Online Appendix
Borrower protection and the supply of credit: Evidence from foreclosure laws

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Abstract

This online appendix is split into two sections. Section 1 provides further details on the data sources; it also presents the data on foreclosure time frames as well as the list of counties in our sample. Section 2 presents additional robustness and falsification tests.

1. Data

1.1. Judicial foreclosure

We follow recent work by Mian, Sufi, and Trebbi (2015) and classify states between judicial and non-judicial based on publicly available data from RealtyTrac, a leading foreclosure data provider. [2] Fig. 1 in the main text shows a map of US mainland in which states that require a judicial process are shaded in dark gray.

We supplement this binary measure with continuous measures indicating the length of the foreclosure process from foreclosure filing to foreclosure sale. Our favourite measure is one that was collected by the US Foreclosure Network (USFN), which, through its legal expertise, provides an estimate of the number of days it takes to foreclose on a property solely based on state regulations, abstracting for additional operational delays. These data are publicly available

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[2]See http://www.realtytrac.com/foreclosure-laws/foreclosure-laws-comparison.asp.

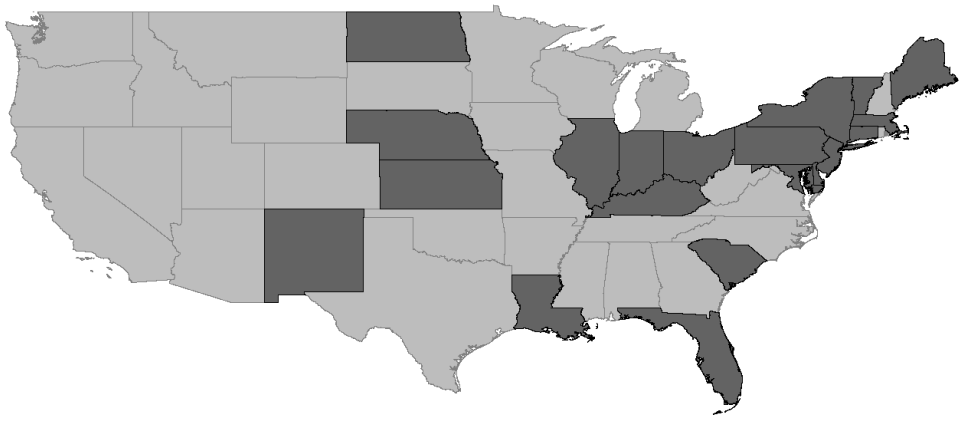

Fig. 1. States with judicial requirement. This map of the US mainland indicates in dark gray the states that require judicial foreclosure based on RealtyTrac.

from RealtyTrac, and we reproduce them here in Table A1. The USFN measure addresses the shortcomings of having to rely on a binary variable to capture the cost of foreclosure processing.

We also collect data from the National Mortgage Servicers' Reference Directory (NMSRD) on Freddie Mac's guidelines to servicers in terms of processing days. The data, shown in Table A1, are the allotted number of days from initiation of the foreclosure to the foreclosure sale. These foreclosure timelines take into account variations in legal requirements as well as delays and are used by Freddie Mac to rate the servicers. The measure from Freddie Mac is available starting in 2001, and is constant between 2001 and 2006. We verified with the USFN that states have not made any meaningful changes to their regulation prior to the crisis, as also evidenced by the constant Freddie Mac measure over the period.

Table A1
Foreclosure timelines

This table presents the data on processing days produced by the USFN and abvailable from the Realty Trac website and the data from Freddie Mac that we have collected through the NMSRD. * Indicates that the state is not included in our sample since none of the cross-border urban areas in our sample lie in this state.

State Code	State	USFN	Freddie Mac
AL	Alabama	49-74	75
AK	Alaska*	105	136
AZ	Arizona*	90+	118
AR	Arkansas	70	116
CA	California	117	126
CO	Colorado	145	104
CT	Connecticut	62	176
DE	Delaware	170-210	210
DC	District of Columbia	47	91
FL	Florida	135	151
GA	Georgia	37	67
HI	Hawaii*	220	137
ID	Idaho*	150	187
IL	Illinois	300	287
IN	Indiana	261	253
IA	Iowa	160	312
KS	Kansas	130	180
KY	Kentucky	147	194
LA	Louisiana	180	216
ME	Maine	240	330
MD	Maryland	46	47
MA	Massachusetts	75	83
MI	Michigan	60	75
MN	Minnesota*	90-100	100
MS	Mississippi	90	85
MO	Missouri	60	77
MT	Montana	150	202
NE	Nebraska	142	129
NV	Nevada	116	139
NH	New Hampshire	59	78
NJ	New Jersey	270	274
NM	New Mexico*	180	192
NY	New York	445	338
NC	North Carolina	110	119
ND	North Dakota	150	150
OH	Ohio	217	252
OK	Oklahoma	186	217
OR	Oregon	150	173
PA	Pennsylvania	270	282
RI	Rhode Island	62	83

