

Appendix. Not for Publication

June 18, 2014

Abstract

In this Appendix we present probability inclusion tables and estimation results corresponding to the robustness exercises presented in Table 9.

We also illustrate classical reduced-form regressions for each case that do not directly account for loan-performance using a two-stage procedure, but rather include in a rate regression all the controls we use if both the loan-performance probit regressions and the rate regressions in the Bayesian approach illustrated in the paper.

1 Conclusions

The following are some observations about the inclusion probabilities tables and the comparison with the reduced-form estimations.

- The inclusion probability tables indicate that relaxing slightly the probability thresholds of 90% does not have a big impact on the results in each case.
- Relaxing the probability thresholds to lower standards such as 0.75 or 0.65 increases the number of cases where we find effects.
- Comparing the results from the two-stage Bayesian approach with the reduced-form classical approach regressions indicate the following:
 - For most cases where we find effects in the second-stage rate regression, the corresponding reduced-form rate regression coefficients are statistically significant.
 - In only a small number of cases, the effects uncovered in the second-stage rate regression are not statistically significant in the reduced-form regression. [Cite examples.]

2 Benchmark

Table 1: Model Inclusion Probabilities in the Rates estimation. Baseline.

Variable	2yr ARM	3yr ARM	30yr FRM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
$\Pr(\delta = 1)$								
default	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
prepay	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
$\Pr(\gamma = 1)$								
black	0.03	0.05	0.01	1.00	0.02	0.08	0.41	0.82
Hispanic	0.03	0.04	0.18	1.00	0.01	0.99	1.00	1.00
PPP \times black	0.03	0.04	0.02	0.67	0.06	0.99	0.09	0.64
PPP \times Hispanic	0.05	0.02	0.84	0.25	0.03	0.05	1.00	0.06
PMI \times black	0.07	0.11	0.02	1.00	0.13	0.14	0.09	0.14
PMI \times Hispanic	0.04	0.40	0.05	1.00	0.05	0.15	0.07	1.00
Tract Income	1.00	0.05	1.00	1.00	0.92	0.67	1.00	1.00
Tract Mmortality	0.02	0.99	0.04	1.00	1.00	0.78	0.77	0.18

The probabilities in the top panel correspond to the evaluation of statistical discrimination.

The probabilities in the bottom panel correspond to the evaluation of taste-based discrimination.

Table 2: Rates estimation. Baseline.

Variable	2yr ARM	3yr ARM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
Constant	5.6182	5.1737	5.1877	1.8879	5.8303	4.1851	4.1776
$\hat{\mathbf{P}}$							
default	5.2694	5.1788	5.7680	11.6018	4.0455	3.6928	4.8819
prepay	1.7055	0.9506	3.1153	5.0320	0.4220	2.4015	1.6197
\mathbf{z}							
PPP	-0.3309	0.1117	0.1594	0.3725	0.0061	0.1945	0.0604
PMI	0.1720	0.0201	0.0154	0.4253	0.1191	0.2555	0.1837
Amount	-0.0871	-0.0543	-0.0067	-0.3208	0.0174	-0.0515	-0.0671
FL	0.5191	0.4429	0.4460	0.8449	0.2039	0.2913	0.5194
\mathbf{x}							
black				0.2902			
Hispanic				0.1192		0.0555	0.1398
PPP \times black						0.1576	
PPP \times Hispanic							-0.1343
PMI \times black				-0.3043			
PMI \times Hispanic				-0.1808			-0.2286
Tract Income	-0.1139		-0.0704	-0.0922	-0.0530	-0.1039	-0.1248
Tract Minority		0.1431		0.0865	0.1026		
No. Obs.	17192	6417	40959	139882	7059	19584	60878
							35601

The coefficients of the \mathbf{z} variables represent the medians of the posterior distributions.

The grayed-out coefficients indicate that 0 is contained in the 90 percent coverage interval.

The coefficients of the \mathbf{x} variables represent the medians of the posterior distributions conditional on the modal value of the corresponding γ for cases in which the inclusion probability $\Pr(\gamma = 1)$ exceeds 90 percent.

Table 3: Rates estimation. Benchmark.

	2-yr ARM	3-yr ARM	30-yr FRM	30-yr ARM	10-yr FRM	10-yr ARM	5-yr ARM	Other
LTV	0.0260*** (33.784)	0.0209*** (15.942)	0.0063*** (23.986)	0.0133*** (35.041)	0.0050*** (12.461)	0.0081*** (14.846)	0.0229*** (52.041)	0.0082*** (14.595)
PPP	-0.8064*** (-27.410)	0.1094*** (3.444)	0.1217*** (11.658)	-0.2449*** (-11.909)	-0.0050 (-0.358)	0.0752*** (6.699)	-0.0109 (-0.966)	-0.2375*** (-9.002)
DTI	0.0001 (0.354)	-0.0040*** (-9.557)	0.0029*** (15.974)	0.0076*** (34.919)	-0.0003 (-1.104)	0.0009*** (3.815)	0.0020*** (14.469)	0.0029*** (9.946)
FICO	-0.0045*** (-40.746)	-0.0066*** (-30.906)	-0.0065*** (-97.481)	-0.0142*** (-188.389)	-0.0023*** (-20.715)	-0.0037*** (-35.332)	-0.0059*** (-101.874)	-0.0092*** (-78.493)
PMI	0.0736*** (3.693)	0.0068 (0.131)	0.0342** (2.807)	0.4372*** (37.586)	0.0890* (2.031)	0.2170*** (8.415)	0.1242*** (11.467)	0.2264*** (8.607)
Amount	-0.0646*** (-11.536)	-0.0386*** (-3.445)	-0.0949*** (-14.797)	-0.2261*** (-22.981)	0.0094 (1.628)	0.0078 (1.192)	-0.0343*** (-10.432)	-0.1074*** (-11.758)
Full Doc	-0.6345*** (-68.170)	-0.4481*** (-23.739)	-0.2720*** (-37.162)	-0.1509*** (-17.704)	-0.1932*** (-20.083)	-0.3093*** (-29.261)	-0.4385*** (-81.402)	-0.1375*** (-10.631)
Refi	-0.0490*** (-4.888)	-0.1682*** (-8.806)	-0.1739*** (-18.595)	-0.3295*** (-31.488)	-0.0819*** (-7.624)	-0.0919*** (-8.614)	-0.0357*** (-6.327)	-0.3503*** (-22.274)
FL	0.4141*** (27.621)	0.4224*** (16.996)	0.3853*** (41.816)	0.5029*** (42.480)	0.2251*** (16.889)	0.1637*** (13.870)	0.3742*** (48.965)	0.4794*** (30.001)
black	-0.1211 (-1.455)	0.0092 (0.117)	-0.0488 (-1.589)	0.2123*** (3.379)	0.0391 (1.356)	0.0258 (0.875)	0.0649 (1.652)	0.2137* (2.528)
Hispanic	-0.0416 (-0.863)	-0.0831* (-2.133)	-0.0410** (-2.833)	0.0976* (2.531)	0.0071 (0.411)	0.0394** (3.094)	0.0988*** (4.866)	0.1195** (2.613)
PPP × black	0.1188 (1.411)	0.0117 (0.133)	0.0784* (2.269)	-0.0593 (-0.937)	-0.0449 (-0.727)	0.1884*** (4.011)	-0.0331 (-0.807)	-0.1901* (-2.153)
PPP × Hispanic	0.0293 (0.600)	0.0748 (1.693)	-0.0393* (-2.324)	-0.0340 (-0.866)	-0.0026 (-0.087)	0.0534** (2.791)	-0.0887*** (-4.192)	0.0022 (0.046)
PMI × black	0.0006 (0.011)	-0.0117 (-0.093)	-0.0081 (-0.238)	-0.2244*** (-8.562)	-0.1044 (-0.895)	-0.0174 (-0.197)	-0.0699* (-2.384)	-0.0341 (-0.480)
PMI × Hispanic	0.0067 (0.235)	0.1697* (2.326)	-0.0179 (-0.859)	-0.0973*** (-4.976)	-0.0049 (-0.056)	-0.0661 (-1.389)	-0.0047 (-0.304)	-0.1595*** (-3.907)
Tract Income	-0.0761*** (-4.112)	-0.0075 (-0.236)	-0.1007*** (-8.361)	-0.0876*** (-4.723)	-0.0431** (-2.935)	-0.0299* (-2.265)	-0.0793*** (-7.924)	-0.1014*** (-4.022)
Tract Minority	-0.0307 (-1.482)	0.1235** (3.102)	-0.0467** (-3.060)	0.0336 (1.783)	0.0706** (3.016)	0.0465* (2.308)	0.0179 (1.492)	0.0468 (1.535)
Constant	8.9201*** (88.238)	9.2353*** (47.523)	10.8358*** (186.908)	14.7562*** (220.186)	7.9179*** (86.018)	8.1843*** (89.684)	9.0810*** (159.302)	12.9313*** (120.057)
R^2	0.4187	0.3874	0.4596	0.3953	0.3734	0.2731	0.3698	0.3503
BIC	30089.2381	13643.9143	85211.2470	535096.9087	7160.6450	34671.8207	117473.8232	117655.6553
N	17192.0000	6417.0000	40959.0000	139882.0000	7059.0000	19584.0000	60878.0000	35601.0000

3 Statistical Discrimination

Table 4: Model Inclusion Probabilities in the Rates estimation. Statistical Discrimination.

