);
 - There was an unconfirmed suspicion of fraud; or
 - The claimant refused to provide some of the necessary evidence.
- 2.16 Where relevant, evidence of any change in HB entitlement was referred back to the LA for action. The decision of the LA about the impact on HB was then taken as the value of the error (although the RO could overrule this, based on the evidence available).
- 2.17 Evidence of any change affecting Income Support (IS), Jobseekers Allowance (JSA) or Pension Credit was referred to either Jobcentre Plus or The Pension Service for action. The result of this action was then referred to the LA if it could result in a change to the HB entitlement.

Data Management

- 2.18 After the visit the RO entered all the relevant data onto the HBR database. The case was then forwarded by email, first to the regional team and then to the central HBR team.
- 2.19 These teams were responsible for adding some further information to each case (such as assessing a self-employed person's entitlement or performing some of the more complex calculations) and for checking (and double checking) the accuracy of the RO's assessment. The central team also maintained overall control of and responsibility for the survey exercise.
- 2.20 100% of the incorrect cases and 25% of the correct cases were checked ('validated') by both the regional team and the central team, to check that the database reflected accurately what the RO had in the paperwork, and that the HBR process was being followed correctly.
- 2.21 Data consistency checks were also carried out using a set of computerised rules to ensure that the dataset was internally consistent and plausible. Mistakes identified by these checks were examined and corrected by the central team.

2.22 Finally, the data was transferred to the Information Directorate (IFD) for analysis and production of the estimates presented in the report.

3. Uncertainties and Limitations Surrounding the HBR Results

- 3.1 This section updates and supersedes the information presented about uncertainties and limitations in previous HBR reports. It describes and assesses the impact of the various uncertainties and limitations that surround the HBR results, and the methods that have been used to try to minimise them.
- 3.2 Considered as a whole, the uncertainties surrounding the results are:
- Sampling uncertainties
 - Measurement process imperfections
- 3.3 There may be various minor sources of bias that are not mentioned explicitly in this section. Some of these could arise because of pragmatic decisions taken in the design of the review process. For example, cases that have been visited recently by the LA should not be visited by the review officer within six weeks of the first visit to avoid claimants feeling harassed. This may lead to a disproportionate number of cases in the sample that had been visited by the LA just over six weeks before their HBR interview.
- 3.4 At present it is assumed that these factors will have an insignificant effect on the results relative to the other uncertainties discussed in this section. This will be reviewed over time.

Sampling Uncertainties

- 3.5 Sampling uncertainties are those that arise from limitations in the selection of the sample. They tend to be systematic in nature and can generally be quantified using statistical techniques. There will always be uncertainty inherent in a sample estimate because we are *inferring* information about the entire population from a relatively small sample, which is intended to be *representative* of that population.

95% Confidence Intervals

- 3.6 As with all sampling exercises, despite the use of random sampling, it is unlikely that the sample selected was perfectly representative of the overall HB caseload and expenditure. This uncertainty has been quantified by the estimation of 95% confidence intervals. These intervals represent the range in which the population

value would be expected to fall 95 times out of 100. Generally, the width of the confidence interval (and thus the amount of uncertainty) would be decreased by increasing the number of cases included in the sample.

- 3.7 The confidence intervals are calculated for the estimates using the bootstrap method. This is a resampling technique which involves repeated random sampling with replacement from the original sample to provide a collection of new samples. From the new samples we calculate fraud and error estimates, and determine the values between which 95% of these estimates lie.
- 3.8 The 95% confidence intervals presented in this report are relatively wide in proportion to the estimate. For example, they extend 19% above and below the figure to be used as the baseline for the PSA target measure, i.e. the percentage of expenditure within the scope of the sample that was overpaid to working age customers.
- 3.9 These relatively wide confidence intervals are the result of a relatively small sample size combined with the very wide variability in the amounts of HB (and therefore erroneous HB) that a claimant can receive, from just 50 pence per week to well over £100 per week for some claimants in private rented accommodation. As well as this there are also a relatively small number of cases with large errors that contribute to the overall estimates of fraud and error (e.g. there are only about 750 cases in the 2002/3 sample with weekly HB overpaid by more than £5). This has the effect of widening the confidence intervals further.
- 3.10 The confidence intervals for the estimates about change over time, which can be seen in *figure 3B* in the main report showing progress towards the PSA target, are wider because they reflect the extra potential variability that arises in estimates of the differences between two samples.
- 3.11 The various statistical adjustments described in this report have widened the confidence intervals.

Expenditure not Covered by the Sample

- 3.12 For a variety of reasons, not all HB expenditure is within the scope of the HBR sample. It is estimated that around 15% was not covered during the period under consideration. The largest element not covered, probably around 12%, arises from the relatively long processing times for new HB claims in LAs and the fact that the HBR does not, and could not easily, review the correctness of the expenditure that was paid retrospectively when claims were awarded.
- 3.13 Recent information shows processing times for new HB claims have declined since the baseline year 2002/3. This would cause a small reduction in the proportion of

expenditure outside the scope of the sample. Further work is needed to assess whether it is sensible to adjust the rough extrapolation method described below to reflect this, given various other factors that would also affect sample coverage.