State Code	State	Process Days (USFN)	Process Days (Freddie Mac)
SC	South Carolina	150	189
SD	South Dakota*	150	203
TN	Tennessee	40-45	72
TX	Texas	27	60
UT	Utah*	142	164
VT	Vermont*	95	357
VA	Virginia	45	71
WA	Washington	135	156
WV	West Virginia	60-90	61
WI	Wisconsin	290	310
WY	Wyoming	60	93

Our study also controls for whether states prohibit deficiency judgement and whether they offer a statutory right of redemption. Both of these state laws are taken from Pence (2006).

1.2. Loan level data

We use a comprehensive sample of individual mortgage application and origination data collected by the Federal Reserve system under the provision of the Home Mortgage Disclosure Act (HMDA). Under this provision, the vast majority of mortgage lenders are required to report their house-related lending activity. HMDA data offer the best coverage of mortgage loans originated in the US, with coverage nearing 95% in urban areas.[3]

We collect HMDA data from 2001 to 2006. We exclude the crisis years in our analysis in order to avoid tainting our results with factors that are specific to the crisis.[4] We also exclude earlier years since data on foreclosure time-lines are not available prior to 2001.

We restrict our sample to either approved or denied loans, and the loan type to be conventional

[3]Lenders are required to report if they meet certain criteria related to size, geographical location, the extent of housing-related lending activity, and regulatory status. Regarding size, a depository institution is subject to HMDA reporting requirements if it has assets of $34 million or more, as of December 31, 2004. In 2010, the Board raised this threshold to $40 million. Regarding the geographical location, lenders must report if they have offices in a Metropolitan Statistical Area (MSA) or if they are non-depository institutions with lending activities on properties located in an MSA. Lenders must also report if they are depository institutions with at least one home purchase loan or if they are non-depository institutions and they originate 100 or more home-purchase and refinancing loans. As for the regulatory status, lenders must report if they are non-depository institutions or if they are depository institutions that are federally insured or regulated.

[4]Due to the unprecedented number of foreclosures during the crisis, foreclosure laws had a real impact on the local economy. In normal times, however, with foreclosure rates typically below 1 percent, differences in the way foreclosures are processed are unlikely to have general equilibrium effects, as suggested by the data which do not show significant differences in delinquency and foreclosures (Mian, Sufi, and Trebbi (2015)).

(excluding loans guaranteed by the Federal Housing Administration, Veterans Administration, Farm Service Agency, or Rural Housing Service), the property types to be single family, the loan purpose to be home purchase (excluding refinancing or home improvement), and the occupancy status to be owner-occupied as principal dwelling.

Our empirical strategy dictates that we focus on metropolitan counties lying on state borders. We follow Pence (2006) and define an urban area as the collection of contiguous counties that belong to metropolitan statistical areas (MSAs). Our sample is, therefore, made of 53 urban areas straddling state borders. Table A2 lists these urban areas. The geographic sample is shown in Figure 3 in the main paper. To minimize noise and outliers, from each year and county we only include banks that received more than 30 applications. All these restrictions leave us with around 1.3 million loan applications made at 680 banks, in 190 counties and 42 states. Our analysis exploits the changes in regulations across 50 state borders.

Table A2
List of urban areas

This table lists the urban areas and the counties within those urban areas in our sample.

