

A1 Cross-Border Robustness Check for State Statute Analysis

As discussed in Section 4, we compare the outcomes of borrowers located within 10 miles of a judicial/power of sale state boundary to help further control for differences between borrowers in judicial and power of sale states that could be driving our results. To carry out this analysis, we constructed 10-mile buffers around each boundary between a judicial and power of sale state. We then selected any ZIP codes with a centroid located within one of these buffers. We restricted our main sample to just those borrowers located within a boundary ZIP code, and in the case of borrowers located near multiple state boundaries, we assigned the closest relevant border. We then included the borders as fixed effects in our logit regressions of cure, foreclosure, and modification at the four time horizons of interest: 3, 6, 12, and 18 months after the borrower became seriously (90 days) delinquent. Because ZIP code level house price indices are not available for many sparsely populated areas (which tend to make up a number of the relevant state boundaries), we use county-level house price indices in these models.

We display the results for the 12-month horizon in Table 4 and Table A-7, though results for the other time periods are consistent and are available upon request. We find that at each time horizon, there is no evidence that borrowers in judicial states experience higher cure or modification rates than their counterparts in power of sale states. As compared to Table 4, Table A-7 demonstrates that our full-sample results are robust to using county-level house price indices, which allows for a greater sample size than when we restrict our sample to those borrowers for whom we have ZIP code level house prices.

A2 Robustness Checks for Right-to-Cure Policy Analysis

To be confident that the right-to-cure law improved neither the rates at which Massachusetts borrowers cured nor the rates at which they received modifications, we examined the sensitivity of the results to alternative model specifications and sample definitions. In addition, we examined descriptive statistics to determine if there is evidence that borrowers “self-selected” into the delinquency cohort that received the right-to-cure protection. Here we present the results from different specifications—allowing borrowers with previous delinquencies, adjusting the sizes and definitions of the delinquency cohorts, re-defining the modification outcome to examine whether different types of modifications were made, and

examining the potential bias of borrower “self-selection.” We also discuss the steps taken to address the largest threat to validity, the difficulty of definitively categorizing Massachusetts borrowers as having received or not received the 90-day right-to-cure period. Finally, we discuss our treatment of borrowers who were right-censored on the mortgage outcomes (because they were still delinquent when data collection ended or they were no longer followed in the sample), as well as borrowers with missing information on the covariates we include in our regression models.

Recall that the baseline sample includes borrowers who became seriously delinquent for the first time during January–June 2008. Some borrowers impacted by the implementation of the right-to-cure law may have experienced delinquency previously. Including these borrowers in our sample does not change our results. In order to isolate the impact of the right-to-cure law and avoid complications from borrowers who bounced in and out of delinquency before January 2008, we must still remove any borrowers who had been seriously delinquent in the year leading up to their January–June 2008 delinquency spells. In other words, for this exercise, borrowers who became seriously delinquent in April 2008 could not have been 90 or more days delinquent since April 2007. Notice that this still allows borrowers to be in the sample if they were seriously delinquent in prior years. While this particular group of borrowers (those who were seriously delinquent in the year before January–June 2008) makes up a small portion of the sample and appears equally spread across the states and delinquency cohorts (see “previous 90-day delinquency spell” in Table 6 of the paper), we decided to exclude them from the models to be sure that they do not drive the results. In the Table A-14 we display additional results for this restricted sample, although none of the estimates of interest change in any substantive way.

To further test the validity of the results, we adjusted the sizes of the cohorts from three months each to five months each. In other words, the early cohort was extended to include borrowers who became seriously delinquent November 2007–March 2008 and the later cohort was extended to include borrowers who became seriously delinquent April–August 2008. This change increased the sample of borrowers who became delinquent for the first time and which contained complete data on all covariates by about 3,500 mortgages. Increasing the size of the cohorts allows us to test the sensitivity of the findings to borrowers who became seriously delinquent four to five months before and after the cutoff, which is appealing because the treatment status of these borrowers (whether or not they received the right-to-cure protection) is more certain compared to the borrowers who became seriously delinquent very close to the policy change.⁴⁰ Our substantive findings do not change when

⁴⁰Of course, the tradeoff is that borrowers who became seriously delinquent in November 2007 may be different in unobserved ways from borrowers who became seriously delinquent in June 2008.

we estimate the logit model on the larger cohorts, as shown in Table A-9.

Although we have found no evidence of a significant differential change in modification rates in Massachusetts following the introduction of the 90-day right-to-cure period, it could be possible that the types of modifications changed—that is, the distribution of modifications could have shifted to types that are more beneficial for borrowers. In order to investigate this possibility, we estimated separate logit models for each type of modification: interest-rate adjustment, monthly-payment reduction, term extension, principal-balance reduction, and principal-balance increase. The estimation results (displayed in Table A-10) showed no evidence that any specific type of modification rate changed after the introduction of the right to cure, conditional on controlling for regional changes in modification rates. Finally, we fitted a Poisson model to estimate the number of mortgage modifications that a given loan received, but there was still no evidence of a policy effect in Massachusetts (see Table A-11).