- 3.14 There are other smaller elements not covered by the sample, including expenditure paid to various cases satisfying the strictly defined criteria for abandonment, e.g. expenditure paid to the terminally ill and run-on cases, and expenditure paid to new claims in the first six to eight weeks after their award because of the minimum time needed between a case being selected for the sample and the review being completed. Other coverage issues included the lack of coverage of working age cases not in receipt of IS in 2002/3 for one LA.
- 3.15 In the report rough extrapolations have been made to provide estimates for the levels of fraud and error for the whole of the HB expenditure. The method has been changed slightly since the last publication. Previously, the extrapolation for each year was based on that for the baseline, whereas the new method calculates the extrapolation for each year separately. This means that the estimates for the baseline will not have changed as a result of using the altered method, but other years will have changed.
- 3.16 The method of extrapolation is based on the assumption that 12% of expenditure (i.e. that which is paid to new claims) is missing. We assume the rate of fraud and error in the HB expenditure not covered by the sample and relating to new claims, is the same as the rate of fraud and error for expenditure within the scope of the sample on cases less than six months old. For the additional 3% of missing expenditure we assume the rates of fraud and error outside the scope of the sample are the same as the rates within the scope of the sample. Levels of fraud and error captured within the sample are therefore updated to reflect these assumptions.
- 3.17 Different assumptions could have been made based on whether the expenditure not covered by the sample is more like recently award cases or more like the whole of the HBR sample, and how old 'recently awarded' cases are considered to be. Different assumptions could also have been made about the proportion of expenditure which is outside the scope of the sample, and we could have used new cases from more, or fewer, years of data when calculating the rates of fraud and error for new claims. Since the extrapolation varies significantly depending on which assumptions we use, the confidence intervals have been widened to reflect the range of possible assumptions.
- 3.18 Any bias resulting from the assumptions that underpin the extrapolations, if used carefully and consistently, should not distort comparisons over time. However, these estimates place even greater weight on the new cases within the sample than do the estimates for the expenditure covered by the sample. Therefore their confidence intervals are wider still.

The Estimator Formula

- 3.19 To calculate the estimates of overpaid expenditure for the population represented by the sample from the HBR data, an 'estimator' formula is needed because the units of sampling are necessarily HB cases (with varying weekly payments), rather than units of expenditure. All the standard statistical options for this involve some potential bias, and the choice made will have had some effect on the results. In advance of the first HBR publication in December 2003, analysis of the possible confidence intervals and potential bias of the main options was carried out to inform this choice.
- 3.20 Three standard options were considered as the basis for the estimator formula for the expenditure-related estimates – the 'combined ratio estimator', the 'separate ratio estimator' and a third option³ which was discounted as it would have had an obviously problematic bias.
- 3.21 The analysis indicated that if the separate ratio estimator had been used, the 2002/3 headline estimate for HB overpaid due to fraud and error within the expenditure covered by the sample would have been around £25m higher.
- 3.22 The 'combined ratio estimator' was chosen as it had the smallest theoretical bias, and further analysis suggested that it would not have wider confidence intervals. As the same estimator is being used for all years, it is assumed that any bias resulting from the choice of estimator will not significantly distort comparisons over time.
- 3.23 The combined estimator calculates the percentage of expenditure overpaid in the following way. We gross up overpayments and weekly Housing benefit amounts per case by multiplying them by a grossing factor⁴. We then divide the total grossed up overpayment on sample cases in a particular client group and LA by the total grossed up Housing Benefit for cases in that client group and LA.
- 3.24 Multiplying this ratio by the total spend gives the monetary value of the amount of HB overpaid.

³ Based on the total HB expenditure rather than using the expenditure in each stratum.

⁴ The grossing factors are calculated using HB population caseload data.

Systematic Under-sampling of Recent Claims

- 3.25 There are a variety of other possible factors, besides those related to sample coverage and explicit stratification, which mean that some parts of the caseload may have been more likely to be selected in the sample than others.
- 3.26 The caseload data is used as the list from which the sample is randomly drawn. However, there is an unavoidable delay between sample selection and case review (because of the preview and other operational considerations) meaning that the review is not instantaneous. The main effect is that recently awarded cases within the scope of the sample were systematically less likely to be selected than cases that had been in payment for some time.
- 3.27 The effect is further compounded by the timing arrangements for the supply of caseload data from the LAs to the DWP. The supply of this data has been subject to great variability, in particular for the baseline period 2002/03 (for many LAs, the data was too old to be useful in deriving the adjustments for the sample bias).
- 3.28 It follows that the supply of the caseload data and the timing of the interviews determine the distribution of the age of cases, which in turn has an effect on the measurement of the level of fraud and error.
- 3.29 For LAs to be comparable, it is necessary to set a common point in time after the caseload data has been supplied to correct for the systematic under-sampling of recent claims.
- 3.30 The method for adjusting the under-sampling of recent claims uses actual caseload (population) data in addition to the sample data. Crucially, it uses the caseload data in two ways:
- The caseload is aged by eight weeks from the time the sample was chosen.
 - The random outflow of cases in the caseload (from sample selection to a point eight weeks after) is modelled by using an exponential decay model.
- 3.31 The method used in the analysis to correct for the systematic under-sampling of new cases increased the headline estimate for overpaid HB for the 2002/3 period by around £20m.

Measurement Process Imperfections

Fraud and Error Outside the Scope of the HBR

3.32 The following types of fraud or error are outside the measurement scope of the HBR and are currently not quantified:

- Fraud related to manipulation of a Local Authority's payment mechanisms, e.g. counterfeiting of cheques.
- Incorrectness occurring in HB payments because of errors or delays in the assessment of other DWP benefits or HMRC tax credits (other than some errors that affect eligibility for Income Support, Jobseeker's Allowance, Minimum Income Guarantee or Pension Credit), e.g. where an incorrect assessment of Disability Living Allowance might lead to an incorrect amount of HB being paid.

Errors Not Picked up by the Review

3.33 As with the other DWP exercises of this type, despite the careful and detailed design of the review process, it is likely that some instances of fraud or error, e.g. committed by the determined fraudster, would not be picked up where present in the cases selected for review, even with perfect compliance with the specified review process. As a result, some HB fraud and error will be missed by the measurement system.