Urban Area	**Urban Area**
Counties	Counties
Allentown-Bethlehem-Easton, PA-NJ*	**Cambridge-Newton-Framingham, MA &**
Northampton, PA	**Manchester-Nashua, NH** §
Warren, NJ	Hillsborough, NH
Auburn-Opelika, AL & Columbus, GA-AL	Middlesex, MA
Harris, GA	**Carson City, NV & Sacramento, CA &**
Lee, AL	**Reno-Sparks, NV**
Muscogee, GA	Carson City city, NV
Russell, AL	Placer, CA
Augusta-Richmond County, GA-SC* §	Washoe, NV
Aiken, SC	**Charlotte-Gastonia-Concord, NC-SC &**
Burke, GA	**Shelby, NC** §
Columbia, GA	Gaston, NC
Richmond, GA	Mecklenburg, NC
Baltimore-Towson, MD & York-Hanover, PA	York, SC
Baltimore, MD	**Chattanooga, TN-GA***
Carroll, MD	Catoosa, GA
Harford, MD	Hamilton, TN
York, PA	Marion, TN
Beaumont, TX & Lake Charles, LA §	Walker, GA
Calcasieu, LA	**Cheyenne, WY & Fort Collins-Loveland,**
Orange, TX	**CO & Greeley, CO**
Boston-Cambridge-Quincy, MA-NH* §	Laramie, WY
Essex, MA	Larimer, CO
Rockingham, NH	Weld, CO
Boston-Cambridge-Quincy, MA-NH &	**Chicago-Naperville-Joliet, IL- IN -WI &**
Portland-South Portland-Biddeford, ME §	**Kankakee-Bradley, IL**
Strafford, NH	Cook, IL
York, ME	Kankakee, IL
Boston-Cambridge-Quincy, MA &	Lake, IN
Providence-New Bedford-Fall River, RI-MA §	Will, IL
Bristol, MA	**Chicago-Naperville-Joliet, IL -IN-WI*** §
Bristol, RI	Kenosha, WI
Newport, RI	Lake, IL
Norfolk, MA	McHenry, IL
Providence, RI	**Cincinnati-Middletown, OH-KY-IN***
Bridgeport, CT & Poughkeepsie, NY	Boone, KY
Dutchess, NY	Brown, OH
Fairfield, CT	Butler, OH
Putnam, NY	Campbell, KY
	Clermont, OH
	Dearborn, IN
	Franklin, IN
	Hamilton, OH
	Kenton, KY

Urban Area Counties	**Urban Area** Counties
Clarksville, TN-KY* § Christian, KY Montgomery, TN Stewart, TN Trigg, KY **Daphne-Fairhope, AL & Pensacola-Ferry Pass-Brent, FL** § Escambia, FL Baldwin, AL **Davenport-Moline-Rock Island, IA-IL*** Rock Island, IL Scott, IA **Evansville, IN-KY & Owensboro, KY** Daviess, KY Henderson, KY Posey, IN Vanderburgh, IN Warrick, IN **Fargo, ND-MN*** § Cass, ND Clay, MN **Fort Smith, AR-OK*** Crawford, AR Le Flore, OK Sebastian, AR Sequoyah, OK **Grand Forks, ND-MN*** § Grand Forks, ND Polk, MN **Gulfport-Biloxi, MS & New Orleans-Metairie-Kenner, LA** § Hancock, MS St. Tammany, LA **Hartford, CT & Springfield, MA & Worcester, MA** Hampden, MA Hartford, CT Tolland, CT Worcester, MA **Huntington-Ashland, WV-KY-OH*** § Boyd, KY Cabell, WV Greenup, KY Lawrence, OH Wayne, WV	**Janesville, WI & Rockford, IL** § Boone, IL Rock, WI Winnebago, IL **Kansas City, MO-KS*** § Cass, MO Clay, MO Jackson, MO Johnson, KS Leavenworth, KS Miami, KS Platte, MO Wyandotte, KS **Kingsport-Bristol-Bristol, TN-VA*** Hawkins, TN Sullivan, TN Washington, VA **La Crosse, WI-MN*** Houston, MN La Crosse, WI **Longview, WA & Portland-Vancouver-Beaverton, OR-WA** Clark, WA Columbia, OR Cowlitz, WA Multnomah, OR **Louisville, KY-IN*** Clark, IN Floyd, IN Hardin, KY Harrison, IN Jefferson, KY Oldham, KY **Memphis, TN-MS-AR*** Crittenden, AR DeSoto, MS Fayette, TN Marshall, MS Shelby, TN **Minneapolis-St. Paul-Bloomington, MN-WI*** Dakota, MN Pierce, WI St. Croix, WI Washington, MN