Variable	2yr ARM	3yr ARM	30yr FRM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
$\Pr(\delta = 1)$								
default	0.00	0.15	0.92	0.00	0.05	0.40	1.00	0.51
prepay	0.00	0.40	0.00	0.00	0.28	0.00	0.00	0.00
$\Pr(\gamma = 1)$								
black	0.02	0.07	0.83	1.00	0.03	0.06	0.67	0.51
Hispanic	0.04	0.07	0.29	1.00	0.02	0.60	0.68	0.94
PPP \times black	0.02	0.11	0.70	0.67	0.09	0.70	0.44	0.53
PPP \times Hispanic	0.04	0.13	0.24	0.23	0.04	0.11	0.71	0.12
PMI \times black	0.07	0.18	0.29	1.00	0.14	0.21	0.90	0.18
PMI \times Hispanic	0.04	0.46	0.43	1.00	0.07	0.19	0.26	0.92
Tract Income	1.00	0.28	0.47	1.00	0.90	0.45	0.89	0.64
Tract Mmortality	0.04	0.57	0.32	0.99	0.88	0.85	1.00	0.58

The probabilities in the top panel correspond to the evaluation of statistical discrimination.

The probabilities in the bottom panel correspond to the evaluation of taste-based discrimination.

Table 5: Rates estimation. Statistical Discrimination.

Variable	2yr ARM	3yr ARM	30yr FRM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
Constant	5.6278	5.2125	5.1173	1.8983	5.8426	4.2536	5.0135	4.0624
$\hat{\mathbf{P}}$ default	5.1342	5.1505	5.7730	11.5905	3.9675	3.8030	4.6230	4.9142
prepay	1.7158	1.0712	3.1308	5.0093	0.4196	2.2389	1.6371	2.8798
\mathbf{z} PPP	-0.3529	0.1104	0.1525	0.3671	0.0100	0.1865	0.0558	-0.0291
PMI	0.1611	0.0543	0.0208	0.4263	0.1250	0.2615	0.1159	0.1821
Amount	-0.0807	-0.0547	-0.0056	-0.3222	0.0154	-0.0493	-0.0688	-0.2010
FL	0.5154	0.4401	0.4466	0.8550	0.1985	0.2748	0.5247	0.8623
\mathbf{x} black				0.2880				0.1308
Hispanic				0.1184				
PPP \times black								
PPP \times Hispanic								
PMI \times black				-0.3039			-0.1628	
PMI \times Hispanic				-0.1809				-0.2156
Tract Income	-0.1140			-0.0925				
Tract Minority				0.0868			0.1903	
No. Obs.	17192	6417	40959	139882	7059	19584	60878	35601

The coefficients of the \mathbf{z} variables represent the medians of the posterior distributions.

The grayed-out coefficients indicate that 0 is contained in the 90 percent coverage interval.

The coefficients of the \mathbf{x} variables represent the medians of the posterior distributions conditional on the modal value of the corresponding γ for cases in which the inclusion probability $\Pr(\gamma = 1)$ exceeds 90 percent.

Table 6: Rates estimation. Benchmark.

	2-yr ARM	3-yr ARM	30-yr FRM	30-yr ARM	10-yr FRM	10-yr ARM	5-yr ARM	Other
LTV	0.0260*** (33.784)	0.0209*** (15.942)	0.0063*** (23.986)	0.0133*** (35.041)	0.0050*** (12.461)	0.0081*** (14.846)	0.0229*** (52.041)	0.0082*** (14.595)
PPP	-0.8064*** (-27.410)	0.1094*** (3.444)	0.1217*** (11.658)	-0.2449*** (-11.909)	-0.0050 (-0.358)	0.0752*** (6.699)	-0.0109 (-0.966)	-0.2375*** (-9.002)
DTI	0.0001 (0.354)	-0.0040*** (-9.557)	0.0029*** (15.974)	0.0076*** (34.919)	-0.0003 (-1.104)	0.0009*** (3.815)	0.0020*** (14.469)	0.0029*** (9.946)
FICO	-0.0045*** (-40.746)	-0.0066*** (-30.906)	-0.0065*** (-97.481)	-0.0142*** (-188.389)	-0.0023*** (-20.715)	-0.0037*** (-35.332)	-0.0059*** (-101.874)	-0.0092*** (-78.493)
PMI	0.0736*** (3.693)	0.0068 (0.131)	0.0342** (2.807)	0.4372*** (37.586)	0.0890* (2.031)	0.2170*** (8.415)	0.1242*** (11.467)	0.2264*** (8.607)
Amount	-0.0646*** (-11.536)	-0.0386*** (-3.445)	-0.0949*** (-14.797)	-0.2261*** (-22.981)	0.0094 (1.628)	0.0078 (1.192)	-0.0343*** (-10.432)	-0.1074*** (-11.758)
Full Doc	-0.6345*** (-68.170)	-0.4481*** (-23.739)	-0.2720*** (-37.162)	-0.1509*** (-17.704)	-0.1932*** (-20.083)	-0.3093*** (-29.261)	-0.4385*** (-81.402)	-0.1375*** (-10.631)
Refi	-0.0490*** (-4.888)	-0.1682*** (-8.806)	-0.1739*** (-18.595)	-0.3295*** (-31.488)	-0.0819*** (-7.624)	-0.0919*** (-8.614)	-0.0357*** (-6.327)	-0.3503*** (-22.274)
FL	0.4141*** (27.621)	0.4224*** (16.996)	0.3853*** (41.816)	0.5029*** (42.480)	0.2251*** (16.889)	0.1637*** (13.870)	0.3742*** (48.965)	0.4794*** (30.001)
black	-0.1211 (-1.455)	0.0092 (0.117)	-0.0488 (-1.589)	0.2123*** (3.379)	0.0391 (1.356)	0.0258 (0.875)	0.0649 (1.652)	0.2137* (2.528)
Hispanic	-0.0416 (-0.863)	-0.0831* (-2.133)	-0.0410** (-2.833)	0.0976* (2.531)	0.0071 (0.411)	0.0394** (3.094)	0.0988*** (4.866)	0.1195** (2.613)
PPP × black	0.1188 (1.411)	0.0117 (0.133)	0.0784* (2.269)	-0.0593 (-0.937)	-0.0449 (-0.727)	0.1884*** (4.011)	-0.0331 (-0.807)	-0.1901* (-2.153)
PPP × Hispanic	0.0293 (0.600)	0.0748 (1.693)	-0.0393* (-2.324)	-0.0340 (-0.866)	-0.0026 (-0.087)	0.0534** (2.791)	-0.0887*** (-4.192)	0.0022 (0.046)
PMI × black	0.0006 (0.011)	-0.0117 (-0.093)	-0.0081 (-0.238)	-0.2244*** (-8.562)	-0.1044 (-0.895)	-0.0174 (-0.197)	-0.0699* (-2.384)	-0.0341 (-0.480)
PMI × Hispanic	0.0067 (0.235)	0.1697* (2.326)	-0.0179 (-0.859)	-0.0973*** (-4.976)	-0.0049 (-0.056)	-0.0661 (-1.389)	-0.0047 (-0.304)	-0.1595*** (-3.907)
Tract Income	-0.0761*** (-4.112)	-0.0075 (-0.236)	-0.1007*** (-8.361)	-0.0876*** (-4.723)	-0.0431** (-2.935)	-0.0299* (-2.265)	-0.0793*** (-7.924)	-0.1014*** (-4.022)
Tract Minority	-0.0307 (-1.482)	0.1235** (3.102)	-0.0467** (-3.060)	0.0336 (1.783)	0.0706** (3.016)	0.0465* (2.308)	0.0179 (1.492)	0.0468 (1.535)
Constant	8.9201*** (88.238)	9.2353*** (47.523)	10.8358*** (186.908)	14.7562*** (220.186)	7.9179*** (86.018)	8.1843*** (89.684)	9.0810*** (159.302)	12.9313*** (120.057)
R ²	0.4187	0.3874	0.4596	0.3953	0.3734	0.2731	0.3698	0.3503
BIC	30089.2381	13643.9143	85211.2470	535096.9087	7160.6450	34671.8207	117473.8232	117655.6553
N	17192.0000	6417.0000	40959.0000	139882.0000	7059.0000	19584.0000	60878.0000	35601.0000

4 Top-10 Lenders Fixed Effects

Table 7: Model Inclusion Probabilities in the Rates estimation. Top 10 Lenders Sample with Lender FEs.