3.34 At present, there is no means of accurately quantifying the fraud and error that is missed. The following provides some indirect evidence about it:

- It is possible for an incorrect case to have been recorded in the field mistakenly as correct. Since only 25% of cases recorded as correct are validated in the field or centrally (see Section 5), there is the potential for some fraud and error to be missed, causing an understatement in the estimates. Analysis of the data recorded on the results of validation suggests that this is at most around £20m annually.
- *Table C, part 2d* shows the estimated amount paid to cases that are left with unresolved suspicions of fraud (excluding suspected non-residence), even after a fraud investigation. For the purposes of the main estimates, this expenditure is assumed to have been paid correctly, though some of them may have been fraudulent. However, as these cases have been the subject of a full fraud investigation that could not establish fraud or error, it is unlikely that the understatement related to them is this large.

- 3.35 For the purposes of comparisons across time, it is assumed that the fraud and error that is missed by the review process will be roughly constant over time, or subject to only random fluctuations. The latter would have an effect roughly comparable to a slight widening of the confidence intervals.

Unresolved Suspicion of Incorrectness

- 3.36 There are some cases where a suspicion of fraud or error arose during the course of the review, but for which it was not possible for the HBR processes to establish correctness or incorrectness conclusively. These are categorised as 'non-residence' or 'causal link', or if there remains an unresolved suspicion after completion of a fraud investigation and the case is not suspected of non-residence, then it is assumed to be correct.

Non-residence

- 3.37 A special subset of non-residence cases are cases where the review process, taken to its full extent, is unable to locate or contact the claimant, so there is a strong suspicion remaining, but non-residence on the review date cannot be proven.
- 3.38 The survey fieldwork process is designed to ensure that meaningful information is recorded for the analysis. Detailed information is recorded on the actions taken during the review, the observations made, and the evidence obtained. This has been analysed, along with other data, e.g. on whether the cases involved were paid HB (and other benefits) at a later date and at what address, using a modelling approach to produce estimates of the probabilities that the cases involved were genuinely non-residence on the date of the interview.
- 3.39 The modelling approach consists of three main parts:
- 3.40 For cases where, following the review, a DWP system recorded a change of address, the probability that the case was actually non-residence at the time of the review was derived from a model that was based around the length of time between the HBR review date and the date for the change of address that was recorded on the DWP system. The model compared the patterns of these lengths of time for those cases where non-residence was established, with those for cases where non-residence could not be established. As expected, analysis highlighted that the greater the period of time elapsed between the HBR review date and the change of address recorded on a DWP system, the less likely it was that the case was established as actually non-residence at the time of the review.
- For cases where the DWP systems did not record a change of address, or where the customer was not on a DWP system, an alternative model was used to estimate the probabilities that cases were actually non-residence. This

involved using the additional data items collected during the further investigations of non-residence to partition the data into subgroups of cases that had relatively high numbers of instances where the HBR process came to a conclusion of non-residence compared with instances where the HBR process confirmed residence, or vice-versa. Probabilities were then calculated using the proportions within each of these subgroups.

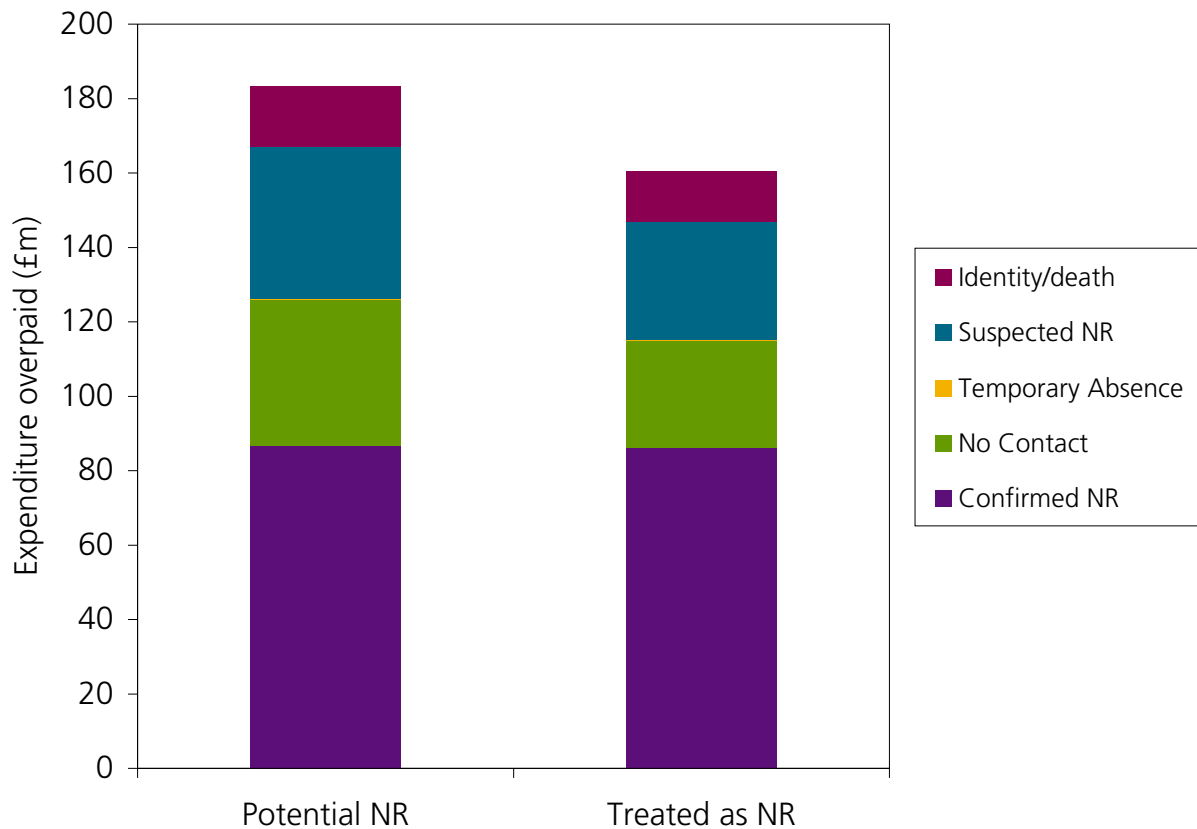
- Finally, for cases where it was not possible to collect the additional data needed to apply the modelling steps described above, a default probability that a case was non-residence was used (calculated as the average probability derived from the methods above).