Another concern is that financially distressed borrowers in Massachusetts who had no intention of curing their mortgage defaults or seeking modifications may have strategically placed themselves in the cohort that received the right-to-cure protection. Such strategic behavior would attenuate the effect of the right-to-cure policy on mortgage cures and modifications. Homeowners were given significant advance notice that the right-to-cure law would take effect, because Massachusetts Governor Deval Patrick signed the legislation that created it in November 2007. While some forward-looking borrowers may have had the incentive to postpone their defaults in order to slow the foreclosure process and increase the time they could live in their properties rent-free, such a strategy would have required significant advanced planning. Note that a borrower who became 90-days delinquent in April 2008 made his or her last mortgage payment in December 2007. Not only would a borrower have had to meticulously plan the timing of default (and have detailed knowledge of the workings of the foreclosure process), but he or she would have had to possess the financial resources to postpone default. After all, any gain in the time the borrower could live in the home rent-free (perhaps 30 or 60 days) would be partially offset by having to make the additional mortgage payment(s) to postpone default until the right-to-cure law went into effect. Therefore, it seems unlikely that many borrowers would have purposely “crossed over” into the protected cohort. The number of borrowers in the Massachusetts cohort increases somewhat after the introduction of the right to cure, though the same can be said of each of the three other states. Given that the number and characteristics of borrowers in the two Massachusetts cohorts appear very similar, it seems unlikely that the results in this section are driven by self-selection into the protected cohort of borrowers who are unlikely to cure.

One might expect that lenders could also have acted strategically when faced with the policy change in Massachusetts, though it is unlikely that such a scenario drives our results. In theory, lenders had an incentive to speed up foreclosures in the early spring of 2008 so that mortgages would be accelerated before May 1 and not receive the right-to-cure protection. There are two reasons why this possibility is unlikely to bias the results. First, most loans are originated using Fannie Mae and Freddie Mac uniform mortgage documents, which require that lenders wait at least 30 days between issuing the notice of default and accelerating the mortgage. So most lenders were contractually bound to the slower time line and could not quickly accelerate mortgages. Second, although lenders would be legally allowed to send the notice of default sooner—after the borrower becomes 60-days delinquent rather than 90-days delinquent, for example—they would be unlikely to do so. Initiating foreclosure proceedings is costly for the lender and, since many borrowers cure their mortgage defaults before becoming seriously delinquent, this would amount to wasted effort on the lender’s part. If lenders can determine which borrowers were least likely to cure and speed up the foreclosure process for those borrowers by sending the notice of default earlier, this would actually result in upwardly biased effects of the right-to-cure policy on borrower cures, since borrowers least likely to cure would be contaminating the control group. In summary, it seems unlikely that strategic behavior by borrowers or lenders is driving the absence of improvements in borrower cures following the implementation of the right-to-cure policy.

Perhaps the most important drawback to the analysis is the fact that we do not possess information on the exact date that the mortgages were accelerated and thus we cannot definitively categorize borrowers in Massachusetts as having received or not received the 90-day right-to-cure period. As previously discussed, the standard time line for issuing default notices, coupled with the required 30-day waiting period for accelerations that was built into standardized mortgage documents, gives us confidence that borrowers who became seriously delinquent after March 2008 received the right-to-cure protection. However, if lenders were slower to begin foreclosure proceedings, borrowers who became delinquent earlier in 2008 may also have received the protection. If this is the case, the borrowers who became seriously delinquent in March 2008 would be the most likely to be miscategorized. To check for this, we adjusted the original 3-month cohorts to categorize borrowers who became seriously delinquent in March 2008 as having received the right-to-cure protection. The results, shown in Table A-12, do not change substantively; cure probabilities for the 3-month horizon decreased slightly in Massachusetts relative to the comparison states, which is exactly what we found using the original cohort definitions.

Another important point to note when interpreting the results is that, as with the LPS data we used in the analysis of judicial and power of sale states, there is a right-censoring

issue in the data: approximately 4 percent of seriously delinquent mortgages are censored by the 18th month, either because they were transferred to different servicers that do not report to LPS or, more rarely, because the existing servicers stopped reporting information on the loans. In the estimation results reported in Table A-8, these censored loans are assumed not to have cured or experienced a modification. As a robustness check, we have estimated all the models in this section in two ways, first by considering all the censored loans as having cured and received a modification, then by considering all the censored loans *not* to have cured or received a modification. This provides upper and lower bounds for the cure and modification rates.⁴¹

A second challenge presented by the LPS data set is missing values for covariates. About half the loans lack at least one piece of information on borrower characteristics, mortgage terms, or ZIP code-level change in the house price index since origination. Rather than impute the missing values, we addressed the missing data problem by estimating the logit models in three ways: first with no additional control variables on the full sample of loans that include mortgages with missing information on covariates (the “full sample”); next with no additional control variables on the sample of loans without missing values on covariates (the “restricted sample”); and finally with additional control variables on the restricted sample. Interestingly, the sign and size of the coefficients of interest (those on the state dummies, cohort dummy, and Massachusetts cohort interaction) are not sensitive to the type of specification used or the sample restriction to only those loans with full covariate information. We display the results at the 3-month time horizon for illustrative purposes in Table A-13. This suggests that observations with missing covariates are not systematically different than observations with full information.

⁴¹The lower bound is probably the more accurate number, at least for the cure estimates. Among the censored loans, nearly two-thirds were in foreclosure at their last observation and almost all the remaining one-third were 90-days delinquent but pre-foreclosure. Thus, we chose to assume that censored loans do not cure and are not modified for the results presented in the paper. The two methods, however, generate very similar results; our results hold regardless of how we treat the censored borrowers. When we estimate a hazard model for loan outcomes, we also find similar results.