Variable	2yr ARM	3yr ARM	30yr FRM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
$\Pr(\delta = 1)$								
default	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
prepay	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
$\Pr(\gamma = 1)$								
black	0.34	0.07	0.36	1.00	0.08	0.09	0.10	0.05
Hispanic	0.02	0.03	0.01	0.19	0.04	0.92	0.01	0.33
PPP \times black	0.18	0.19	0.43	1.00	0.38	0.36	0.09	0.06
PPP \times Hispanic	0.03	0.03	0.02	0.16	0.06	0.05	0.01	0.32
PMI \times black	0.07	0.13	0.04	1.00	0.49	0.12	0.04	0.09
PMI \times Hispanic	0.03	0.12	0.03	0.84	0.33	0.78	0.02	0.51
Tract Income	1.00	0.07	0.89	1.00	0.06	0.36	1.00	0.97
Tract Minority	0.99	0.99	0.18	0.08	0.10	0.74	0.20	0.08

The probabilities in the top panel correspond to the evaluation of statistical discrimination.

The probabilities in the bottom panel correspond to the evaluation of taste-based discrimination.

Table 8: Rates estimation. Top 10 Lenders Sample with Lender FEs.

Variable	2yr ARM	3yr ARM	30yr FRM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
Constant	5.8033	5.2638	5.3141	4.3814	5.5568	4.8132	5.9945	4.7868
$\hat{\mathbf{P}}$ default prepay	5.2033 1.5643	3.7639 0.9704	6.6555 2.7608	7.4741 3.4699	3.4486 0.9276	3.5860 1.2406	4.4158 1.2974	3.0581 2.8537
\mathbf{z} PPP PMI Amount FL	-0.4398 0.2311 -0.0816 0.5116	-0.2111 -0.2073 -0.0433 0.3631	-0.1807 0.1120 -0.0791 0.3866	-0.1341 0.0091 -0.1685 0.5446	0.0271 -0.2253 0.0271 0.1519	0.0709 0.4117 -0.0329 0.2925	-0.5504 -0.0099 -0.0726 0.5528	-0.0961 0.0956 -0.1119 0.6169
\mathbf{x} black Hispanic PPP \times black PPP \times Hispanic PMI \times black PMI \times Hispanic Tract Income Tract Minority				0.3196 -0.2674 -0.1613 -0.0827 0.1841		0.0534		
No. Obs.	12909	2731	16415	71546	710	8934	29163	22820

The coefficients of the \mathbf{z} variables represent the medians of the posterior distributions.

The grayed-out coefficients indicate that 0 is contained in the 90 percent coverage interval.

The coefficients of the \mathbf{x} variables represent the medians of the posterior distributions conditional on the modal value of the corresponding γ for cases in which the inclusion probability $\Pr(\gamma = 1)$ exceeds 90 percent.

Table 9: Rates estimation. Top-10 Lenders Fixed Effects.

	2-yr ARM	3-yr ARM	30-yr FRM	30-yr ARM	10-yr FRM	10-yr ARM	5-yr ARM	Other
LTV	0.0286*** (31.531)	0.0207*** (13.683)	0.0079*** (17.839)	0.0117*** (26.524)	0.0054* (1.970)	0.0056*** (9.303)	0.0245*** (41.371)	0.0098*** (12.530)
PPP	-0.8984*** (-33.687)	-0.2161*** (-5.088)	-0.2183*** (-5.818)	-0.4574*** (-19.422)	-0.0112 (-0.169)	0.0048 (0.277)	-0.5015*** (-23.404)	-0.1405*** (-3.600)
DTI	0.0008 (1.905)	0.0048*** (5.910)	-0.0009** (-2.690)	0.0050*** (17.058)	-0.0010 (-0.340)	0.0014*** (3.823)	-0.0003 (-1.059)	0.0057*** (14.152)
FICO	-0.0042*** (-36.109)	-0.0045*** (-17.596)	-0.0072*** (-62.479)	-0.0089*** (-102.027)	-0.0023*** (-5.769)	-0.0028*** (-21.010)	-0.0052*** (-63.538)	-0.0064*** (-44.398)
PMI	0.0938*** (3.833)	0.0116 (0.174)	0.1071*** (5.846)	0.1686*** (10.010)	-0.1747 (-1.412)	0.3043*** (11.500)	-0.0659*** (-5.226)	0.1466*** (4.016)
Amount	-0.0813*** (-13.959)	-0.0370** (-2.775)	-0.1624*** (-19.046)	-0.1621*** (-19.767)	0.0156 (0.835)	-0.0113 (-1.417)	-0.0432*** (-8.337)	-0.0658*** (-6.577)
Full Doc	-0.6426*** (-63.962)	-0.4703*** (-19.659)	-0.3523*** (-27.354)	-0.4640*** (-50.336)	-0.1927*** (-4.475)	-0.2422*** (-18.563)	-0.4809*** (-64.366)	-0.5123*** (-34.777)
Refi	-0.0201 (-1.877)	-0.0387 (-1.531)	-0.3119*** (-18.033)	-0.0433*** (-3.729)	-0.0972** (-2.810)	-0.0922*** (-7.186)	-0.0335*** (-4.137)	-0.0711*** (-3.998)
FL	0.3811*** (23.597)	0.3470*** (10.753)	0.3265*** (22.853)	0.3269*** (27.604)	0.1295* (2.165)	0.1851*** (8.645)	0.4255*** (39.136)	0.3465*** (18.410)
black	-0.1543* (-2.202)	0.0772 (0.923)	-0.2032 (-1.711)	0.2833*** (4.502)	-0.0535 (-0.684)	0.0126 (0.409)	0.1438* (2.174)	0.2826* (2.381)
Hispanic	-0.1147** (-2.717)	-0.0584 (-1.504)	-0.0708 (-0.884)	0.0492 (1.146)	0.0370 (0.455)	0.0365* (2.286)	0.0096 (0.282)	0.1764** (2.659)
PPP × black	0.1364 (1.899)	-0.1136 (-1.141)	0.2733* (2.287)	-0.2299*** (-3.619)	0.2335 (1.196)	0.1167* (2.221)	-0.1266 (-1.876)	-0.2742* (-2.266)
PPP × Hispanic	0.0907* (2.109)	0.0671 (1.365)	0.0261 (0.322)	-0.0812 (-1.867)	-0.0363 (-0.417)	0.0430 (1.629)	-0.0298 (-0.861)	-0.2129** (-3.147)
PMI × black	0.0297 (0.467)	0.0190 (0.111)	-0.0659 (-1.568)	-0.1308*** (-4.299)	0.0000 (.)	-0.1310 (-1.338)	-0.0305 (-0.836)	-0.0850 (-1.003)
PMI × Hispanic	0.0363 (1.139)	0.0332 (0.394)	0.0131 (0.496)	-0.0365 (-1.671)	0.7593*** (6.097)	-0.1494** (-2.654)	-0.0066 (-0.364)	-0.1144* (-2.205)
Tract Income	-0.0577** (-2.999)	-0.0073 (-0.192)	-0.0673** (-3.218)	-0.0453* (-2.436)	-0.0279 (-0.583)	-0.0262 (-1.646)	-0.0396** (-3.033)	-0.0619* (-2.122)
Tract Minority	-0.0952*** (-4.391)	0.1097* (2.204)	0.0126 (0.519)	-0.0067 (-0.319)	0.0197 (0.269)	0.0548* (2.204)	0.0133 (0.844)	0.0082 (0.236)
Constant	8.1802*** (71.936)	7.5051*** (32.514)	11.1702*** (103.889)	11.9296*** (155.892)	7.4286*** (25.321)	7.1781*** (61.111)	8.6682*** (106.529)	9.6203*** (55.321)
R ²	0.4968	0.5134	0.4990	0.5689	0.4385	0.4659	0.4630	0.5595
BIC	20073.8941	4647.7829	34318.1094	239269.9210	1087.1701	12486.2033	51016.2906	71266.2242
N	12909.0000	2731.0000	16415.0000	71546.0000	710.0000	8934.0000	29163.0000	22820.0000

5 Top-10 Lenders No Fixed Effects

Table 10: Model Inclusion Probabilities in the Rates estimation. Top 10 Lenders Sample without Lender FEs.