3.41 On the basis of the data recorded, the estimates for expenditure paid to cases where the HBR process has left an unresolved suspicion of non-residence are shown in *Table C, part 2a*. The modelling approach currently estimates that around two thirds of this is actually paid incorrectly.

3.42 *Figure 1* opposite compares the non-residence estimates in the report to what they would have been without this modelling, i.e. if we assumed all the suspected non-residence cases were genuinely non-residence. There are five different categories for non-residence, I have described these below:

- Identity/death: A false identity has been used in the claim, or the claimant has died. We think all the errors in this category are due to claimant death.
- Suspected Non-residence: Non-residence is suspected but not proven, and there was some contact made with the claimant.
- Temporary Absence: The LA is paying the claimant HB as a permitted temporarily absent case, but there is evidence that the claimant should either have never qualified as temporarily absent or has breached the HB rules for temporary absence.
- No Contact: Non-residence is suspected but not proven, and there was no contact made with the claimant by either the Review Officer or Fraud Investigator.
- Confirmed Non-residence: Non-residence at the address is proven.

We apply the probability modelling to all these errors except confirmed non-residence.

Figure 1: Breakdown of the non-residence estimates

3.43 Remaining limitations and uncertainties still surrounding this modelling approach include:

- A small number of cases were classified as residence based on judgements made by Local Authorities using evidence that may have been weaker than the HBR process would normally seek to obtain.
- The probabilities were necessarily estimated from a small sample of cases.
- The cases used in these analyses were those that were subject to special post-validation scrutiny by the central HBR team. Some other cases were also initially suspected of non-residence but quickly determined to be resident and therefore were not scrutinised further (see *part 2b* in the tables). The process for making this decision has been examined and standardised.
- A final uncertainty has been caused by a lack of information for some cases. For cases where the HBR process was complete, but where full details about the cases were not available, the initial database categorisation was used, without further investigations or data gathering taking place. For cases

where an unresolved suspicion of non-residence was identified, but the details required for the modelling were missing, a default probability for whether the case was non-residence was applied. These cases account for only a small amount of the total expenditure in each year.

- 3.44 Sensitivity analysis shows that the headline estimates could have been around £10m higher or lower, if slightly different decisions had been taken when modelling the probabilities of non-residence. However, this is in addition to uncertainty related to the choice of modelling approach itself.

Causal Link

- 3.45 Another group of cases where the measurement process fails to establish incorrectness conclusively occurs where a suspicion of fraud is observed during the interview (or attempted interview), and the customer terminates or reduces benefit shortly afterwards, saying that their circumstances have just changed (which can make effective fraud investigation impractical). If such cases satisfy a strict 'causal link' test, requiring there to be a strong reason to suppose that the termination was a result of the interview (or attempted interview), they are recorded as incorrect in the fieldwork stage of the process. It is assumed that 100% of these cases are incorrect. *Table C, part 2c* shows how much this contributed to the headline results.
- 3.46 It is possible that some cases would be recorded as incorrect as a result of the causal link criteria when they are actually correct, e.g. a customer preparing to start work or a partner preparing to move in at the time of the interview and this resulting in suspicion. It is assumed that such cases would be rare, so that any overstatement in the estimates due to assuming that 100% of causal link cases are actually incorrect will be small.
- 3.47 It is also possible that because of some of the subjectivity involved, the causal link rule itself is applied with different degrees of strictness for different review cases or for different periods of time. The application of the rule is checked closely. There is no firm evidence for whether it was applied differently in more recent years compared with 2002/3, but the large figure (£50m) in 2002/3 was mainly due to a single high value sample case, so any differences do not suggest that the rule has been applied inconsistently.

Timing of HB Payments

- 3.48 The HBR review process aims to assess and record whether the circumstances of a customer on the day they are reviewed (i.e. in most cases, interviewed) are exactly the same as those upon which the HB assessment for that case on that day is based. However, the HB payment that is made for the review date will generally be

made on a different day, because HB is paid periodically, either in arrears or advance (most often four weeks in arrears). This gives rise to two effects:

- *Arrears:* If HB is paid in arrears, then the case is reviewed before the date of payment. If the case is found to be incorrect, it is possible that the error would be corrected between the interview and the payment, so that the HB is actually paid correctly, but is recorded by the review as incorrect. We therefore make a downward adjustment to the estimates to account for the resulting overstatement of error.
- *Advance:* If HB is paid in advance, then the case is reviewed after the payment has already been made. If the payment was made incorrectly, but the error was then corrected between that date and the review, then the case will be recorded as correct, even though the actual payment was wrong. We therefore make an upward adjustment to the estimates to account for the resulting understatement of error.

3.49 The methodology developed to make these adjustments involves modelling the rates at which errors would be corrected, in the absence of the HBR, using data recorded on the duration of identified overpayments for different groups of cases, and applying this to the data on the payment dates and periodicities of the sample cases.

3.50 There is additional uncertainty surrounding the HBR results as a result of this adjustment. This is because:

- Sample data is used in making the adjustment.
- The methodology itself involves a simplification of reality in order to make use of that data.
- Some of this data, in particular the recorded start dates for identified over- and underpayments, have known problems with quality.

3.51 However, rough sensitivity analysis suggests that, allowing for various realistic variations in the parameters used in the adjustment, the extra uncertainty is unlikely to be of the order of more than £10m.

3.52 If all the necessary data is recorded accurately and the methodology for the adjustment is used consistently over time, any bias arising from inaccuracy in the adjustment should not distort comparisons across time. However, the extra uncertainty arising from the fact that the adjustment is based on sample data will have an effect roughly comparable to a slight widening of the confidence intervals.