Table A-1: Cumulative Cures—Comparison of Different Specifications and Samples

	3 Months				6 Months				N
	Power of Sale	Judicial	Difference (PoS–J)		Power of Sale	Judicial	Difference (PoS–J)		
			Raw	With Controls			Raw	With Controls	
LPS									
Full Sample	13.0	13.4	–0.4	n/a	20.9	20.9	0.0	n/a	160,491
Estimation Sample (with all covariates)	11.8	12.2	–0.4	1.2	18.8	19.1	–0.3	2.1	89,860
Censored as Cured	12.7	13.0	–0.3	1.3	20.5	20.6	–0.1	2.4	89,860
No First-time Defaulters	15.6	15.6	0.0	1.2	24.8	24.6	0.3	2.1	33,558
No “Fast-track” Defaulters	16.2	16.9	–0.7	0.2	26.4	26.7	–0.3	1.1	36,896
CoreLogic									
2005–2010 (Short Sales as Cures)	13.1	13.6	–0.5	1.4	22.3	21.7	0.6	3.1	90,379
2005–2010 (Short Sales as Non-cures)	12.1	13.0	–0.9	1.1	19.2	20.1	–0.9	2.0	90,379
2000–2005 (Short Sales as Cures)	25.0	22.9	2.1	3.4	36.6	33.7	2.9	5.3	9,291
2000–2005 (Short Sales as Non-cures)	24.4	22.5	1.9	3.2	35.3	32.9	2.4	4.8	9,291
	12 Months				18 Months				N
	Power of Sale	Judicial	Difference (PoS–J)		Power of Sale	Judicial	Difference (PoS–J)		
			Raw	With Controls			Raw	With Controls	
LPS									
Full Sample	29.1	28.7	0.4	n/a	34.1	33.2	0.9	n/a	160,491
Estimation Sample (with all covariates)	25.6	26.0	–0.4	3.0	29.7	29.9	–0.2	3.6	89,860
Censored as Cured	28.2	28.5	–0.3	3.1	35.2	36.5	–1.4	3.1	89,860
No First-time Defaulters	33.4	33.0	0.4	2.9	38.0	37.5	0.5	3.2	33,558
No “Fast-track” Defaulters	36.2	36.7	–0.5	1.6	41.4	41.9	–0.5	2.0	36,896
CoreLogic									
2005–2010 (Short Sales as Cures)	32.5	32.0	0.4	3.3	37.6	38.2	–0.6	2.4	90,379
2005–2010 (Short Sales as Non-cures)	25.7	27.6	–2.0	1.8	28.9	31.5	–2.6	1.6	90,379
2000–2005 (Short Sales as Cures)	48.2	46.4	1.8	5.1	54.6	53.3	1.3	5.4	9,291
2000–2005 (Short Sales as Non-cures)	45.7	44.4	1.3	4.8	51.6	50.3	1.3	5.9	9,291

Source: Lender Processing Services (LPS), CoreLogic, and authors’ calculations.

Note: Final sample includes only loans for which full covariates are available and treats censored loans as not cured. Controlled differences are for prototypical fixed-rate purchase mortgages held by occupant-owners of single-family properties with average LTV (82 percent), FICO (652), months elapsed between initial payment and delinquency spell (19), and percent change in ZIP code-level house price index since origination (–11) within the LPS sample. Corresponding values are used for the CoreLogic sample.

Table A-2: Cumulative Foreclosures—Comparison of Different Specifications and Samples

	3 Months				6 Months				N	
	Power of Sale	Judicial	Difference (PoS–J)		Power of Sale	Judicial	Difference (PoS–J)			
			Raw	With Controls			Raw	With Controls		
LPS										
Full Sample	4.3	0.6	3.7	n/a	18.8	2.6	16.2	n/a	160,491	
Estimation Sample (with controls)	3.8	0.6	3.2	2.7	19.3	2.6	16.7	12.1	89,680	
Censored as Foreclosed	4.7	1.4	3.3	2.9	20.9	4.0	16.9	12.7	89,680	
No First-time Defaulters	3.3	0.4	2.8	2.2	15.3	1.8	13.5	9.9	33,558	
No “Fast-track” Defaulters	2.8	0.4	2.4	2.0	12.5	1.7	10.8	7.4	36,896	
CoreLogic										
2005–2010	4.4	0.4	4.1	4.8	24.5	2.6	21.9	18.7	90,379	
2000–2005	3.7	0.5	3.2	3.0	11.8	2.8	9.0	7.5	9,291	
	12 Months				18 Months				N	
	Power of Sale	Judicial	Difference (PoS–J)		Power of Sale	Judicial	Difference (PoS–J)			
			Raw	With Controls			Raw	With Controls		
LPS										
Full Sample	33.5	14.0	19.5	n/a	40.0	22.9	17.1	n/a	160,491	
Estimation Sample (with controls)	35.4	13.5	21.9	17.6	42.6	22.8	19.8	17.0	89,680	
Censored as Foreclosed	38.0	16.0	21.9	18.2	48.1	29.5	18.7	17.0	89,680	
No First-time Defaulters	28.1	10.6	17.5	14.3	34.2	18.2	16.0	13.9	33,558	
No “Fast-track” Defaulters	23.7	9.2	14.5	10.7	29.2	15.4	13.8	11.1	36,896	
CoreLogic										
2005–2010	39.8	15.8	24.1	21.9	44.6	24.5	20.1	18.5	90,379	
2000–2005	22.2	13.3	8.9	6.0	27.1	19.8	7.3	3.7	9,291	

Source: Lender Processing Services (LPS), CoreLogic, and authors’ calculations.