Variable	2yr ARM	3yr ARM	30yr FRM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
$\Pr(\delta = 1)$								
default	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
prepay	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
$\Pr(\gamma = 1)$								
black	0.44	0.09	0.35	1.00	0.12	0.04	0.76	0.88
Hispanic	0.04	0.03	0.06	1.00	0.06	1.00	0.07	1.00
PPP \times black	0.25	0.10	0.37	1.00	0.45	0.69	0.76	0.28
PPP \times Hispanic	0.07	0.04	0.07	0.19	0.08	0.03	0.04	0.07
PMI \times black	0.05	0.18	0.41	1.00	0.50	0.13	0.04	0.47
PMI \times Hispanic	0.03	0.08	0.47	1.00	0.34	0.64	0.03	1.00
Tract Income	1.00	0.03	0.95	0.99	0.08	0.07	1.00	1.00
Tract Minority	0.94	1.00	0.03	0.03	0.12	0.45	0.42	0.08

The probabilities in the top panel correspond to the evaluation of statistical discrimination.

The probabilities in the bottom panel correspond to the evaluation of taste-based discrimination.

Table 11: Rates estimation. Top 10 Lenders Sample without Top 10 Lenders Sample with Lender FEs. Lender FEs.

Variable	2yr ARM	3yr ARM	30yr FRM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
Constant	6.0653	4.7506	5.6605	2.2881	5.6425	4.5036	5.6979	3.7052
$\hat{\mathbf{P}}$ default	4.8253	4.2018	6.6439	11.2975	4.0852	4.0341	4.6502	4.9375
prepay	1.3545	0.8689	2.5648	5.2127	1.0838	1.6264	1.3609	2.0331
\mathbf{z} PPP	-0.5178	0.1828	-0.2281	0.0751	0.0420	0.2222	-0.3332	-0.3257
PMI	0.2580	-0.1222	0.0854	0.3216	-0.2386	0.3569	0.1075	0.3055
Amount	-0.0865	-0.0566	-0.0885	-0.2248	0.0133	-0.0543	-0.0831	-0.1557
FL	0.5191	0.4618	0.3869	0.9073	0.2172	0.1987	0.5424	0.9362
\mathbf{x} black				0.5458				
Hispanic				0.1461		0.0756		0.2026
PPP \times black				-0.3481				
PPP \times Hispanic								
PMI \times black				-0.3964				
PMI \times Hispanic				-0.2176				-0.4032
Tract Income	-0.1200		-0.0744	-0.0788			-0.0998	-0.1615
Tract Minority	-0.0861	0.2434						
No. Obs.	12909	2731	16415	71546	710	8934	29163	22820

The coefficients of the \mathbf{z} variables represent the medians of the posterior distributions.

The grayed-out coefficients indicate that 0 is contained in the 90 percent coverage interval.

The coefficients of the \mathbf{x} variables represent the medians of the posterior distributions conditional on the modal value of the corresponding γ for cases in which the inclusion probability $\Pr(\gamma = 1)$ exceeds 90 percent.

Table 12: Rates estimation. Top-10 Lenders No Fixed Effects.

	2-yr ARM	3-yr ARM	30-yr FRM	30-yr ARM	10-yr FRM	10-yr ARM	5-yr ARM	Other
LTV	0.0273*** (30.400)	0.0208*** (13.023)	0.0080*** (17.324)	0.0135*** (27.309)	0.0051* (2.231)	0.0054*** (7.536)	0.0249*** (39.970)	0.0101*** (10.788)
PPP	-0.8932*** (-32.480)	0.1048** (2.822)	-0.2406*** (-6.446)	-0.4617*** (-16.780)	-0.0290 (-0.481)	0.1611*** (9.495)	-0.2990*** (-13.304)	-0.3590*** (-8.101)
DTI	-0.0016*** (-3.820)	0.0041*** (5.941)	0.0017*** (5.309)	-0.0025*** (-9.296)	0.0000 (0.035)	0.0039*** (9.892)	0.0008** (2.995)	0.0023*** (5.361)
FICO	-0.0041*** (-33.364)	-0.0049*** (-17.818)	-0.0068*** (-61.616)	-0.0143*** (-147.097)	-0.0032*** (-7.109)	-0.0032*** (-21.474)	-0.0055*** (-64.921)	-0.0100*** (-62.337)
PMI	0.0789** (3.265)	0.1411 (1.797)	0.1264*** (7.355)	0.3455*** (23.423)	-0.2613* (-2.556)	0.3069*** (10.699)	0.1061*** (8.135)	0.3770*** (9.295)
Amount	-0.0725*** (-11.600)	-0.0373** (-2.860)	-0.1638*** (-18.907)	-0.1637*** (-17.624)	0.0015 (0.065)	-0.0216* (-2.463)	-0.0405*** (-8.371)	-0.0478*** (-4.158)
Full Doc	-0.6191*** (-60.862)	-0.4547*** (-19.616)	-0.3705*** (-28.727)	-0.2049*** (-19.308)	-0.2047*** (-4.095)	-0.2892*** (-19.467)	-0.4256*** (-54.745)	-0.1465*** (-8.244)
Refi	-0.0557*** (-5.055)	-0.0514* (-2.015)	-0.3142*** (-18.055)	-0.2955*** (-22.015)	-0.1274*** (-3.451)	-0.1209*** (-8.022)	-0.0429*** (-5.384)	-0.5132*** (-24.591)
FL	0.3933*** (23.665)	0.4119*** (12.161)	0.3571*** (24.327)	0.5358*** (39.652)	0.2336** (3.166)	0.0970*** (5.427)	0.4420*** (39.416)	0.5665*** (26.583)
black	-0.1514* (-2.125)	0.0729 (0.729)	-0.2326* (-2.015)	0.4411*** (5.909)	-0.0426 (-0.509)	-0.0196 (-0.573)	0.2243** (2.892)	0.3018* (2.351)
Hispanic	-0.1206** (-2.768)	-0.0649 (-1.534)	-0.0543 (-0.665)	0.1319* (2.565)	0.0605 (0.604)	0.0627*** (3.426)	0.0333 (0.828)	0.1709* (2.286)
PPP × black	0.1127 (1.541)	-0.0487 (-0.421)	0.3002** (2.580)	-0.2750*** (-3.665)	0.3680 (1.774)	0.1941*** (3.444)	-0.2002* (-2.540)	-0.2112 (-1.607)
PPP × Hispanic	0.0934* (2.105)	0.0943 (1.792)	0.0061 (0.073)	-0.0474 (-0.914)	-0.0481 (-0.445)	0.0615* (2.081)	-0.0407 (-0.995)	-0.0212 (-0.278)
PMI × black	0.0347 (0.542)	0.0323 (0.162)	-0.1351** (-3.033)	-0.3234*** (-9.836)	0.0000 (.)	-0.1940 (-1.878)	-0.0256 (-0.654)	-0.1850 (-1.794)
PMI × Hispanic	0.0273 (0.846)	0.1102 (1.133)	-0.0670* (-2.403)	-0.1459*** (-6.069)	1.1377*** (10.482)	-0.1580** (-2.833)	0.0178 (0.927)	-0.3571*** (-5.505)
Tract Income	-0.0841*** (-4.196)	0.0112 (0.285)	-0.0900*** (-4.165)	-0.0661** (-3.064)	-0.0336 (-0.636)	-0.0208 (-1.127)	-0.0815*** (-5.838)	-0.1297*** (-3.806)
Tract Minority	-0.0788*** (-3.474)	0.1808*** (3.366)	-0.0435 (-1.721)	-0.0234 (-0.975)	0.0424 (0.505)	0.0441 (1.537)	0.0160 (0.944)	0.0424 (1.028)
Constant	8.7155*** (74.923)	7.4539*** (30.570)	11.4389*** (111.159)	15.2452*** (178.539)	8.6104*** (25.029)	7.9177*** (59.270)	9.0270*** (108.627)	13.5442*** (88.829)
R ²	0.4441	0.4421	0.4497	0.4252	0.3010	0.2733	0.3728	0.3758
BIC	21274.3721	4949.8520	35772.7598	259761.3565	1183.6092	15155.3779	55450.7108	79128.0700
N	12909.0000	2731.0000	16415.0000	71546.0000	710.0000	8934.0000	29163.0000	22820.0000

6 Refinances

Table 13: Model Inclusion Probabilities in the Rates estimation. Refinances.