Urban Area Counties	**Urban Area** Counties
Niles-Benton Harbor, MI & South Bend- **Mishawaka, IN-MI** §	**Philadelphia-Camden-Wilmington, PA-** **NJ-DE-MD***
Cass, MI	Burlington, NJ
Elkhart, IN	Camden, NJ
St. Joseph, IN	Cecil, MD
Mobile, AL & Pascagoula, MS	Chester, PA
George, MS	Delaware, PA
Jackson, MS	Gloucester, NJ
Mobile, AL	Lancaster, PA
Monroe, MI & Toledo, OH §	New Castle, DE
Lucas, OH	Philadelphia, PA
Monroe, MI	Salem, NJ
Myrtle Beach-Conway-North Myrtle Beach, **SC & Wilmington, NC** §	**Philadelphia-Camden-Wilmington, PA &** **Trenton-Ewing, NJ**
Brunswick, NC	Bucks, PA
Horry, SC	Hunterdon, NJ
New York-Northern New Jersey, **NY-NJ***	Pike, PA **Pittsburgh, PA & Weirton-Steubenville,** **WV-OH** §
Bergen, NJ	Beaver, PA
Bronx, NY	Hancock, WV
Hudson, NJ	Washington, PA
New York, NY	**Shreveport-Bossier, LA & Texarkana, TX** §
Rockland, NY	Bowie, TX
Westchester, NY	Caddo, LA
New York-New Jersey-Long Island, NY-NJ **& Poughkeepsie-Newburgh-Middletown, NY**	Miller, AR **St. Louis, MO-IL*** §
Orange, NY	Jefferson, MO
Sussex, NJ	Jersey, IL
Norwich-New London, CT & Providence- **New Bedford-Fall River, RI-MA** §	Lincoln, MO
Kent, RI	Madison, IL
New London, CT	Monroe, IL
Washington, RI	St. Charles, MO
Omaha-Council Bluffs, NE-IA* §	St. Clair, IL
Cass, NE	St. Louis city, MO
Douglas, NE	St. Louis, MO
Pottawattamie, IA	**Wheeling, WV-OH*** §
Sarpy, NE	Belmont, OH
Washington, NE	Brooke, WV
Parkersburg-Marietta, WV-OH* §	Jefferson, OH
Washington, OH	Ohio, WV
Wood, WV	Marshall, WV
	Youngstown-Warren-Boardman, OH-PA*
	Mercer, PA
	Trumbull, OH

Urban Area Counties	**Urban Area** Counties
Washington-Arlington-Alexandria, DC-VA- MD-WV* § Alexandria, VA Arlington, VA Charles, MD Clarke, VA District of Columbia Fairfax, VA Frederick, MD Jefferson, WV Loudoun, VA Montgomery, MD Prince George's, MD	

* Indicates that all counties within the urban area belong to the same metropolitan statistical area (MSA).
§Indicates that the urban area straddles across a judicial/non-judicial state border.

1.3. Distance

In our analysis, we also control for the distance of the census tract, where the property on the application is located, to the state border. The data on distance is retrieved from the Geographic Information System (GIS) software, ArcMap, through the following procedures. First, using a census tract level shapefile for the United States, a new state boundaries layer was extracted from it that contains only the line segment boundaries of mainland USA. This new state boundaries shapefile was clipped to remove segments of the lines along the US coastline and that separated the United States from Canada and Mexico, leaving only boundaries between US States. These segments were then individually assigned an attribute in their associated data files indicating what two states each line section separated, creating a unique attribute for every two-state combination. Once this shapefile was completed, and the updated state-boundary shapefile was overlain over the original census tract layer, ArcMap was used to select all individual census tracts whose centroids were within 50 miles of each unique border segment. This process involved the creation of a layer containing only the centroid points for each census tract, and using the selection tool to select all points within 50 miles of each specified line segment. The data of census tract bordering state borders are available upon request.

1.4. Other data

We supplement our dataset with economic and demographic county characteristics from the Bureau of Labor Statistics and the Census. Data on median household income are obtained from

CENSUS-SAIPE. Data on per capita personal income are from DOC-BEA. The unemployment rate is the civilian labor force unemployment rate from BLS. Poverty is the percentage of people of all ages in poverty from SENSUS-SAIPE. New house built (per 1,000 persons) is the ratio of total new private housing units authorized by building permits to the total population.

