

## The Effect of the Principal Reduction Alternative (PRA) on Redefault Rates in the Home Affordable Modification Program (HAMP)

### Executive Summary

In 2012 the Making Home Affordable Program analyzed the effect of Principal Reduction Alternative (PRA) on modifications in the Home Affordable Modification Program. The key findings in that analysis were:

- Payment reduction is an important driver of HAMP modification performance.
- HAMP modification re-default rates also fall as the loan’s after-modification mark-to-market loan-to-value, or MTMLTV, ratio decreases (i.e. as the size of the loan’s current principal balance relative to the home’s value decreases).
- HAMP PRA participating servicers tend to use the principal reduction feature on loans that have relatively riskier credit characteristics than the overall HAMP population - borrowers with much lower credit scores and that are more seriously delinquent at time of modification.
- A logistic regression controls for these riskier characteristics. The regression shows that for a given payment reduction, homeowners who received a HAMP modification with principal reduction perform better than homeowners who receive a HAMP modification without principal reduction.

Due to the limited availability of seasoned PRA modifications in 2012, the original analysis focused on “early re-default”—meaning a modified loan goes 90+ days delinquent and loses good standing in HAMP within the first six months.

With the benefit of a higher volume of seasoned modified loans, Making Home Affordable has re-performed the analysis, confirmed the original findings, extended the window of observation to 24 months and shown that the default reducing benefit of Principal Reduction Alternative persists over time.

### Changes in Available Data

In March 2012, although PRA modifications had higher re-default rates than the remaining non-PRA modifications, the regression analysis demonstrated that PRA modifications performed better than non-PRA modifications with comparable risk factors. Subsequent vintages have performed better, so today even single-variable analysis shows PRA modifications performing better than HAMP modifications as a whole.

**Table 1: 2012 HAMP Performance without controlling for risk characteristics**

All Modifications		PRA Modifications	
Number of Permanent Modifications	Percent 90+ Days Delinquent at 6 months	Number of Permanent Modifications	Percent 90+ Days Delinquent at 6 months
800,613	5.8%	30,345	6.3%

Source: Making Home Affordable Program System of Record – data through March 2012

**Table 2: 2016 Tier 1 HAMP Performance without controlling for risk characteristics**

All Modifications		PRA Modifications	
Number of Permanent Modifications	Percent 90+ Days Delinquent at 6 months	Number of Permanent Modifications	Percent 90+ Days Delinquent at 6 months
1,278,498	5.5%	147,790	4.9%

Source: Making Home Affordable Program System of Record – data through March 2016

As we observed originally in 2012, however, PRA modifications still represent riskier loans. PRA modifications to date still have lower FICO scores, higher LTV ratios before modification, are more delinquent at the time of the trial modification.

**Table 3: Credit Characteristics All Modifications vs. PRA Modifications**

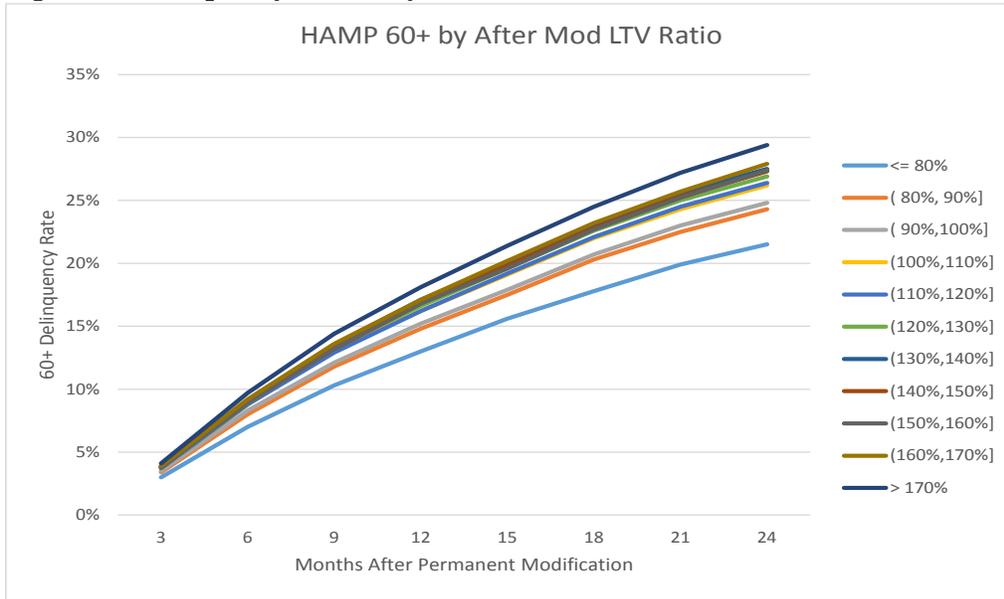
Measure	All Modifications		PRA Modifications	
	Mean	Median	Mean	Median
Months DLQ	7	5	11	7
Credit Score	578	565	571	560
Before Mod LTV	143.30%	125.00%	191.60%	163.70%
After Mod LTV	133.90%	115.00%	121.90%	115.00%
Monthly Gross Income	\$4,335	\$3,913	\$4,481	\$3,976