- 3.53 *Table C, part 5a* shows the downward adjustment made for the arrears effect, and *part 5b* shows the upward adjustment made for the advance effect. Therefore, subtracting *5b* from *5a* gives the overall reduction to the headline estimate for HB overpaid due to fraud and error in the expenditure within the scope of the sample.

Interference with Subject Matter

- 3.54 There is some scope for the measurement process itself to affect the correctness of cases being reviewed before their HBR assessment. There are a number of ways in which this could occur.
- 3.55 These include various scenarios where action is underway or could begin on a case during the review, e.g. where a fraud investigation has started prior to the review, or a notification of a change of circumstances is outstanding at the start of the review or arrives at the LA during it. The review process defines what should be done in these instances in a way aimed at minimising any bias to the results. It is currently assumed that any bias in the results arising from effects of interference is not significant, except for that due to receipt of change of circumstances, for which we make an adjustment (introduced due to a change in the methodology from 2005/6, see paragraph 3.57).
- 3.56 Measurement interference could also occur if knowledge that the review is taking place significantly affects the behaviour of LA or DWP staff or customers, in ways that are not specifically addressed by the HBR process. The HBR process continuously monitors for the possibility of this, but has not revealed any review outcomes that have been affected in this way. Therefore, it is assumed that the results have not been affected significantly.

Receipt of Change of Circumstances Notification during Review Period

- 3.57 The guidance for the way LAs are asked to handle cases where the LA receives new information about a claimant selected for the HBR sample has changed. For 2002/3 the instruction was to act on the notification of change of circumstances (e.g. an increase in earned income) if it was received before the claimant had been interviewed. For 2003/4 and 2004/5 these cases were abandoned. However, this led to wasted effort because in many cases a significant amount of work had been carried out into reviewing a sample case before the notification of a change of circumstances arrived at the LA.
- 3.58 For 2005/6 the guidance was changed so that these sample cases are not abandoned, and any notification of change of circumstances is acted on. When reviewing the case, the RO is asked to restore it to how it was at the point the LA was notified of the sample and record any errors found on the case. Within the analysis IFD have treated these errors by separating the cases involved into those for which notification of a change of circumstances arrived *before* the LA was

notified of the sample and those *after* the LA was notified of the sample. Only the errors on those cases for which notification of change of circumstances had arrived *before* the LA was notified of the sample have been included within the estimates of official error.

- 3.59 For some sample cases the date on which notification of a change of circumstances had arrived with the LA was unclear. These cases were assigned to either the before or after groups according to the proportion of complete cases falling into each of these groups.
- 3.60 The overall effect of this adjustment is to reduce the headline estimate for HB overpaid due to fraud and error in the expenditure within the scope of the sample. This is shown in *part 6* of the tables.

Incomplete Measurement Data

- 3.61 There are some instances where an error causes a 'passporting benefit' (either Income Support, Jobseeker's Allowance, Minimum Income Guarantee or Pension Credit) to cease and so the 'passporting' of the customer by the LA to 'full' HB also ceases, but where the customer may still have an 'underlying entitlement' to HB. For some cases the RO was able to estimate the underlying entitlement. *Table C, part 3a* shows how much of the expenditure was affected and how much of this is estimated to have been overpaid.
- 3.62 For some other cases, the RO identifies that there may be an underlying entitlement but does not have all the information required in order to calculate or estimate its value. For these cases it is assumed, based on analysis of a comparable sample of cases where the underlying entitlement is known, that on average, customers would still be entitled to 70% of the full HB award. *Table C, part 3b* shows the expenditure thus estimated to have been overpaid.
- 3.63 This assumption presents additional uncertainty for the headline results for three reasons:
- It is based on a small sample.
 - The assumption that the cases where underlying entitlement could be estimated were comparable to those where it could not, is untested.
 - There is some judgment required from the RO about whether there could be an underlying entitlement.

- 3.64 Provided that the method applied can be and is used consistently over time, and the HBR process continues to deal with these cases as at present, any bias arising from inaccuracy in the assumption should not distort comparisons over time. However, the use of sample data in its estimation plus the element of judgement in the fieldwork will have an effect roughly equivalent to a slight widening of the confidence intervals.
- 3.65 For a number of other cases, the HBR process had not been completed at the time of the analysis, usually because fraud investigations were still to be completed. Predictions for the final outcomes for these cases have been made in the analysis using either the RO's estimation of the most likely outcome, or the results from the reviews of similar cases that had been completed. *Table C, part 4b* shows how much expenditure these cases account for, and how much of this is estimated to have been overpaid.
- 3.66 For a further small number of cases, the HBR process had been completed, but they had not gone through the final validation phase. *Table C, part 4a* shows how much expenditure has been overpaid on these cases.

4. Data Quality and Compliance with HBR Processes

- 4.1 A statistical survey on this scale will always present data quality challenges. In addition, the unavoidable complexity of the process that is required to review the accuracy of a very complex benefit, and the complexity of the reassessments that are needed when incorrectness is identified, present a substantial additional challenge in managing the quality of the resulting statistical dataset.
- 4.2 Further, the reliability of the results presented in this report and future reports is critically dependent upon the compliance of the staff carrying out the survey fieldwork with the specified Housing Benefit Review process, and on the resulting data being recorded accurately on the survey database for use in the statistical analysis.
- 4.3 There are several main ways in which the results can be affected by poor data quality and non-compliance with the HBR process:
- Incorrect application of the sampling process, incorrect abandonment or timing issues can introduce sample bias.
 - It is possible for some cases that are in error to be recorded as benefit correct. That is, the error has been missed.
 - Conversely, a case may be recorded as incorrect when it is in fact correct.
 - Because the assessment of an error, and the calculation of its value, can necessarily be very complex, it is possible for the amount of error, or its categorisation, to be recorded incorrectly.
 - Other information, such as the date of last payment, may also be recorded incorrectly, further affecting the results.