We also make use of data on mortgage delinquency from the Consumer Credit Panel produced by the Federal Reserve of New York based on Equifax credit report data. The delinquency ratio is the ratio of the number of 90+ delinquent loans to the number of outstanding loans. Our data on foreclosure come from Realty Trac. The foreclosure rate is computed as the share of properties in foreclosure in the total number of properties. Foreclosures are defined as units that have received during the year either a notices of trustee sale or a notice of foreclosure sale.

2. Additional Robustness

In this section we provide additional robustness results to accompany the main paper.

2.1. Full county sample and Freddie Mac measure

In the main paper we restrict our sample to the loans that are within 25 miles from state borders. Here we show the results of the full sample with no restriction on distance. We also introduce a third judicial measure, which is the estimated number of processing days from Freddie Mac. To save the space, we pool all the years together instead of splitting them into three periods.

The results continue to hold in this larger sample, as shown in Table A3. In Columns 1–2 we use the judicial dummy as the key explanatory variable. The coefficients on the control variables are similar to those in the Table 3 in the paper. While the coefficients on foreclosure laws are again not significant, the coefficient on the interaction between jumbo dummy and judicial dummy is positive and significant. Also the magnitude of the coefficient is in line with the results in the paper. We replace the judicial dummy with the USFN timelines in Columns 3–4, and with the Freddie Mac measure in Columns 5–6. The results continue to be consistent with our main findings. Note that when we pool the years together (controlling for year fixed effects) we find that the coefficient on the deficiency law to be positive and significant in the larger sample of all MSAs that we use when the judicial measure is continuous (USFN or Freddie Mac).

Table A3

Full sample and including Freddie Mac

This table presents the coefficient estimates from a linear probability model regressing the rejection dummy on application characteristics, foreclosure laws, and state border, bank, and year fixed effects. We use the full sample with no restriction on the distance and pool all the years together. In Columns 1–2, the key explanatory variable is the judicial dummy. We replace the dummy with the USFN measure in Columns 3–4, and the Freddie Mac measure in Columns 5–6. Standard errors are clustered at state border and bank level. t-statistics are reported in brackets. ***, **, * indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	Dummy		USFN		Freddie Mac	
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Log of tract median income in 2005	-0.0387***	-0.0390***	-0.0459***	-0.0461***	-0.0458***	-0.0459***
	(-6.48)	(-6.60)	(-7.47)	(-7.59)	(-7.36)	(-7.44)
Log of applicant income	-0.0398***	-0.0396***	-0.0387***	-0.0388***	-0.0387***	-0.0389***
	(-6.20)	(-6.25)	(-7.00)	(-7.13)	(-7.00)	(-7.16)
Loan-to-income ratio	0.00499**	0.00501**	0.00411***	0.00412***	0.00411***	0.00411***
	(2.54)	(2.53)	(2.73)	(2.74)	(2.72)	(2.72)
Minority	0.0595***	0.0592***	0.0601***	0.0600***	0.0602***	0.0600***
	(7.24)	(7.18)	(8.05)	(8.02)	(8.06)	(8.05)
Female	-0.000634	-0.000688	-0.00145	-0.00148	-0.00146	-0.00149
	(-0.20)	(-0.22)	(-0.66)	(-0.66)	(-0.67)	(-0.67)
Jumbo dummy	0.0404***	0.0236**	0.0428***	0.0291***	0.0428***	0.0263***
	(3.14)	(2.06)	(4.36)	(3.26)	(4.32)	(2.78)
Judicial measure	-0.00110	-0.00452	0.0205	0.0153	0.00429	0.00266
	(-0.20)	(-0.76)	(1.15)	(0.94)	(0.35)	(0.22)
Redemption dummy	0.0230	0.0259	0.0181	0.0191	0.0181	0.0189
	(0.85)	(0.96)	(0.86)	(0.90)	(0.87)	(0.90)
Deficiency prohibition dummy	-0.00136	-0.00428	0.00217	-0.000491	-0.00126	-0.00285
	(-0.13)	(-0.39)	(0.15)	(-0.03)	(-0.09)	(-0.21)
Jumbo dummy*Judicial measure		0.0237***		0.0331***		0.0335***
		(2.84)		(3.22)		(3.10)
Jumbo dummy*Redemption dummy		-0.0268		-0.0153		-0.0150
		(-1.11)		(-1.14)		(-1.14)
Jumbo dummy*Deficiency dummy		0.00419		0.0304**		0.0293**
		(0.10)		(2.45)		(2.45)
Distance	0.146	0.136	0.213*	0.209*	0.135	0.147*
	(0.67)	(0.63)	(1.76)	(1.80)	(1.50)	(1.65)
Distance squared	2.778	2.100	-1.529	-1.761	-2.559	-2.611
	(0.30)	(0.23)	(-0.34)	(-0.39)	(-0.55)	(-0.57)
Number of Observations	681882	681882	1404011	1404011	1404011	1404011
R-squared	0.098	0.098	0.101	0.101	0.100	0.101