Note: Final sample includes only loans for which full covariates are available and treats censored loans as not cured. Controlled differences are for prototypical fixed-rate purchase mortgages held by occupant-owners of single-family properties with average LTV (82 percent), FICO (652), months elapsed between initial payment and delinquency spell (19), and percent change in ZIP code-level house price index since origination (–11) within the LPS sample. Corresponding values are used for the CoreLogic sample.

Table A-3: Cumulative Modifications—Comparison of Different Specifications and Samples

	3 Months				6 Months				N
	Power of Sale	Judicial	Difference (PoS–J)		Power of Sale	Judicial	Difference (PoS–J)		
			Raw	With Controls			Raw	With Controls	
LPS									
Full Sample	5.49	4.8	0.7	n/a	10.27	9.07	1.2	n/a	143,575
Estimation Sample (with controls)	5.67	4.86	0.8	0.6	10.34	8.84	1.5	1.4	81,275
Censored as Modified	6.42	5.48	0.9	0.7	11.68	10	1.7	1.6	81,275
No First-time Defaulters	7.54	6.79	0.8	0.4	13.62	11.98	1.6	1.1	30,525
No “Fast-track” Defaulters	8.54	7.68	0.9	0.4	15.54	13.72	1.8	1.2	32,594
CoreLogic									
2005–2010	5.44	5.29	0.2	0.1	9.44	9.5	–0.1	0.0	77,453
	12 Months				18 Months				N
	Power of Sale	Judicial	Difference (PoS–J)		Power of Sale	Judicial	Difference (PoS–J)		
			Raw	With Controls			Raw	With Controls	
LPS									
Full Sample	15.93	14.51	1.4	n/a	19.82	18.5	1.3	n/a	143,575
Estimation Sample (with controls)	15.71	13.72	2.0	2.2	19.43	17.54	1.9	2.4	81,275
Censored as Modified	18.12	16.04	2.1	2.4	25.52	24.94	0.6	2.2	81,275
No First-time Defaulters	20.45	18.07	2.4	2.0	24.75	22.66	2.1	2.0	30,525
No “Fast-track” Defaulters	23.35	21.14	2.2	1.7	28.34	26.52	1.8	1.7	32,594
CoreLogic									
2005–2010	14.49	15.17	–0.7	0.2	17.73	18.93	–1.2	0.1	77,425

Source: Lender Processing Services (LPS), CoreLogic, and authors’ calculations.

Note: Final sample includes only loans for which full covariates are available and treats censored loans as not cured. Controlled differences are for prototypical fixed-rate purchase mortgages held by occupant-owners of single-family properties with average LTV (82 percent), FICO (652), months elapsed between initial payment and delinquency spell (19), and percent change in ZIP code-level house price index since origination (–11) within the LPS sample. Corresponding values are used for the CoreLogic sample.

Table A-4: State-statute Results—Comparison of Cure/Modification Rates at 12 Months

	Cure		Modification	
	Censored as Cured	Censored as Not Cured	Censored as Modified	Censored as Not Modified
Judicial	0.873*** (−10.25)	0.860*** (−10.97)	0.891*** (−7.43)	0.874*** (−8.14)
Refinance	1.116*** (−8.27)	1.144*** (−9.7)	1.183*** (−10.9)	1.229*** (−12.61)
Adjustable-rate Mortgage	0.670*** (−32.04)	0.626*** (−36.06)	0.769*** (−17.97)	0.733*** (−20.05)
FICO at Origination	0.996*** (−39.22)	0.996*** (−39.62)	0.996*** (−37.19)	0.995*** (−38.69)
Months Since First Payment	1.012*** (−21.4)	1.014*** (−25.23)	1.017*** (−25.96)	1.019*** (−28.1)
LTV Ratio at Origination	0.987*** (−24.12)	0.984*** (−28.47)	1.005*** (−7.43)	1.002*** (−3.35)
Owner Occupant	1.586*** (−19.15)	1.632*** (−19.2)	2.011*** (−22.41)	2.261*** (−23.07)
Condominium	0.824*** (−10.83)	0.790*** (−12.55)	0.801*** (−10.54)	0.736*** (−13.23)
Multi-family (2–4 units)	0.819*** (−5.32)	0.791*** (−5.99)	0.997 (−0.08)	0.978 (−0.47)
Percent Change in House Price Index	1.020*** (−46.84)	1.022*** (−50.11)	0.996*** (−7.61)	0.997*** (−5.76)
Observations	136, 508	136, 508	127, 902	127, 902
Chi-square	7, 633.89	8, 659.18	3, 974.74	4, 521.13
Log Likelihood	−79, 246.9	−75, 003.8	−62, 900	−57, 294

Source: Lender Processing Services (LPS), CoreLogic, and authors' calculations.

Note: Sample excludes borrowers who were 90-days delinquent before January 2008. Sample size differs for modification and cure models because modification sample excludes some loans that experienced suspicious term changes and were thus left out of the estimation. Displayed statistics are odds ratios with z-statistics in parentheses. ***, **, and * represent statistical significance at 0.1, 1, and 5 percent level, respectively.