Variable	2yr ARM	3yr ARM	30yr FRM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
$\Pr(\delta = 1)$								
default	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
prepay	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
$\Pr(\gamma = 1)$								
black	0.14	0.05	0.06	1.00	0.04	0.08	0.29	0.07
Hispanic	0.05	0.07	0.98	0.52	0.02	0.11	0.01	0.04
PPP \times black	0.13	0.05	0.26	0.83	0.35	0.48	0.28	0.05
PPP \times Hispanic	0.05	0.03	0.04	0.34	0.06	0.14	0.01	0.03
PMI \times black	0.13	0.37	0.32	1.00	0.99	0.97	0.06	0.25
PMI \times Hispanic	0.05	0.10	0.02	0.80	0.50	0.09	0.10	0.45
Tract Income	0.38	0.07	0.57	1.00	0.09	0.09	1.00	0.05
Tract Mmortality	0.17	0.04	0.02	0.02	0.42	0.47	0.02	0.04

The probabilities in the top panel correspond to the evaluation of statistical discrimination.

The probabilities in the bottom panel correspond to the evaluation of taste-based discrimination.

Table 14: Rates estimation. Refinances.

Variable	2yr ARM	3yr ARM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
Constant	6.7775	4.0812	4.8642	-2.6849	5.7046	3.8856	2.9928
$\hat{\mathbf{P}}$							
default	7.3623	4.4849	5.0080	13.3096	3.9827	5.5865	5.6092
prepay	0.3562	2.4826	3.7725	10.8177	0.8365	2.6828	4.5524
\mathbf{z}							
PPP	-0.7844	0.6759	0.1619	1.3417	0.0103	0.2546	0.0845
PMI	0.1979	-0.1127	-0.0004	0.1759	0.0138	0.2922	0.2119
Amount	-0.1024	-0.0022	0.0142	-0.1517	0.0395	-0.0486	-0.2305
FL	0.5061	0.5015	0.4720	1.3087	0.1501	0.3530	0.4559
\mathbf{x}							
black				0.3444			
Hispanic			-0.0612				
PPP \times black							
PPP \times Hispanic							
PMI \times black				-0.3459	0.6191	0.5401	
PMI \times Hispanic							
Tract Income				-0.0834			-0.0867
Tract Minority							
No. Obs.	6261	2795	33231	90241	3737	6416	21133

The coefficients of the \mathbf{z} variables represent the medians of the posterior distributions.

The grayed-out coefficients indicate that 0 is contained in the 90 percent coverage interval.

The coefficients of the \mathbf{x} variables represent the medians of the posterior distributions conditional on the modal value of the corresponding γ for cases in which the inclusion probability $\Pr(\gamma = 1)$ exceeds 90 percent.

Table 15: Rates estimation. Refinances.

	2-yr ARM	3-yr ARM	30-yr FRM	30-yr ARM	10-yr FRM	10-yr ARM	5-yr ARM	Other
LTV	0.0208*** (25.410)	0.0197*** (15.498)	0.0064*** (21.835)	0.0090*** (21.504)	0.0048*** (11.284)	0.0063*** (9.817)	0.0172*** (38.663)	0.0057*** (9.299)
PPP	-0.7465*** (-12.787)	0.1757*** (3.656)	0.0226 (1.805)	-0.2834*** (-10.314)	-0.0559*** (-3.299)	0.0747*** (3.359)	-0.0676*** (-3.425)	-0.2785*** (-7.687)
DTI	0.0014** (3.083)	-0.0022*** (-3.646)	0.0028*** (13.887)	0.0072*** (26.641)	-0.0001 (-0.194)	0.0019*** (4.516)	0.0016*** (6.714)	0.0034*** (8.335)
FICO	-0.0053*** (-27.402)	-0.0059*** (-19.455)	-0.0066*** (-87.406)	-0.0153*** (-169.373)	-0.0020*** (-15.766)	-0.0042*** (-22.707)	-0.0066*** (-67.645)	-0.0097*** (-65.583)
PMI	0.0269 (0.868)	0.1061 (1.749)	0.0738*** (5.509)	0.4935*** (38.092)	-0.0086 (-0.128)	0.1904** (3.259)	0.1605*** (11.139)	0.3017*** (10.467)
Amount	-0.0572*** (-6.071)	-0.0333* (-2.319)	-0.1108*** (-18.845)	-0.1330*** (-14.275)	0.0222** (3.174)	0.0082 (0.636)	-0.0478*** (-8.496)	-0.0738*** (-5.655)
Full Doc	-0.6106*** (-39.395)	-0.3891*** (-14.318)	-0.2909*** (-34.870)	-0.1502*** (-14.141)	-0.1605*** (-13.316)	-0.2836*** (-15.491)	-0.3528*** (-39.463)	0.0391* (2.254)
Refi	0.0000 (.)	0.0000 (.)	0.0000 (.)	0.0000 (.)	0.0000 (.)	0.0000 (.)	0.0000 (.)	0.0000 (.)
FL	0.3814*** (13.458)	0.3782*** (10.088)	0.3858*** (37.979)	0.4813*** (35.607)	0.1749*** (9.580)	0.1633*** (7.182)	0.3103*** (23.790)	0.5557*** (25.455)
black	-0.0433 (-0.318)	0.0520 (0.322)	-0.0669* (-2.030)	0.1773* (2.071)	-0.0204 (-0.618)	-0.0348 (-0.635)	0.1116 (1.587)	0.2504* (2.064)
Hispanic	0.0633 (0.617)	0.0562 (0.666)	-0.0827*** (-4.421)	-0.0167 (-0.296)	-0.0356 (-1.879)	0.0039 (0.159)	-0.0589 (-1.584)	0.0399 (0.566)
PPP × black	0.0075 (0.054)	-0.0333 (-0.198)	0.1321*** (3.589)	-0.0737 (-0.854)	0.1972* (2.370)	0.1912* (2.510)	-0.1062 (-1.460)	-0.2305 (-1.835)
PPP × Hispanic	-0.0859 (-0.831)	-0.0174 (-0.197)	0.0081 (0.384)	0.0340 (0.592)	0.0553 (1.617)	0.0875* (2.231)	0.0555 (1.434)	-0.0000 (-0.000)
PMI × black	0.0386 (0.470)	-0.2139 (-1.299)	-0.0997** (-2.734)	-0.2448*** (-7.713)	0.6629*** (5.706)	0.5800** (2.977)	-0.0494 (-1.227)	-0.1359 (-1.848)
PMI × Hispanic	0.0435 (0.933)	-0.0067 (-0.074)	-0.0071 (-0.298)	-0.0389 (-1.635)	0.2675 (1.729)	-0.0330 (-0.285)	-0.0434 (-1.825)	-0.1044* (-2.098)
Tract Income	-0.0362 (-1.211)	-0.0390 (-0.862)	-0.0615*** (-4.427)	-0.0529* (-2.454)	-0.0125 (-0.671)	-0.0330 (-1.444)	-0.0659*** (-4.104)	-0.0417 (-1.214)
Tract Minority	-0.0991** (-2.819)	-0.0391 (-0.727)	-0.0391* (-2.237)	-0.0489* (-2.051)	0.0448 (1.580)	0.0470 (1.207)	-0.0339 (-1.727)	-0.0175 (-0.413)
Constant	9.5885*** (63.683)	8.7568*** (35.831)	10.7542*** (169.079)	15.5212*** (207.051)	7.5916*** (71.645)	8.6034*** (56.531)	9.9494*** (121.115)	12.9617*** (101.113)
R ²	0.3859	0.3874	0.4528	0.4181	0.3573	0.2461	0.3610	0.3663
BIC	11280.1902	5657.3058	69821.1922	345309.7805	2879.8547	12774.1796	45354.5367	73062.2046
N	6261.0000	2795.0000	33231.0000	90241.0000	3737.0000	6416.0000	23151.0000	21133.0000

7 Purchases

Table 16: Model Inclusion Probabilities in the Rates estimation. Purchases.