Data Quality Assurance

- 4.4 A number of different formal processes are in place, and various additional activities have been carried out, to manage, monitor and provide assurance about compliance with the specified process and about data quality.

Clerical Validation

- 4.5 A first tier clerical validation process is carried out by the fieldwork teams locally. A second tier clerical validation process is then carried out by the central project team in Leeds. The field manager also checks a proportion of cases in between these tiers. Validation involves a full review of all the paperwork gathered by the Review Officer, including the actions taken and conclusions reached in the HBR review of a case.
- 4.6 100% of all cases with errors or suspected errors recorded, or which had been referred to a fraud team for fraud investigation but recorded as correct, were checked by both the field teams and the central project team.
- Data recorded on field validation so far has identified that in around a quarter of cases the values of weekly errors recorded are incorrect. Correction of these mistakes at central validation adds no more than £50m to the overall headline estimate.
 - It does appear however, that the quality of the data is improving, as the proportion of cases found with mistakes has declined since the baseline year.
- 4.7 25% of cases recorded as correct, and not previously referred for fraud investigation, were checked by the field teams. Only 25% of these cases (i.e. about 6% of all cases recorded as correct) were then subjected to a further check by the central project team.
- Data recorded so far on the findings of field validation shows that around 2% of cases recorded by ROs as being correct should have been recorded as being incorrect. However, less than 1% of the cases validated involved overpayment which would affect the main headline estimate for HB overpaid due to fraud and error. For most of these cases, the errors identified were only of small value (i.e. less than £5).
 - Since only a sample of these cases recorded as correct are subject to validation, each mistake found by validation is potentially much more critical to the results than mistakes found by validation of cases categorised as incorrect, since it provides an indication of mistakes that will be going unidentified and uncorrected amongst other cases because they are not validated.
- 4.8 100% of abandoned cases have been subject to checking by the central project team in Leeds to check whether they fall within the tightly defined criteria for abandonment.

- Only a small handful of cases in each year have been found to have been abandoned incorrectly. It is not considered that this would have caused significant bias to the sample.

Checking of Known Groups of Difficult Cases

- 4.9 All cases recorded as either confirmed or suspected of non-residence, or which were referred for fraud investigation as suspected of non-residence but later recorded as correct, were subject to further detailed scrutiny by the central project team in Leeds (by separate staff from those that had carried out the validation work). Departmental computer systems for HB and other benefits were also examined, to provide further information (mainly address-specific research) for this specific group of cases.
- 4.10 For cases where HB was still in payment following the review process, the appropriate LAs were also contacted to obtain further information regarding the customer's HB claim history. This was aimed both at ensuring that the standard data recorded on them was accurate, and providing additional information on each case for use in the analysis.

Automatic Checking (datacleaning)

- 4.11 A lengthy set of automatic checks is run regularly on the dataset, to identify inconsistencies between data items (such as dates that contradict common sense), and implausible values. Whilst these did not test for every imaginable inconsistency in the data, they tested those that were judged to be most critical to the results.
- 4.12 Around 5% of cases are found with inconsistencies, but almost all of these are corrected before the analysis for the report. In the small number of remaining cases, true values for inconsistently recorded data were estimated as part of the analysis.

Other Data Quality Issues

- 4.13 Occasionally, further instances of incorrect data will be identified by analysts in the DWP Information Directorate as a natural part of their work to produce the estimates. This leads to a small number of corrections after validation.
- 4.14 The DWP Audit Validation Team (AVT) during 2005 carried out further clerical validation work, on a small sample of cases that had already been through the full validation procedures, to examine compliance with the HBR methodology and assess the reliability of the validation process. This work was limited in scope, due to the small sample taken, but it identified a problem around the distinction

between Claimant Error and Official Error which has caused some errors to be categorised wrongly.

- 4.15 Prior to this, the survey process and methodology had also been subject to separate reviews by the Benefit Fraud Inspectorate and by DWP Internal Assurance Services.
- 4.16 Although the validation process itself should correct the mistakes that it finds, there is a good chance that some will be missed. It is also possible that mistakes are made at validation, which could create data errors. This adds extra uncertainty to the HBR results and its impact on the results may be substantial.
- 4.17 At present it is unknown to what extent this might bias the results, since the effects of estimated positive and negative errors might roughly balance out. As discussed in paragraph 4.6, the correction of mistakes at central validation is possibly adding up to £50m to the overall headline estimate for each 12-month period. It is therefore possible that a similar amount of error is missed, further biasing the results.

Conclusion

- 4.18 The various pieces of information, and in particular the results of the validation activity, show that there are some significant problems with data quality and process compliance occurring during data-gathering.
- 4.19 Although the processes in place should have led to most of the mistakes found being corrected, it is likely that some mistakes will have been missed (or made) at central validation, particularly in the weekly values of errors recorded. This adds extra uncertainty to the results, which is currently not quantified. However, the various further corrections that have been made to the data after central validation across the period of the exercise suggests that it is possible that the impact of the mistakes remaining may be substantial.
- 4.20 Whilst this problem can be regarded in part as a probable consequence of the complexity of the task of measuring HB fraud and error, it needs to be addressed for the purposes of future results, and the effective use of the HBR results for measuring progress against the PSA target to reduce HB fraud and error. A performance improvement plan for the survey work has been developed by the central project team, and there is some evidence that data quality has improved. Further monitoring and analysis of this issue, and its potential impact upon the resulting statistical estimates from the exercise, will be carried out.