Table A-5: State-statute Results—Cumulative Modification Results at 18 Months

	Rate Change	Principal Reduction	Principal Increase	Term Change
Judicial	0.975 (-1.37)	1.205*** (-3.37)	0.879*** (-8.18)	1.032 (-1.06)
Refinance	1.225*** (-10.94)	1.688*** (-9.99)	1.196*** (-11.42)	0.991 (-0.30)
Adjustable-rate Mortgage	0.318*** (-60.22)	1.158** (-3.01)	0.653*** (-28.41)	0.455*** (-25.22)
FICO at Origination	0.998*** (-17.09)	1.004*** (-8.21)	0.994*** (-46.19)	0.998*** (-7.49)
Months Since First Payment	1.017*** (-22.11)	1.008*** (-3.47)	1.018*** (-27.19)	1.020*** (-15.88)
LTV Ratio at Origination	1.005*** (-7.5)	1.005** (-2.81)	1.001~ (-1.82)	1.016*** (-11.56)
Owner Occupant	3.884*** (-28.55)	11.58*** (-11.07)	2.254*** (-24.15)	4.483*** (-15.78)
Condominium	0.737*** (-11.59)	0.876~ (-1.84)	0.717*** (-14.90)	0.757*** (-6.39)
Multi-family (2-4 units)	1.077 (-1.41)	1.489** (-2.68)	0.981 (-0.44)	0.858 (-1.59)
Percent Change in House Price Index	0.982*** (-31.55)	0.962*** (-22.22)	0.998*** (-3.53)	0.993*** (-7.60)
Observations	127,902	127,902	127,902	127,902
Chi-square	8,030.87	1,290.38	5,876.42	1,862.63
Log Likelihood	-47,667	-8,926.63	-60,799.4	-21,900.2

Source: Lender Processing Services (LPS), CoreLogic, and authors' calculations.

Note: Sample size differs for modification and cure models because modification sample excludes some loans that experienced suspicious term changes and were thus left out of the estimation. Displayed statistics are odds ratios with z-statistics in parentheses. ***, **, *, and ~ represent statistical significance at 0.1, 1, 5, and 10 percent level, respectively.

Table A-6: State Statute Results—Modifications Received in First 18 Months

	Modifications Within 18 Months
Judicial	−0.084*** (−7.11)
Refinance	0.173*** (−14.63)
Adjustable-rate Mortgage	−0.293*** (−25.72)
FICO at Origination	−0.004*** (−42.26)
Months Since First Payment	0.012*** (−25.76)
LTV Ratio at Origination	0.001** (−2.96)
Owner Occupant	0.822*** (−27.47)
Condominium	−0.271*** (−15.11)
Multi-family (2–4 units)	0.019 (−0.54)
Percent Change in House Price Index	−0.004*** (−10.71)
Constant	−0.114 (−1.46)
Observations	127,902
Pseudo R ²	0.034

Source: Lender Processing Services (LPS), CoreLogic, and authors' calculations.

Note: Prediction indicates the number of modifications received in 18 months after borrower's first serious delinquency. Sample size differs for modification and cure models because modification sample excludes some loans that experienced suspicious term changes and were thus left out of the estimation. Displayed statistics are odds ratios with z-statistics in parentheses. ***, **, and * represent statistical significance at 0.1, 1, and 5 percent level, respectively.

Table A-7: State Statute Results— Cross-Border Robustness Check

	Cures		Foreclosures		Modifications	
	<i>FullSample</i>	<i>BorderSample</i>	<i>FullSample</i>	<i>BorderSample</i>	<i>FullSample</i>	<i>BorderSample</i>
Judicial	0.872*** (9.60)	1.031 (0.35)	0.303*** (71.98)	0.579*** (5.31)	0.870*** (7.71)	1.002 (0.01)
Refinance	1.135*** (8.63)	1.012 (0.15)	0.811*** (14.18)	0.971 (0.34)	1.222*** (11.13)	0.947 (0.54)
Adjustable-rate Mortgage	0.658*** (29.79)	0.686*** (4.78)	1.938*** (45.46)	1.575*** (5.22)	0.945** (3.26)	1.187~ (1.73)
FICO at Origination	0.995*** (45.64)	0.997*** (4.45)	1.005*** (43.58)	1.006*** (7.89)	0.993*** (47.94)	0.994*** (7.87)
Months since First Payment	1.013*** (18.27)	1.015*** (4.01)	0.978*** (29.03)	0.977*** (5.37)	1.025*** (27.02)	1.031*** (6.24)
LTV Ratio at Origination	0.982*** (30.07)	0.986*** (4.53)	1.019*** (25.68)	1.015*** (3.68)	1.002* (2.55)	1.001 (0.24)
Owner Occupant	1.495*** (15.08)	2.401*** (5.94)	0.568*** (24.89)	0.458*** (6.07)	1.826*** (15.83)	2.135*** (3.36)
Condominium	0.846*** (7.90)	0.827 (1.12)	1.036~ (1.76)	1.513* (2.43)	0.808*** (7.86)	0.810 (0.94)
Small Multifamily (2-4 Units)	0.720*** (8.30)	0.684~ (1.65)	0.913* (2.33)	1.092 (0.39)	0.862** (2.89)	0.611 (1.50)
Change in Unemployment Rate	1.017** (3.17)	0.970 (1.19)	0.836*** (32.50)	0.919** (2.65)	1.050*** (8.16)	1.024 (0.78)
Percent Change in House Price Index	1.036*** (47.06)	1.009 (1.36)	0.988*** (15.66)	1.009 (1.13)	1.003** (2.90)	0.971*** (3.50)
Observations	121, 538	3, 709	121, 538	3, 697	120, 738	3, 664
Chi-square	10257.78	195.15	15276.95	418.88	4314.92	195.9
Log likelihood	-65698.21	-2333.2	-63483.93	-1934.64	-47925.04	-1569.43

Source: Lender Processing Services (LPS), CoreLogic, Bureau of Labor Statistics, and authors' calculations.