Source: Making Home Affordable Program System of Record – data through March 2016

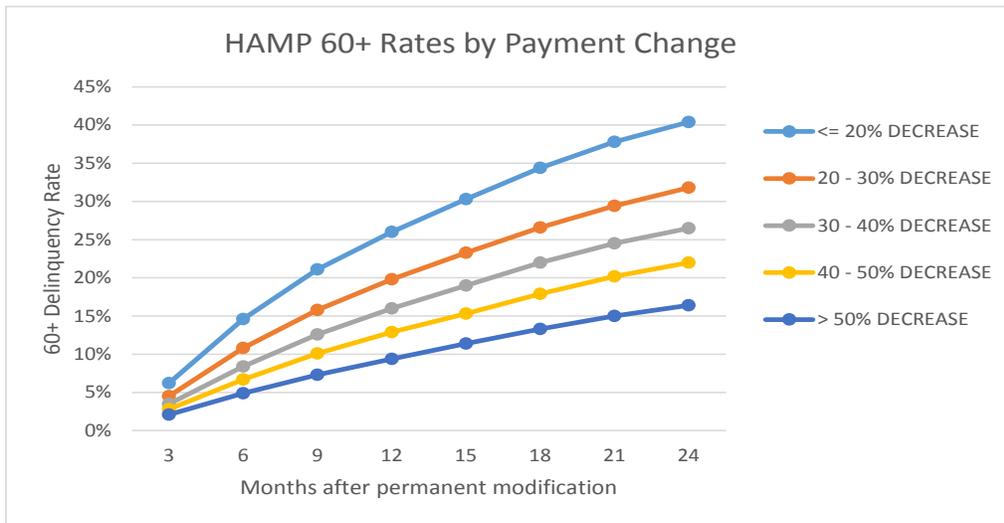
### New Model

The re-estimated logistic regression model uses permanent HAMP modifications aged 6 months or more as of March 2016. The new model largely uses the same control variables as the original study with only minor changes in how the variables enter the regression. Payment change and after-modification loan-to-value ratio were once again confirmed to be the most significant factors in predicting re-default.

**Figure 1: Delinquency Curves by Post-Modification MTMLTV**



**Figure 2: Delinquency Curves by Payment Change**



The regression results allow us to show the change in default likelihood attributable to the different modification features.

Table 4 below compares the default estimates using models for both 6- and 24-month regressions, estimated separately using both the original 2012 study population<sup>1</sup> and the full population of HAMP Modifications as of March 2016. The comparison shows estimates for a loan with 570 FICO score, 3 months delinquent, in a private label security, originated at 95% LTV, in Florida, loan aged 36 months at time of modification, 1 unit, \$180,000 UPB after capitalizing arrearages, 170% LTV ratio, and witnessing a 2% home price appreciation in the following 12 months. Unmodified, the model estimates the loan's probability of default by 24 months to be 94.6%. A HAMP modification reducing the monthly P&I payment by 20%-30% lowers default probability to 44.4%. The default probability for a HAMP modification with principal forbearance is 36.9% and with 29.1% for one with principal forgiveness down to 115% LTV. Probability estimates are fairly consistent between the two loan populations.

Study Population	6 Months		24 Months	
	Original Mar 2012	P-T-D Mar 2016	Original Mar 2012	P-T-D Mar 2016
Loans in estimation	614,450	1,222,112	610,571	1,133,918
A) No Payment Reduction	10.2%	10.7%	48.0%	48.2%
B) P&I Reduction, LTV = 170, No Forgiveness	4.1%	4.2%	24.9%	24.1%
C) P&I Reduction with Forbearance	3.9%	3.9%	21.5%	21.1%
D) P&I Reduction, with PRA Forgiveness <sup>2</sup>	3.6%	3.3%	20.5%	19.2%

## Conclusion

The new study confirms the effects observed in 2012 on a larger and more seasoned population of modified loans. HAMP modified loans with principal reduction perform better than loans without. The benefit of principal reduction is more significant at 24 months and more also more significant when evaluating the full population of permanent modifications.

## Appendix

[The original full-length paper](#) summarized the econometric analysis performed to evaluate the effect of principal reduction on the performance of loan modifications made under the Home Affordable Modification Program (HAMP). It was based on data related to modifications with principal reduction entered into the HAMP system of record by HAMP participating servicers in 2012.

<sup>1</sup> The original study had 620,673. 6,102 of these loans (mostly GSE) are no longer available for study due to data issues or missing data in IR2. Repurchased loans are an example of such an issue.

<sup>2</sup> As observed in the original analysis the model measures an effect from principal forgiveness unrelated to either the payment change or change in LTV. We cut this effect in half to conservatively correct for the possibility that it may represent borrower and servicer selection effects.