

I. Scope and Timing

- A. The following outline on how to remediating borrowers applies loans originated from April 1, 2011 to December 31, 2013.
- B. Remediation for loans originated between April 1, 2011 and March 31, 2012 shall be completed within 30 days of a federal district court's approval of the this Consent Order. Remediation for loans originated between April 1, 2013 and December 31, 2013 shall be completed within 30 days of the court's approval of this Consent Order or February 14, 2014, whichever is later.

II. Disparities and Damages Calculation

- A. For each protected class, the average disparities will be calculated using the proportional method based on the BISG probability proxies. Aside from the BISG probabilities, the model should contain no other explanatory variables. Disparities will be estimated separately by period – 4/1/2011 to 3/31/2012, 4/1/2012 to 3/31/2013 and 4/1/2013 to 12/31/2013. Hereinafter, "PC" refers to protected classes that show material and significant disparity in a period.

Comment [SW1]: If we allow any controls, this will need to be modified.

- B. Using the disparity estimates from I.A, the amount of *Total Damages as of Date T* will be calculated as follows.
 - 1. For every borrower *i* whose BISG probabilities of being one or more of the PCs are greater than zero -
 - a. Calculate an adjusted contract rate ($ACR_{i,PC}$) for each PC by subtracting the full estimated disparity for the PC from borrower *i*'s contract rate. For example, for borrower *i* whose BISG probabilities of being African American (AA) and Hispanic (Hisp) are greater than zero, calculate two adjusted contract rates.

$$ACR_{i,AA} = \text{actual contract rate}_i - \text{estimated disparity for AA}$$

$$ACR_{i,Hisp} = \text{actual contract rate}_i - \text{estimated disparity for Hispanic}$$

- b. Construct adjusted loan amounts ($ALA_{i,PC}$) by allocating the fraction of dollars to a PC based on the BISG probabilities.

$$ALA_{i,AA} = (\text{loan amount}_i) \times \text{Prob}(\text{borrower } i = \text{AA})$$

$$ALA_{i,Hisp} = (\text{loan amount}_i) \times \text{Prob}(\text{borrower } i = \text{Hispanic})$$

- c. Calculate the total difference in payments between the time of origination and Date *T*, assuming loan amount = *ALA* and comparing the actual contract rate with *ACR*.

$$Damages_{i,AA} = \text{The difference in payment stream using the actual contract rate vs. } ACR_{i,AA} \text{ assuming loan amount} = ALA_{i,AA}$$

$$Damages_{i,Hisp} = \text{The difference in payment stream using the actual contract rate vs. } ACR_{i,Hisp} \text{ assuming loan amount} = ALA_{i,Hisp}$$

$$Damages_i = Damages_{i,AA} + Damages_{i,Hisp}$$

2. In the event that a borrower prepaid or defaulted on a loan before Date *T*, *Damages* will be calculated as of the prepay or default date. In the event that the loan was sold to another financial institution, calculate *Damages* as if the loan were held to maturity without default or prepayment and include all damages to the end of the loan term, not to Date *T* (because Ally cannot do note rate reduction for these loans).
3. *Total Damages as of Date T* = sum of *Damages*, for all borrowers. This amount will be distributed to borrowers following the steps in Paragraph III below.
4. Compensation for damages that continues from Date *T* to the end of the loan term will be done through a reduction in contract rate going forward following the steps in Paragraph IV below.

III. Distribution of *Total Damages as of Date T*

Comment [SW2]: This Paragraph describes how to divide *Total Damages* proportionally to only those PC members who paid greater than average NHW disparities.

A. Compensation Eligible Borrowers

1. Only borrowers with greater than zero probabilities of being one of the PCs are eligible.
2. Only borrowers who paid higher markups than the NHW average markup are eligible.

B. Determine Proportion

3. For every Eligible borrower, calculate the total difference in payments as of Date *T* between using the actual contract rate and the model-predicted rate if the borrower were NHW.¹ Calculate the Initial Estimated Compensation ("IEC") by multiplying the total difference by the sum of PC probabilities.

Example: If borrower *i* has Prob(AA) = 0.45, Prob(Hispanic) = 0.3 and Prob(NHW) = 0.25, $IEC_i = (0.45 + 0.3) * (\text{total difference in payments})$.

4. Calculate a second estimate of compensation (SEC) using the following formula:

$$SEC_i = (\text{Total Damages as of Date } T) \left(\frac{IEC_i}{\sum_{j \in \text{Eligible Borrowers}} IEC_j} \right)$$

5. If $SEC_i < \text{De Minimis Amount}$ (e.g., \$20), no compensation will be made to that borrower. The remaining borrowers, Final Compensation Recipients, will receive the following final estimate of compensation.

$$FEC_i = (\text{Total Damages as of Date } T) \left(\frac{IEC_i}{\sum_{j \in \text{Final Compensation Recipients}} IEC_j} \right)$$

¹ If the estimation model has no control other than BISG probabilities, this would be the average NHW markup.

IV. Note rate reduction for loan payments after Date T

A. Total Excess Markup

1. For every PC, calculate the *Total Excess Markup*_{PC} = average markup disparity for the PC * estimated number of PC borrowers.

B. Note Rate Reduction Eligible Borrowers

2. Only borrowers with greater than zero probabilities of being one of the PCs are eligible.
3. Only borrowers who paid higher markups than the NHW average markup are eligible.
4. Only borrowers whose loans have 3 or more months remaining as of Date T are eligible.

C. Calculate Amount of Note Rate Reduction

1. For each eligible borrower, calculate the probability-adjusted excess markup (*AEM*_{i,PC}) for each PC that the borrower has a positive BISG probability.

$$AEM_{i,AA} = \text{Prob}(\text{borrower } i = AA) (\text{Actual Markup}_i - \text{average NHW markup})$$

$$AEM_{i,Hisp} = \text{Prob}(\text{borrower } i = Hisp) (\text{Actual Markup}_i - \text{average NHW markup})$$

2. For each eligible borrower, calculate the note rate reduction separately for each PC (*NR*_{i,PC}) and sum the calculated reductions to get to the preliminary note rate reduction (*PNR*_i).

$$NR_{i,AA} = (\text{Total Excess Markup}_{AA}) \left(\frac{AEM_{i,AA}}{\sum_{j \in \text{Eligible Borrowers}} AEM_{j,AA}} \right)$$

$$NR_{i,Hisp} = (\text{Total Excess Markup}_{Hisp}) \left(\frac{AEM_{i,Hisp}}{\sum_{j \in \text{Eligible Borrowers}} AEM_{j,Hisp}} \right)$$

$$PNR_i = NR_{i,AA} + NR_{i,Hisp}$$

3. If *PNR*_i is less than a de minimis amount (e.g., 5 bps), remove borrower *i* from the set of eligible borrowers. Repeat C.2 above but with only the remaining eligible borrowers to calculate the Final Note Rate Reductions.

Comment [SW3]: It's probably not worthwhile to do note rate reduction if there is not much time left on the loan. I wrote 3 months here, but could be longer such as 6 months.

Suppose we exclude these loans from note rate reduction, query whether we should include these remaining months in the damages calculation. That is, for loans that will only have a few months left after Date T, we will calculate damages till maturity instead of as of Date T.

Comment [SW4]: I think it makes sense to have a de minimis amount for note rate reduction as well. Perhaps this should be 10 bps?