Source: Lender Processing Services (LPS), CoreLogic, Bureau of Labor Statistics, and authors' calculations.

Note: Cumulative cure, foreclosure, and modification results at 12 months. Displayed statistics are odds ratios with z-statistics in parentheses. ***, **, and * represent statistical significance at 0.1, 1, and 5 percent level, respectively. Border sample includes loans located in zip codes within 10 miles of a border between a judicial and power of sale state. House price change is measured at the county level from origination to the time of the default.

Table A-8: Right-to-cure Results—Comparison of Cure/Modification Rates at 18 Months

	Cure		Modification	
	Censored as Cured	Censored as Not Cured	Censored as Modified	Censored as Not Modified
Right to Cure	1.045 (0.53)	1.018 (0.22)	1.105 (1.05)	1.057 (0.56)
Massachusetts	0.695*** (4.17)	0.652*** (4.83)	0.807* (2.14)	0.724** (3.06)
Massachusetts \times Right to Cure	0.971 (0.25)	0.939 (0.54)	1.033 (0.25)	1.006 (0.04)
Rhode Island	0.653*** (4.43)	0.642*** (4.54)	0.799* (2.05)	0.749* (2.50)
New Hampshire	0.865 (1.01)	0.868 (0.97)	0.723~ (1.87)	0.647* (2.32)
Observations	5,327	5,327	5,282	5,282
Chi-square	39.32	53.38	12.51	19.66
Log Likelihood	-3,505	-3,399	-2,900	-2,637

Source: Lender Processing Services (LPS) and authors' calculations.

Note: Prediction after entrance into serious delinquency, treating censored borrowers as all experiencing favorable or unfavorable outcomes. Excludes borrowers who were 90-days delinquent before January 2008. Sample size differs for modification and cure models because modification sample excludes some loans that experienced suspicious term changes and were thus left out of the estimation. Displayed statistics are odds ratios with z-statistics in parentheses. ***, **, *, and ~ represent statistical significance at 0.1, 1, 5, and 10 percent level, respectively.

Table A-9: Right-to-cure Results—Cumulative Cure/Modification Rates for Larger Windows

	Cure		Modification	
	3-Month Window	5-Month Window	3-Month Window	5-Month Window
Right to Cure	1.120 (1.20)	0.973 (0.37)	1.177 (1.24)	1.202~ (1.85)
Massachusetts	0.693*** (3.63)	0.647*** (5.48)	0.632** (3.15)	0.621*** (4.16)
Massachusetts \times Right to Cure	0.857 (1.16)	1.014 (0.13)	1.146 (0.73)	1.189 (1.22)
Rhode Island	0.618*** (4.25)	0.673*** (4.71)	0.702* (2.29)	0.769* (2.34)
New Hampshire	0.816 (1.23)	0.857 (1.20)	0.532* (2.32)	0.702~ (1.88)
Observations	5,327	8,952	5,282	8,880
Chi-square	41.36	57.41	23.07	38.42
Log Likelihood	-2,780	-4,670	-1,692	-2,926

Source: Lender Processing Services (LPS) and authors' calculations.

Note: Table compares cumulative cure and modification rates for 3-month and 5-month windows around the implementation date of the right-to-cure law. Excludes borrowers who were 90-days delinquent before January 2008. Sample size differs for modification and cure models because modification sample excludes some loans that experienced suspicious term changes and were thus left out of the estimation. Displayed statistics are odds ratios with z-statistics in parentheses. ***, **, *, and ~ represent statistical significance at 0.1, 1, 5, and 10 percent level, respectively.

Table A-10: Right-to-cure Results—Cumulative Modification Results at 18 Months

	Rate Change	Principal Reduction	Principal Increase	Term Change
Right to Cure	1.321 [~] (1.94)	0.449 (0.91)	1.108 (0.98)	0.913 (0.32)
Massachusetts	0.737 [~] (1.83)	0.551 −0.54)	0.857 (1.31)	1.309 (0.90)
Massachusetts × Right to Cure	1.165 (0.76)	3.411 (0.97)	0.988 (0.08)	1.495 (1.11)
Rhode Island	0.759 (1.53)	2.822 (1.08)	0.811 (1.59)	1.552 (1.39)
New Hampshire	0.512 [*] (2.21)	.	0.706 [~] (1.80)	0.428 (1.15)
Refinance	1.007 (0.07)	.	1.07 (0.85)	0.583 ^{**} (2.91)
Adjustable-rate Mortgage	0.699 ^{**} (3.13)	1.43 (0.54)	1.123 (1.49)	0.498 ^{**} (3.25)
FICO at Origination	0.993 ^{***} (8.32)	1.000 (0.07)	0.991 ^{***} (13.72)	0.997 [*] (2.09)
Months Since First Payment	0.983 ^{**} (2.79)	0.965 (0.82)	1.018 ^{***} (4.12)	0.989 (1.02)
LTV Ratio at Origination	1.004 [~] (1.68)	1.116 ^{**} (2.65)	1.001 (0.69)	1.002 (0.50)
Owner Occupant	2.440 ^{**} (2.82)	.	1.742 ^{**} (2.95)	4.319 [*] (2.02)
Condominium	0.923 (0.55)	0.752 (0.26)	0.787 [*] (2.26)	0.75 (1.13)
Multi-family (2–4 units)	0.785 (1.52)	0.872 (0.17)	0.781 [*] (2.23)	0.737 (1.10)
Percent Change in House Price Index	0.987 (1.48)	0.943 (1.01)	0.998 (0.38)	0.994 (0.37)
Observations	5,282	2,902	5,282	5,282
Chi-square	166.14	17.25	296.07	52.88
Log Likelihood	−1,481	−64	−2,448	−605

Source: Lender Processing Services (LPS), CoreLogic, and authors' calculations.