Variable	2yr ARM	3yr ARM	30yr FRM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
$\Pr(\delta = 1)$								
default	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
prepay	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
$\Pr(\gamma = 1)$								
black	0.26	0.11	0.09	1.00	0.15	0.02	0.72	0.98
Hispanic	0.26	0.03	0.10	1.00	0.02	0.91	1.00	1.00
PPP \times black	0.11	0.08	0.43	1.00	0.15	1.00	0.65	0.55
PPP \times Hispanic	0.69	0.05	0.19	0.84	0.06	0.07	1.00	0.06
PMI \times black	0.09	0.16	0.08	0.85	0.39	0.16	0.04	0.19
PMI \times Hispanic	0.05	0.21	0.26	0.86	0.06	0.18	0.02	0.07
Tract Income	1.00	0.04	1.00	1.00	0.42	0.02	1.00	1.00
Tract Mmortality	0.03	0.96	0.67	1.00	1.00	0.99	1.00	0.96

The probabilities in the top panel correspond to the evaluation of statistical discrimination.

The probabilities in the bottom panel correspond to the evaluation of taste-based discrimination.

Table 17: Rates estimation. Model=odelta. Purchases.

Variable	2yr ARM	3yr ARM	30yr FRM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
Constant	5.3992	4.0079	5.4824	5.1321	5.6735	3.9961	5.7552	2.9793
$\hat{\mathbf{P}}$ default	4.4408	3.8046	4.7904	7.5626	2.9938	2.6476	4.2189	2.4211
prepay	2.1329	2.7697	2.0027	0.6926	0.9441	2.7105	0.4640	5.4922
\mathbf{z} PPP	-0.2435	0.4704	0.2801	-0.2821	0.0625	0.2757	-0.1353	0.2944
PMI	0.3103	-0.3040	0.0643	0.2331	-0.1070	0.2457	0.1628	-0.2809
Amount	-0.0925	-0.0432	-0.0042	-0.4271	0.0167	-0.0359	-0.1118	-0.1597
FL	0.5142	0.4992	0.3521	0.5159	0.2599	0.3677	0.4383	0.7273
\mathbf{x} black				0.5378				0.2405
Hispanic				0.2913		0.0440	0.1720	0.1482
PPP \times black				-0.3666		0.1681		
PPP \times Hispanic							-0.1386	
PMI \times black								
PMI \times Hispanic								
Tract Income	-0.1069		-0.1254	-0.1701			-0.0874	-0.1410
Tract Minority		0.1687		0.1723	0.1799	0.0876	0.0844	0.1454
No. Obs.	10931	3622	7728	49641	3322	13168	37727	14468

The coefficients of the \mathbf{z} variables represent the medians of the posterior distributions.

The grayed-out coefficients indicate that 0 is contained in the 90 percent coverage interval.

The coefficients of the \mathbf{x} variables represent the medians of the posterior distributions conditional on the modal value of the corresponding γ for cases in which the inclusion probability $\Pr(\gamma = 1)$ exceeds 90 percent.

Table 18: Rates estimation. Purchases.

	2-yr ARM	3-yr ARM	30-yr FRM	30-yr ARM	10-yr FRM	10-yr ARM	5-yr ARM	Other
LTV	0.0432*** (30.410)	0.0371*** (11.229)	0.0119*** (18.156)	0.0371*** (38.255)	0.0062*** (6.578)	0.0093*** (10.198)	0.0397*** (43.541)	0.0251*** (12.965)
PPP	-0.8945*** (-27.496)	0.1172** (3.077)	0.3043*** (14.582)	-0.2025*** (-6.436)	0.0370 (1.695)	0.0763*** (5.973)	0.0326* (2.444)	-0.2047*** (-5.475)
DTI	0.0000 (0.093)	-0.0048*** (-8.430)	0.0021*** (4.959)	0.0076*** (21.064)	-0.0008 (-1.875)	0.0009*** (3.371)	0.0022*** (13.101)	0.0023*** (5.917)
FICO	-0.0039*** (-30.585)	-0.0065*** (-24.472)	-0.0056*** (-35.333)	-0.0114*** (-88.517)	-0.0030*** (-15.964)	-0.0036*** (-28.107)	-0.0053*** (-74.561)	-0.0080*** (-43.343)
PMI	0.1184*** (4.636)	-0.2387** (-2.624)	0.0280 (0.883)	0.1705*** (6.774)	0.0224 (0.437)	0.2178*** (7.888)	0.0646*** (4.401)	-0.2372*** (-3.950)
Amount	-0.0705*** (-10.343)	-0.0440** (-2.981)	-0.0719*** (-7.698)	-0.3321*** (-22.846)	0.0088 (0.934)	0.0140* (2.318)	-0.0251*** (-6.244)	-0.1111*** (-8.724)
Full Doc	-0.6370*** (-56.204)	-0.4775*** (-18.637)	-0.2015*** (-12.483)	-0.2210*** (-15.839)	-0.2424*** (-15.890)	-0.3327*** (-25.969)	-0.4852*** (-74.148)	-0.4534*** (-25.168)
Refi	0.0000 (.)	0.0000 (.)	0.0000 (.)	0.0000 (.)	0.0000 (.)	0.0000 (.)	0.0000 (.)	0.0000 (.)
FL	0.4032*** (23.412)	0.4197*** (13.564)	0.3483*** (20.682)	0.5440*** (28.789)	0.2783*** (14.619)	0.1896*** (13.380)	0.3893*** (42.243)	0.3799*** (16.617)
black	-0.1749 (-1.574)	0.0968 (1.003)	-0.0329 (-0.646)	0.4394*** (5.151)	0.0919 (1.903)	0.0029 (0.095)	0.1233* (2.418)	0.3030** (2.914)
Hispanic	-0.1117* (-2.205)	-0.0697 (-1.534)	-0.0146 (-0.578)	0.1958*** (3.673)	0.0239 (0.901)	0.0509*** (3.360)	0.1281*** (5.400)	0.1353* (2.237)
PPP × black	0.1548 (1.386)	-0.0437 (-0.392)	0.1631* (2.407)	-0.2629** (-3.044)	0.0141 (0.115)	0.2146*** (3.839)	-0.0901 (-1.691)	-0.1810 (-1.679)
PPP × Hispanic	0.1184* (2.308)	0.0851 (1.582)	-0.0527 (-1.551)	-0.0818 (-1.504)	-0.0463 (-1.006)	0.0319 (1.394)	-0.1245*** (-5.023)	-0.0091 (-0.145)
PMI × black	0.0540 (0.669)	0.0781 (0.370)	0.0152 (0.173)	-0.1260** (-2.638)	-0.3022 (-1.522)	-0.2457** (-2.726)	-0.0081 (-0.175)	0.2163 (1.759)
PMI × Hispanic	-0.0008 (-0.022)	0.2775* (2.484)	-0.0439 (-0.901)	-0.0701 (-1.958)	-0.0574 (-0.626)	-0.1167* (-2.354)	0.0466* (2.265)	0.0578 (0.699)
Tract Income	-0.0897*** (-3.951)	0.0221 (0.499)	-0.1232*** (-4.973)	-0.1778*** (-5.956)	-0.0540* (-2.320)	-0.0155 (-0.977)	-0.0755*** (-6.173)	-0.1294*** (-4.020)
Tract Minority	-0.0175 (-0.703)	0.1489** (2.711)	0.0532 (1.549)	0.1221*** (4.039)	0.1103** (3.081)	0.0714** (2.974)	0.0608*** (4.189)	0.1390*** (3.575)
Constant	7.2587*** (46.737)	7.7950*** (23.541)	9.6907*** (73.747)	11.0436*** (85.531)	8.3080*** (58.892)	7.9921*** (66.935)	7.3066*** (79.227)	10.8992*** (51.171)
R ²	0.4681	0.4312	0.4800	0.3641	0.3789	0.2789	0.3992	0.3501
BIC	18186.0898	7736.3144	15439.5998	188911.4798	3898.9847	22206.1182	70137.6309	42705.1277
N	10931.0000	3622.0000	7728.0000	49641.0000	3322.0000	13168.0000	37727.0000	14468.0000

8 Depository Institutions

Table 19: Model Inclusion Probabilities in the Rates estimation. Depository Institutions.