2.2. Controlling for distance

In the paper we controlled for the distance and distance squared to border. In the interest of space however we did not show how introducing these controls affect the coefficients of interest. Here we do that, and, in addition, we control for the cubic distance. These are shown in Table A4. The samples we use are the same used in Table 3 and Table 4 in the main paper, which include loans within 25 miles from the state border. Again we show the pooled results for the whole period.

For all three judicial measures, controlling for distance, distance squared, and distance cubed barely affects the magnitude and the significance of the coefficients.

2.3. Restricting urban areas to same MSAs

Next we present a set of robustness tests that address concerns related to the homogeneity of border counties. It is important to note first that our identifying assumption does not hinge on border counties being identical in unobservable factors. Nevertheless, it is useful to see how restricting the sample to urban areas within the same metropolitan area affects our results.

This restriction results in a smaller sample with 34 urban areas, 135 counties, and about 70% of the applications. We thus repeat the key exercises using this smaller sample. The results from the benchmark regression are shown in Table A5. This table is to be compared with Table 3 and 4 from the main paper. We see that the coefficients on the interaction between the jumbo dummy and the judicial measures (both dummy and continous measure) are positive and statistically significant at 1% level. Clearly, these results further assuage concerns related to the role of unobservable variations across borders.

2.4. Full results of the falsification test

In the last two tables we show the full panel of the falsification test. As explained in the main paper, we construct a false jumbo cutoff using 80% (or 120%) of the actual cutoff. Based on the imaginary cutoff, new dummies for jumbo loans are created. Then we repeat the band estimation as in Table 5. Due to space constraints, the main paper only shows the results from the 20% band in Table 6. In this appendix we show the full results in Table A6 and Table A7 for the judicial dummy and the USFN timelines, respectively. In all the samples, the coefficients on the interaction between the false jumbo dummy and judicial dummy are not significant.

Table A4

Controlling for distance

This table presents the coefficient estimates from a linear probability model regressing the rejection dummy on application characteristics, foreclosure laws, and state border, bank, and year fixed effects. We use the same sample, which include loans that are less 25 miles from state borders, and pool all the years together. In Columns 1–2, the key explanatory variable is the judicial dummy. We replace the dummy with the USFN measure in Columns 3–4, and the Freddie Mac measure in Columns 5–6. Standard errors are clustered at state border and bank level. t-statistics are reported in brackets. ***, **, * indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	Dummy		USFN		Freddie Mac	
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Log of tract median income in 2005	-0.0391***	-0.0396***	-0.0463***	-0.0467***	-0.0462***	-0.0464***
	(-6.91)	(-6.43)	(-7.27)	(-7.48)	(-7.17)	(-7.27)
Log of applicant income	-0.0384***	-0.0384***	-0.0389***	-0.0387***	-0.0390***	-0.0389***
	(-6.17)	(-6.08)	(-7.20)	(-6.97)	(-7.22)	(-6.93)
Loan-to-income ratio	0.00538***	0.00537***	0.00441***	0.00443***	0.00441***	0.00442***
	(2.67)	(2.66)	(2.95)	(2.85)	(2.92)	(2.83)
Minority	0.0588***	0.0588***	0.0603***	0.0603***	0.0603***	0.0603***
	(7.14)	(6.79)	(7.78)	(7.70)	(7.80)	(7.76)
Female	-0.00110	-0.00106	-0.00195	-0.00192	-0.00196	-0.00194
	(-0.34)	(-0.34)	(-0.84)	(-0.85)	(-0.85)	(-0.85)
Jumbo dummy	0.0226*	0.0229*	0.0280***	0.0279***	0.0252***	0.0250***
	(1.91)	(1.96)	(3.25)	(3.10)	(2.79)	(2.62)
Judicial measure	-0.00693	-0.00217	0.00364	0.0160	-0.00386	0.00187
	(-1.14)	(-0.30)	(0.23)	(0.94)	(-0.31)	(0.15)
Redemption dummy	0.0264	0.0265	0.0201	0.0207	0.0203	0.0204
	(0.96)	(0.93)	(0.91)	(0.95)	(0.94)	(0.94)
Deficiency prohibition dummy	-0.00708	-0.00559	-0.00638	-0.00556	-0.00770	-0.00807
	(-0.68)	(-0.50)	(-0.41)	(-0.34)	(-0.52)	(-0.53)
Jumbo dummy*Judicial measure	0.0234***	0.0231**	0.0338***	0.0338***	0.0341***	0.0345***
	(2.80)	(2.57)	(3.43)	(3.34)	(3.27)	(3.21)
Jumbo dummy*Redemption dummy	-0.0268	-0.0269	-0.0207	-0.0209	-0.0214	-0.0214
	(-1.07)	(-1.10)	(-1.32)	(-1.33)	(-1.43)	(-1.44)
Jumbo dummy*Deficiency dummy	0.00307	0.00285	0.0348***	0.0353***	0.0339***	0.0343***
	(0.07)	(0.07)	(2.74)	(2.68)	(2.77)	(2.68)
Distance		0.356		0.249		0.126
		(1.57)		(1.46)		(0.81)
Distance squared		10.72		0.0683		-0.148
		(0.79)		(0.01)		(-0.02)
Distance cubed		-174.7		25.88		178.2
		(-0.32)		(0.06)		(0.37)
Number of Observations	656270	656270	1286863	1286863	1286863	1286863
R-squared	0.098	0.098	0.100	0.100	0.100	0.100