Note: Missing values correspond to instances in which there is no variation in the dependent variable within a given category; these occur in the principal reduction logits because there are so few principal-reduction modifications in the LPS data. Excludes borrowers who were 90-days delinquent before January 2008. Sample size differs for modification and cure models because modification sample excludes some loans that experienced suspicious term changes and were thus left out of the estimation. Displayed statistics are odds ratios with z-statistics in parentheses. ***, **, *, and [~] represent statistical significance at 0.1, 1, 5, and 10 percent level, respectively.

Table A-11: Right-to-cure Results—Number of Modifications Received in First 18 Months

	Modifications Within 18 Months
Right to Cure	-0.113 (1.22)
Massachusetts	0.0775 (0.96)
Massachusetts × Right to Cure	-0.0371 (0.33)
Rhode Island	-0.218* (2.15)
New Hampshire	-0.307~ (1.91)
Refinance	0.0697 (-1.1)
Adjustable-rate Mortgage	0.0981 (1.61)
FICO at Origination	-0.00658*** (14.04)
Months Since First Payment	0.0104** (3.12)
LTV Ratio at Origination	0.00106 (0.85)
Owner Occupant	0.455** (2.67)
Condominium	-0.164~ (1.90)
Multi-family (2–4 units)	-0.220* (2.42)
Percent Change in House Price Index	-0.00337 (0.68)
Constant	2.005*** (5.47)
Observations	5,282
Pseudo R ²	0.044

Source: Lender Processing Services (LPS), CoreLogic, and authors' calculations.

Note: Prediction indicates the number of modifications received in 18 months after borrower's first serious delinquency. Excludes borrowers who were 90-days delinquent before January 2008. Sample size differs for modification and cure models because modification sample excludes some loans that experienced suspicious term changes and were thus left out of the estimation. Displayed statistics are odds ratios with z-statistics in parentheses. ***, **, *, and ~ represent statistical significance at 0.1, 1, 5, and 10 percent level, respectively.

Table A-12: Right-to-cure Results—Cumulative Cure/Modification Rates for Adjusted Windows

	Cure		Modification	
	Regular Window	Adjusted Window	Regular Window	Adjusted Window
Right to Cure	1.12 (−1.2)	1.073 −0.71	1.177 (−1.24)	1.25 (−1.57)
Massachusetts	0.693*** (−3.63)	0.762* (−2.32)	0.632** (−3.15)	0.650* (−2.45)
Massachusetts × Right to Cure	0.857 (−1.16)	0.767~ (−1.90)	1.146 (−0.73)	1.063 (−0.3)
Rhode Island	0.618*** (−4.25)	0.618*** (−4.25)	0.702* (−2.29)	0.697* (−2.33)
New Hampshire	0.816 (−1.23)	0.817 (−1.22)	0.532* (−2.32)	0.533* (−2.32)
Observations	5,327	5,327	5,282	5,282
Chi-square	41.36	44.16	23.07	22.8
Log Likelihood	−2,780	−2,778	−1,692	−1,692

Source: Lender Processing Services (LPS) and authors' calculations.

Note: Table compares cumulative cure and modification rates for regular and adjusted windows around the implementation date of the right-to-cure law, where the last month of the untreated group in the regular window is considered part of the treated group for the adjusted window. Excludes borrowers who were 90-days delinquent before January 2008. Sample size differs for modification and cure models because modification sample excludes some loans that experienced suspicious term changes and were thus left out of the estimation. Displayed statistics are odds ratios with z-statistics in parentheses. ***, **, *, and ~ represent statistical significance at 0.1, 1, 5, and 10 percent level, respectively.

Table A-13: Right-to-cure Results—Comparison of Cure and Modification Rates

	Cure			Modification		
	Full Sample	Restricted Sample		Full Sample	Restricted Sample	
Right-to-cure	1.122 (1.58)	1.223~ (1.77)	1.207 (1.63)	1.428** (2.81)	1.466* (1.98)	1.425~ (1.8)
Massachusetts	0.847* (2.01)	0.748* (2.35)	0.908 (0.71)	0.97 (0.21)	0.777 (1.18)	0.985 (0.06)
Massachusetts x Right-to-cure	0.826~ (1.83)	0.852 (1.00)	0.843 (1.05)	0.808 (1.21)	0.905 (0.37)	0.948 (0.20)
Rhode Island	0.753** (2.95)	0.683** (2.81)	0.724~ (1.85)	0.651* (2.47)	0.625* (2.02)	0.768 (0.89)
New Hampshire	1.246* (2.54)	0.957 (0.23)	0.946 (0.28)	1.17 (1.08)	0.523 (1.62)	0.594 (1.27)
Refinance			0.995 (0.05)			0.933 (0.48)
Adjustable-rate Mortgage			0.579*** (5.98)			1.665*** (3.52)
FICO at Origination			0.996*** (5.33)			0.993*** (5.98)
Months Since First Payment			1.026*** (5.3)			1.039*** (4.84)
LTV Ratio at Origination			0.988*** (3.84)			1.002 (0.69)
Owner Occupant			1.615* (2.33)			1.408 (1.01)
Condominium			0.798~ (1.89)			1.053 (0.28)
Multi-family (2-4 units)			0.691** (2.79)			0.773 (1.19)
Percent Change in House Price Index			1.01 (1.43)			1.012 (1.04)
Change in Unemployment Rate			1.08 (1.19)			1.035 (0.33)
Observations	11, 522	5, 327	5, 327	11, 423	5, 282	5, 282
Chi-square	49.67	23.09	162.31	20.68	13.52	104.26
Log Likelihood	-4, 857.22	-2, 111.33	-2, 041.72	-2, 197.59	-972.69	-927.32

Source: Lender Processing Services (LPS), CoreLogic, and authors' calculations.