Variable	2yr ARM	3yr ARM	30yr FRM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
$\Pr(\delta = 1)$								
default	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
prepay	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
$\Pr(\gamma = 1)$								
black	0.08	0.07	0.07	0.99	0.19	0.07	0.18	0.32
Hispanic	0.22	0.04	0.02	0.11	0.03	0.89	1.00	0.05
PPP \times black	0.06	0.06	1.00	0.17	0.39	1.00	0.06	0.26
PPP \times Hispanic	0.22	0.06	0.02	0.05	0.04	0.08	0.78	0.04
PMI \times black	0.29	0.20	0.20	0.14	0.16	0.10	0.06	0.15
PMI \times Hispanic	0.09	0.38	0.03	0.08	0.39	0.19	0.25	0.12
Tract Income	0.20	0.05	0.06	0.06	0.41	0.03	1.00	0.09
Tract Minority	0.12	0.14	0.02	0.06	0.82	0.59	0.59	0.07

The probabilities in the top panel correspond to the evaluation of statistical discrimination.

The probabilities in the bottom panel correspond to the evaluation of taste-based discrimination.

Table 20: Rates estimation. Depository Institutions.

Variable	2yr ARM	3yr ARM	30yr FRM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
Constant	5.7034	4.8625	5.2631	0.8979	5.6954	4.3603	4.9806	3.2389
$\hat{\mathbf{P}}$ default prepay	5.6122 1.6145	5.3281 1.2929	5.7496 2.3785	10.8725 5.5029	3.2694 0.8250	3.6131 2.0363	5.3790 1.6468	4.5803 3.0611
\mathbf{z} PPP PMI Amount FL	-0.5009 0.3082 -0.0945 0.5748	0.2286 -0.1733 -0.0568 0.4818	0.2230 0.0815 -0.0037 0.3716	0.4751 0.3166 -0.2423 0.9465	0.0231 0.0635 0.0288 0.2195	0.1648 0.3510 -0.0371 0.3446	0.1133 0.1298 -0.0651 0.4726	-0.0607 0.1127 -0.1585 1.2361
\mathbf{x} black Hispanic PPP \times black PPP \times Hispanic PMI \times black PMI \times Hispanic Tract Income Tract Minority				0.1769			0.1052	
No. Obs.	3961	3644	17233	65921	3586	10793	27147	14044

The coefficients of the \mathbf{z} variables represent the medians of the posterior distributions.

The grayed-out coefficients indicate that 0 is contained in the 90 percent coverage interval.

The coefficients of the \mathbf{x} variables represent the medians of the posterior distributions conditional on the modal value of the corresponding γ for cases in which the inclusion probability $\Pr(\gamma = 1)$ exceeds 90 percent.

Table 21: Rates estimation. Depository Institutions.

	2-yr ARM	3-yr ARM	30-yr FRM	30-yr ARM	10-yr FRM	10-yr ARM	5-yr ARM	Other
LTV	0.0252*** (18.083)	0.0250*** (14.142)	0.0066*** (16.737)	0.0083*** (12.600)	0.0052*** (10.921)	0.0061*** (10.220)	0.0255*** (40.016)	0.0009 (0.890)
PPP	-0.9093*** (-13.373)	0.0543 (1.340)	0.1771*** (12.802)	-0.1439*** (-5.193)	-0.0100 (-0.506)	0.0550*** (4.287)	0.0441** (2.988)	-0.2948*** (-7.764)
DTI	-0.0007 (-1.282)	-0.0063*** (-9.920)	0.0029*** (10.576)	0.0051*** (14.177)	-0.0008* (-1.962)	0.0004 (1.345)	0.0032*** (15.714)	0.0011 (1.840)
FICO	-0.0054*** (-22.047)	-0.0064*** (-23.562)	-0.0058*** (-57.066)	-0.0134*** (-113.366)	-0.0025*** (-17.246)	-0.0036*** (-26.702)	-0.0060*** (-68.651)	-0.0092*** (-43.383)
PMI	0.1025* (2.226)	-0.1308 (-1.751)	0.0689** (2.951)	0.4690*** (18.360)	0.1162 (1.593)	0.2724*** (7.388)	0.0094 (0.557)	0.2421*** (4.102)
Amount	-0.0586*** (-4.880)	-0.0217 (-1.584)	-0.0748*** (-11.868)	-0.1783*** (-15.617)	0.0164* (2.180)	0.0103 (1.453)	-0.0157** (-3.246)	-0.0285 (-1.913)
Full Doc	-0.6768*** (-32.225)	-0.3600*** (-13.690)	-0.2119*** (-19.808)	0.1660*** (10.918)	-0.1955*** (-15.311)	-0.2733*** (-19.850)	-0.4099*** (-51.166)	0.1690*** (6.603)
Refi	-0.0820*** (-3.881)	-0.1380*** (-5.395)	-0.1156*** (-8.993)	-0.2393*** (-14.008)	-0.0652*** (-4.530)	-0.0852*** (-6.658)	-0.0072 (-0.846)	-0.3561*** (-11.987)
FL	0.4622*** (13.298)	0.4143*** (12.987)	0.3595*** (28.948)	0.5618*** (29.308)	0.2205*** (12.425)	0.1943*** (11.874)	0.3563*** (32.670)	0.7555*** (25.841)
black	-0.1738 (-0.673)	0.0746 (0.806)	-0.0466 (-1.472)	0.2533** (2.671)	0.0458 (1.138)	-0.0420 (-1.148)	0.0488 (0.949)	0.3361* (2.335)
Hispanic	-0.0026 (-0.021)	-0.0721 (-1.451)	-0.0486** (-2.694)	0.0642 (1.137)	-0.0225 (-1.189)	0.0353* (2.166)	0.0724** (2.682)	0.0344 (0.464)
PPP × black	0.1469 (0.562)	-0.0734 (-0.706)	0.1922*** (4.872)	-0.0629 (-0.647)	0.1387 (1.510)	0.2433*** (4.093)	0.0007 (0.013)	-0.2044 (-1.339)
PPP × Hispanic	0.0232 (0.190)	0.1093 (1.901)	0.0279 (1.221)	-0.0346 (-0.592)	-0.0214 (-0.513)	0.0582* (2.267)	-0.0309 (-1.091)	0.0290 (0.366)
PMI × black	0.3753 (1.609)	0.0350 (0.226)	-0.0853 (-1.368)	-0.1045 (-1.827)	-0.0151 (-0.069)	-0.0555 (-0.288)	-0.1219** (-2.708)	-0.0481 (-0.355)
PMI × Hispanic	-0.0409 (-0.526)	0.1317 (1.013)	-0.0182 (-0.470)	-0.0634 (-1.436)	0.1332 (1.027)	-0.1466 (-1.767)	-0.0790** (-3.036)	-0.0710 (-0.691)
Tract Income	-0.0295 (-0.776)	-0.0070 (-0.171)	-0.0323* (-2.051)	-0.0396 (-1.544)	-0.0327 (-1.704)	-0.0083 (-0.548)	-0.0633*** (-4.459)	0.0053 (0.132)
Tract Minority	-0.0037 (-0.078)	0.0578 (1.091)	-0.0180 (-0.791)	-0.0814* (-2.411)	0.0797* (2.508)	0.0485 (1.902)	0.0157 (0.883)	-0.0223 (-0.370)
Constant	9.5961*** (46.346)	8.7701*** (36.412)	10.1576*** (115.225)	14.1805*** (130.636)	7.9998*** (66.215)	8.3177*** (71.911)	8.7419*** (102.597)	13.1339*** (68.195)
R^2	0.4477	0.4142	0.4605	0.3301	0.3927	0.2906	0.3895	0.3950
BIC	7535.1774	7777.8437	34145.3857	272682.3154	3336.9077	17335.3203	51908.7057	52219.4377
N	3961.0000	3644.0000	17233.0000	65921.0000	3586.0000	10793.0000	27147.0000	14044.0000

9 Non-Depository Institutions

Table 22: Model Inclusion Probabilities in the Rates estimation. Non-Depository Institutions.