The Tables: Derivation of Headline Estimates from Sample Cases

A	For the combined caseload Percentage of caseload with overpayments	Baseline			Latest
		Apr 02 Mar 03	Apr 03 Mar 04	Apr 04 Mar 05	Apr 05 Mar 06
Group 1: Cases where the HBR would establish incorrectness.	1a) Fraud, Claimant Error or LA, DWP or Process Error:	14.0%	14.5%	15.4%	18.0%
Group 2: Cases where the HBR process would identify a suspicion that it could not resolve.	2a) Cases resulting in a categorisation of suspected non-residence: Percentage estimated to be actually incorrect	0.7% 0.4%	0.6% 0.3%	0.7% 0.4%	0.8% 0.5%
	2b) Cases referred to DWP or LA fraud investigators due to suspicion of non-residence but subsequently categorised as resident: Percentage estimated to be actually incorrect	1.3% 0.0%	1.7% 0.0%	2.3% 0.0%	1.9% 0.0%
	2c) Benefit terminated during review but after a strong suspicion was identified ('causal link'): Of which 100% are assumed to be actually incorrect	0.5% 0.5%	0.2% 0.2%	0.3% 0.3%	0.3% 0.3%
	2d) Suspicion unresolved after a thorough fraud investigation (excluding suspected non-residence): Of which 0% are assumed to be actually incorrect	0.6% 0.0%	0.3% 0.0%	0.4% 0.0%	0.4% 0.0%
	Estimated Total Incorrectness	14.9%	15.0%	16.0%	18.7%
Cases within the above estimates for which the level of fraud and error is estimated due to limitations in the HBR process					
Group 3: Cases where the HBR process would establish incorrectness but not be able to establish the exact amount of incorrectness.	3a) Where the passporting benefit ceases but the RO estimated an underlying entitlement to standard HB: Percentage estimated by the RO to be actually incorrect	0.3% 0.3%	0.3% 0.3%	0.3% 0.3%	0.4% 0.4%
	3b) Cases where the passporting benefit ceases and the RO cannot estimate an underlying entitlement to standard HB: Percentage estimated by IFD to be actually incorrect	0.5% 0.5%	0.6% 0.6%	0.5% 0.5%	0.5% 0.5%
	3c) Cases where the passporting benefit ceases and the RO decides there is no underlying entitlement to standard HB: Percentage estimated to be actually incorrect	1.2% 1.2%	0.9% 0.9%	1.2% 1.2%	1.0% 1.0%
Group 4: Cases that had not completed the full HBR process at the time the data was provided for this report.	4a) Cases with errors that completed the HBR process in the field but not the final validation phase: Percentage estimated to be actually incorrect	0.0% 0.0%	0.2% 0.2%	0.1% 0.1%	0.1% 0.1%
	4b) Cases estimated due to late completion of fraud investigations and problems with data transfer: Percentage estimated to be actually incorrect	0.0% 0.0%	0.1% 0.0%	0.1% 0.0%	0.6% 0.1%
Group 5: Cases where the circumstances of the HB claim might be different on the day of interview from the day of payment.	5a) Cases where the HBR establishes incorrectness but there is a chance that it would have been corrected before the HB was paid, as it was paid in arrears: Percentage estimated to have remained incorrect	10.1% 9.3%	8.4% 7.7%	9.9% 9.0%	12.6% 11.6%
	5b) Cases where the HBR establishes correctness but the HB was paid in advance, so might have been incorrect at the time of payment: Percentage estimated to have been incorrect	35.0% 0.2%	42.7% 0.2%	42.0% 0.2%	38.3% 0.2%
Group 6: Cases with an error affected by the New Post adjustment (i.e. the error does not contribute to the estimates).		N/A	N/A	N/A	1.8%

B	For the combined caseload Percentage of expenditure overpaid	Baseline			Latest	
		Apr 02 Mar 03	Apr 03 Mar 04	Apr 04 Mar 05	Apr 05 Mar 06	
Group 1: Cases where the HBR would establish incorrectness.	1a) Fraud, Claimant Error or LA, DWP or Process Error:	3.8%	4.0%	4.1%	4.5%	
Group 2: Cases where the HBR process would identify a suspicion that it could not resolve.	2a) Cases resulting in a categorisation of suspected non-residence: Percentage estimated to be actually incorrect	0.7% 0.4%	0.5% 0.3%	0.7% 0.5%	0.7% 0.5%	
	2b) Cases referred to DWP or LA fraud investigators due to suspicion of non-residence but subsequently categorised as resident: Percentage estimated to be actually incorrect	1.3% 0.0%	1.7% 0.0%	2.4% 0.0%	1.9% 0.0%	
	2c) Benefit terminated during review but after a strong suspicion was identified ('causal link'): Of which 100% are assumed to be actually incorrect	0.4% 0.4%	0.2% 0.2%	0.2% 0.2%	0.2% 0.2%	
	2d) Suspicion unresolved after a thorough fraud investigation (excluding suspected non-residence): Of which 0% are assumed to be actually incorrect	0.6% 0.0%	0.4% 0.0%	0.3% 0.0%	0.4% 0.0%	
	Estimated Total Incorrectness		4.6%	4.5%	4.8%	5.0%
	Cases within the above estimates for which the level of fraud and error is estimated due to limitations in the HBR process					
Group 3: Cases where the HBR process would establish incorrectness but not be able to establish the exact amount of incorrectness.	3a) Where the passporting benefit ceases but the RO estimated an underlying entitlement to standard HB: Percentage estimated by the RO to be actually incorrect	0.4% 0.1%	0.4% 0.1%	0.4% 0.1%	0.5% 0.1%	
	3b) Cases where the passporting benefit ceases and the RO cannot estimate an underlying entitlement to standard HB: Percentage estimated by IFD to be actually incorrect	0.5% 0.1%	0.6% 0.2%	0.7% 0.2%	0.6% 0.2%	
	3c) Cases where the passporting benefit ceases and the RO decides there is no underlying entitlement to standard HB: Percentage estimated to be actually incorrect	1.2% 1.2%	1.0% 1.0%	1.4% 1.4%	1.1% 1.1%	
Group 4: Cases that had not completed the full HBR process at the time the data was provided for this report.	4a) Cases with errors that completed the HBR process in the field but not the final validation phase: Percentage estimated to be actually incorrect	0.0% 0.0%	0.1% 0.1%	0.1% 0.1%	0.0% 0.0%	
	4b) Cases estimated due to late completion of fraud investigations and problems with data transfer: Percentage estimated to be actually incorrect	0.0% 0.0%	0.1% 0.0%	0.1% 0.1%	0.8% 0.2%	
Group 5: Cases where the circumstances of the HB claim might be different on the day of interview from the day of payment.	5a) Cases where the HBR establishes incorrectness but there is a chance that it would have been corrected before the HB was paid, as it was paid in arrears: Percentage estimated to have remained incorrect	3.6% 3.2%	3.1% 2.8%	3.4% 3.0%	3.7% 3.3%	
	5b) Cases where the HBR establishes correctness but the HB was paid in advance, so might have been incorrect at the time of payment: Percentage estimated to have been incorrect	33.6% 0.0%	38.9% 0.1%	38.9% 0.1%	35.1% 0.1%	
Group 6: Reduction of total estimate due to zeroing errors in the New Post adjustment.		N/A	N/A	N/A	8.5%	