Note: Comparison of cure and modification rates reflects 3 months after entrance into serious delinquency for baseline and final models; excludes borrowers who were 90-days delinquent before January 2008. Sample size differs for modification and cure models because modification sample excludes some loans that experienced suspicious term changes and were thus left out of the estimation. Displayed statistics are odds ratios with z-statistics in parentheses. ***, **, *, and ~ represent statistical significance at 0.1, 1, 5, and 10 percent level, respectively.

Table A-14: Right-to-cure Results—Cumulative Cure/Modification Rates at 6 Months

	Cure		Modification	
	First Delinquency	Ever Delinquent	First Delinquency	Ever Delinquent
Right to Cure	1.12 (1.2)	1.138 (1.38)	1.177 (1.24)	1.192 (1.36)
Massachusetts	0.693*** (3.63)	0.705*** (3.49)	0.632** (3.15)	0.632** (3.19)
Massachusetts × Right to Cure	0.857 (1.16)	0.838 (1.35)	1.146 (0.73)	1.136 (0.69)
Rhode Island	0.618*** (4.25)	0.622*** (4.24)	0.702* (2.29)	0.701* (2.34)
New Hampshire	0.816 (1.23)	0.803 (1.32)	0.532* (2.32)	0.520* (2.41)
Observations	5,327	5,432	5,282	5,385
Chi-square	41.36	41.71	23.07	24.69
Log Likelihood	-2,780	-2,850	-1,692	-1,742

Source: Lender Processing Services (LPS) and authors' calculations.

Note: Prediction after entrance into serious delinquency, using only “first delinquency” borrowers and the sample of borrowers that had a prior history of delinquency. Excludes borrowers who were 90-days delinquent before January 2008. Sample size differs for modification and cure models because modification sample excludes some loans that experienced suspicious term changes and were thus left out of the estimation. Displayed statistics are odds ratios with z-statistics in parentheses. ***, **, and * represent statistical significance at 0.1, 1, and 5 percent level, respectively.

Table A-15: Right-to-cure Results—Cure/Modification Rates After Extension to 150 Days

	Cure		Modification	
	3 Months	6 Months	3 Months	6 Months
Right to Cure	1.204 (1.37)	1.108 (0.94)	1.301 (1.56)	1.087 (0.65)
Massachusetts	1.092 (0.65)	1.117 (1.02)	1.295 (1.53)	1.227 (1.6)
Massachusetts \times Right to Cure	0.91 (0.52)	0.963 (0.26)	0.743 (1.30)	0.845 (0.95)
Rhode Island	0.701 \sim (1.91)	0.816 (1.43)	0.729 (1.36)	0.871 (0.82)
New Hampshire	1.192 (0.79)	1.272 (1.30)	1.325 (1.04)	1.489 \sim (1.90)
Refinance	0.905 (0.96)	0.958 (0.50)	0.915 (0.70)	0.958 (0.44)
Adjustable-rate Mortgage	0.683** (3.24)	0.692*** (3.91)	0.493*** (4.24)	0.507*** (5.47)
FICO at Origination	1.001 (1.59)	1.001 (1.54)	1.003** (2.83)	1.001 (1.52)
Months Since First Payment	0.996 (0.74)	0.996 (1.05)	0.990 \sim (1.67)	0.989* (2.33)
LTV Ratio at Origination	0.984*** (4.58)	0.985*** (4.97)	1.006 (1.22)	1.006 (1.55)
Owner Occupant	1.646* (2.02)	1.723** (2.81)	4.823** (3.06)	4.529*** (4.11)
Condominium	0.937 (0.56)	0.761** (2.74)	0.9 (0.72)	0.752* (2.41)
Multi-family (2–4 units)	0.727* (2.00)	0.887 (1.00)	0.843 (0.89)	0.812 (1.42)
Percent Change in House Price Index	1.012* (2.13)	1.010* (2.2)	1.006 (0.82)	1.004 (0.78)
Observations	4, 130	4, 130	4, 126	4, 126
Chi-square	66.04	82.85	68.99	102.65
Log Likelihood	-1, 628	-2, 226	-1, 152	-1, 715

Source: Lender Processing Services (LPS), CoreLogic, and authors' calculations.

Note: Estimates of cure and modification rates at 3 and 6 months after first serious delinquency for the extension of the Massachusetts right-to-cure law from 90 days to 150 days. Excludes borrowers who were 90-days delinquent before January 2008. Sample size differs for modification and cure models because modification sample excludes some loans that experienced suspicious term changes and were thus left out of the estimation. Displayed statistics are odds ratios with z-statistics in parentheses. ***, **, *, and \sim represent statistical significance at 0.1, 1, 5, and 10 percent level, respectively.