Variable	2yr ARM	3yr ARM	30yr FRM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
$\Pr(\delta = 1)$								
default	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
prepay	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
$\Pr(\gamma = 1)$								
black	0.48	0.06	0.03	1.00	0.04	0.24	1.00	0.97
Hispanic	0.02	0.16	0.37	1.00	0.05	0.23	1.00	1.00
PPP \times black	0.24	0.06	0.03	1.00	0.14	0.64	1.00	0.97
PPP \times Hispanic	0.04	0.06	0.66	0.41	0.03	0.06	1.00	1.00
PMI \times black	0.07	0.43	0.13	1.00	0.13	0.15	0.04	0.18
PMI \times Hispanic	0.04	0.09	0.02	1.00	0.15	0.12	0.03	0.32
Tract Income	1.00	0.09	1.00	1.00	0.13	0.58	1.00	1.00
Tract Minority	0.65	0.68	0.02	1.00	1.00	0.92	0.63	0.04

The probabilities in the top panel correspond to the evaluation of statistical discrimination.

The probabilities in the bottom panel correspond to the evaluation of taste-based discrimination.

Table 23: Rates estimation. Non-Depository Institutions.

Variable	2yr ARM	3yr ARM	30yr FRM	30yr ARM	10yr FRM	10yr ARM	5yr ARM	Other
Constant	5.9353	4.7023	5.2892	3.7251	5.7209	4.1653	5.3845	4.9566
$\hat{\mathbf{P}}$ default prepay	4.8199 1.4015	4.4763 1.4673	6.4818 2.9083	10.5324 3.7377	3.6107 0.6777	4.2860 2.2244	4.2648 1.3377	3.8786 2.8807
\mathbf{z} PPP PMI Amount FL	-0.4565 0.2575 -0.0904 0.5052	0.3224 -0.1486 -0.0530 0.4935	0.0668 0.0446 -0.0307 0.4311	0.0302 0.2834 -0.2865 0.6479	0.0313 -0.0754 0.0253 0.2412	0.2396 0.3309 -0.0584 0.3445	-0.0323 0.1586 -0.0887 0.4721	0.1535 0.0279 -0.1235 0.5751
\mathbf{x} black Hispanic PPP \times black PPP \times Hispanic PMI \times black PMI \times Hispanic Tract Income Tract Minority				0.4412 0.1125 -0.3480 -0.3035 -0.1735 -0.1290 0.1058		0.2424 0.1230 -0.2419 -0.1231	0.3219 0.2260 -0.3664 -0.2338	
No. Obs.	13231	2773	23726	73961	3473	8791	33731	21557

The coefficients of the \mathbf{z} variables represent the medians of the posterior distributions.

The grayed-out coefficients indicate that 0 is contained in the 90 percent coverage interval.

The coefficients of the \mathbf{x} variables represent the medians of the posterior distributions conditional on the modal value of the corresponding γ for cases in which the inclusion probability $\Pr(\gamma = 1)$ exceeds 90 percent.

Table 24: Rates estimation. Non-Depository Institutions.

	2-yr ARM	3-yr ARM	30-yr FRM	30-yr ARM	10-yr FRM	10-yr ARM	5-yr ARM	Other
LTV	0.0260*** (29.078)	0.0227*** (12.542)	0.0074*** (20.441)	0.0168*** (36.949)	0.0052*** (8.060)	0.0102*** (11.282)	0.0205*** (37.462)	0.0118*** (19.366)
PPP	-0.8366*** (-27.101)	0.2306*** (5.033)	0.0435** (2.594)	-0.4132*** (-14.203)	-0.0193 (-1.018)	0.0974*** (4.958)	-0.0808*** (-4.750)	-0.0847** (-2.594)
DTI	0.0003 (0.772)	-0.0016** (-2.638)	0.0026*** (10.431)	0.0080*** (30.362)	0.0001 (0.176)	0.0020*** (5.307)	0.0010*** (5.343)	0.0017*** (5.413)
FICO	-0.0042*** (-34.671)	-0.0060*** (-19.924)	-0.0067*** (-74.609)	-0.0134*** (-144.584)	-0.0023*** (-14.138)	-0.0040*** (-23.964)	-0.0056*** (-71.599)	-0.0071*** (-60.451)
PMI	0.0818*** (3.723)	0.0962 (1.323)	0.0723*** (4.836)	0.3734*** (29.001)	-0.0276 (-0.608)	0.2042*** (6.460)	0.1692*** (13.182)	0.1303*** (5.140)
Amount	-0.0654*** (-10.417)	-0.0701*** (-4.444)	-0.1283*** (-17.159)	-0.2274*** (-21.256)	0.0072 (0.827)	-0.0095 (-0.884)	-0.0569*** (-13.130)	-0.0920*** (-8.463)
Full Doc	-0.6098*** (-59.380)	-0.5238*** (-20.116)	-0.3131*** (-30.581)	-0.4171*** (-44.449)	-0.2006*** (-13.661)	-0.3319*** (-19.710)	-0.4676*** (-65.347)	-0.4193*** (-33.563)
Refi	-0.0521*** (-4.691)	-0.1054*** (-3.903)	-0.2204*** (-16.479)	-0.3172*** (-26.690)	-0.0862*** (-5.627)	-0.1055*** (-5.710)	-0.0508*** (-6.858)	-0.1389*** (-9.815)
FL	0.3976*** (24.115)	0.4032*** (10.967)	0.3842*** (31.115)	0.4152*** (30.450)	0.2496*** (12.441)	0.1835*** (9.501)	0.3744*** (35.898)	0.2884*** (15.473)
black	-0.1322 (-1.427)	0.1239 (0.740)	-0.0487 (-0.992)	0.2828*** (3.781)	0.0174 (0.421)	0.0124 (0.286)	0.2018** (3.141)	0.2419** (2.622)
Hispanic	-0.0928* (-1.963)	0.0636 (0.950)	-0.0548* (-2.140)	0.0670 (1.339)	0.0160 (0.548)	0.0373 (1.795)	0.0592* (1.963)	0.1356* (2.398)
PPP × black	0.1018 (1.089)	-0.0910 (-0.518)	0.0658 (1.248)	-0.2182** (-2.910)	0.0901 (0.899)	0.1863** (2.677)	-0.2024** (-3.053)	-0.3187*** (-3.367)
PPP × Hispanic	0.0711 (1.482)	-0.0553 (-0.757)	-0.0487 (-1.720)	-0.0272 (-0.542)	0.0137 (0.342)	0.0399 (1.298)	-0.0825** (-2.648)	-0.1921*** (-3.333)
PMI × black	0.0145 (0.247)	-0.1806 (-1.032)	-0.0668 (-1.666)	-0.2328*** (-8.215)	0.1210 (0.485)	0.0080 (0.073)	0.0048 (0.122)	0.0765 (1.316)
PMI × Hispanic	0.0412 (1.354)	0.0399 (0.445)	0.0030 (0.120)	-0.1132*** (-5.554)	-0.0798 (-0.913)	-0.0766 (-1.441)	0.0093 (0.496)	-0.0526 (-1.392)
Tract Income	-0.0788*** (-3.802)	0.0050 (0.097)	-0.1161*** (-6.366)	-0.1227*** (-5.596)	-0.0301 (-1.336)	-0.0506* (-2.168)	-0.0708*** (-5.248)	-0.1152*** (-4.488)
Tract Minority	-0.0649** (-2.863)	0.0751 (1.312)	-0.0240 (-1.138)	0.0592** (2.939)	0.0633 (1.931)	0.0783* (2.366)	0.0318* (2.036)	0.0068 (0.254)
Constant	8.7381*** (76.780)	8.6206*** (32.614)	11.0511*** (137.909)	14.6262*** (184.803)	7.8931*** (59.903)	8.1496*** (56.202)	9.2279*** (124.499)	11.4510*** (106.716)
R^2	0.4237	0.4103	0.4558	0.4066	0.3738	0.2655	0.3606	0.3509
BIC	22282.4419	5656.7564	50968.0784	248806.2090	3698.4913	17316.8076	64389.7255	54262.2962
N	13231.0000	2773.0000	23726.0000	73961.0000	3473.0000	8791.0000	33731.0000	21557.0000