C	For the combined caseload Expenditure overpaid	Baseline		Latest		
		Apr 02 Mar 03	Apr 03 Mar 04	Apr 04 Mar 05	Apr 05 Mar 06	
Group 1: Cases where the HBR would establish incorrectness.	1a) Fraud, Claimant Error or LA, DWP or Process Error:	£400m	£420m	£460m	£540m	
Group 2: Cases where the HBR process would identify a suspicion that it could not resolve.	2a) Cases resulting in a categorisation of suspected non-residence: Amount estimated to be actually incorrect	£80m £40m	£50m £30m	£80m £50m	£80m £60m	
	2b) Cases referred to DWP or LA fraud investigators due to suspicion of non-residence but subsequently categorised as resident: Amount estimated to be actually incorrect	£140m £0m	£180m £0m	£270m £0m	£230m £0m	
	2c) Benefit terminated during review but after a strong suspicion was identified ('causal link'): Of which 100% are assumed to be actually incorrect	£50m £50m	£20m £20m	£20m £20m	£20m £20m	
	2d) Suspicion unresolved after a thorough fraud investigation (excluding suspected non-residence): Of which 0% are assumed to be actually incorrect	£60m £0m	£40m £0m	£30m £0m	£50m £0m	
	Estimated Total Incorrectness		£490m	£470m	£540m	£600m
	Cases within the above estimates for which the level of fraud and error is estimated due to limitations in the HBR process					
Group 3: Cases where the HBR process would establish incorrectness but not be able to establish the exact amount of incorrectness.	3a) Where the passporting benefit ceases but the RO estimated an underlying entitlement to standard HB: Amount estimated by the RO to be actually incorrect	£50m £10m	£40m £10m	£50m £10m	£60m £10m	
	3b) Cases where the passporting benefit ceases and the RO cannot estimate an underlying entitlement to standard HB: Amount estimated by IFD to be actually incorrect	£60m £20m	£60m £20m	£80m £20m	£70m £20m	
	3c) Cases where the passporting benefit ceases and the RO decides there is no underlying entitlement to standard HB: Amount estimated to be actually incorrect	£120m £120m	£100m £100m	£150m £150m	£130m £130m	
	Group 4: Cases that had not completed the full HBR process at the time the data was provided for this report.	4a) Cases with errors that completed the HBR process in the field but not the final validation phase: Amount estimated to be actually incorrect	£0m £0m	£10m £10m	£10m £10m	£0m £0m
	4b) Cases estimated due to late completion of fraud investigations and problems with data transfer: Amount estimated to be actually incorrect	£0m £0m	£10m £0m	£10m £10m	£100m £20m	
Group 5: Cases where the circumstances of the HB claim might be different on the day of interview from the day of payment.	5a) Cases where the HBR establishes incorrectness but there is a chance that it would have been corrected before the HB was paid, as it was paid in arrears: Amount estimated to have remained incorrect	£380m £350m	£330m £290m	£380m £340m	£440m £390m	
	5b) Cases where the HBR establishes correctness but the HB was paid in advance, so might have been incorrect at the time of payment: Amount estimated to have been incorrect	£3610m £0m	£4080m £10m	£4360m £10m	£4180m £10m	
	Group 6: Reduction of total estimate due to zeroing errors in the New Post adjustment.		N/A	N/A	N/A	£60m

Notes to the Tables

The tables illustrate how the estimates were derived from the sample data – including the impact of estimating results where the HBR could not establish whether or not a case was correct, and the impacts of various other estimates and adjustments made to the sample data. Figures that are not bold relate to HB expenditure and bold figures relate to expenditure overpaid.

- N1. All figures in the tables refer only to the 85% of the total HB expenditure and caseload that the HBR sample was able to examine.
- N2. The expenditure values are rounded to the nearest £10m, to reflect the level of accuracy in the figures. Columns do not always sum to totals because of this rounding.
- N3. The figures showing amounts of expenditure are calculated by multiplying the percentages of incorrectly paid expenditure by the appropriate total amounts of HB expenditure, which are taken from the annual Budget Report. Around £14bn was spent on HB in 2005/06. Not all of this is within the scope of the HBR sample, so the figures for 2005/06 refer to around £12bn of expenditure. As a rough rule of thumb, this means that 1% of HB expenditure represents around £100m. These figures include Discretionary Housing Payments, which accounted for £20m of expenditure in each year.
- N4. See Annex B of the main report for the definition of 'incorrect' that was used in the analysis.

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