Table A5
Same MSA sample

This table presents the coefficient estimates from a linear probability model regressing the rejection dummy on application characteristics, foreclosure laws, and state border, bank, and year fixed effects. We continue with the sample within 25 miles and further restrict it to the urban areas that are consisted of the same MSA. In Column 1, the key explanatory variable is the judicial dummy. We replace the dummy with the USFN measure in Column 2, and the Freddie Mac measure in Column 3. Standard errors are clustered at state border and bank level. t-statistics are reported in brackets. ***, **, * indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	Dummy	USFN	Freddie Mac
Variable	(1)	(2)	(3)
Log of tract median income in 2005	-0.0386***	-0.0466***	-0.0464***
	(-6.99)	(-6.14)	(-6.02)
Log of applicant income	-0.0348***	-0.0372***	-0.0374***
	(-5.47)	(-6.78)	(-6.80)
Loan-to-income ratio	0.00517**	0.00505***	0.00503***
	(2.57)	(3.04)	(3.02)
Minority	0.0592***	0.0612***	0.0613***
	(6.81)	(7.56)	(7.59)
Female	-0.00150	-0.00260	-0.00260
	(-0.38)	(-0.86)	(-0.85)
Jumbo dummy	-0.00202	0.0150	0.00471
	(-0.45)	(1.07)	(0.49)
Judicial measure	0.000196	0.000928	0.00153
	(0.05)	(0.19)	(0.31)
Redemption dummy	0.00107	0.00961	0.00664
	(0.13)	(0.87)	(0.66)
Deficiency prohibition dummy	0.0209*	0.0233***	0.0204**
	(1.73)	(2.59)	(2.07)
Jumbo dummy*Judicial measure	0.0202**	0.0381***	0.0385***
	(2.36)	(3.82)	(3.17)
Jumbo dummy*Redemption dummy	-0.00840	-0.00813	-0.00958
	(-0.83)	(-0.84)	(-1.11)
Jumbo dummy*Deficiency dummy	-0.0116	0.0299**	0.0289**
	(-0.33)	(2.27)	(2.33)
Number of Observations	529484	878229	878229
R-squared	0.094	0.095	0.095

Table A6

Falsification test: judicial dummy

This table presents the coefficient estimates from the same regressions in Table 5 in the main paper with the exception that jumbo cutoff is chosen to be, as a falsification test, at 80% or 120% of the actual cutoff. The key explanatory variable is the judicial dummy. We show the results of the 80% of the actual cutoff in Columns 1–3 and that for the 120% of the actual cutoff in Columns 4–6. We continue to control for application characteristics and county, bank, and year fixed effects and cluster standard errors at both state border and bank level. t-statistics are reported in brackets. ***, **, * indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	80% of actual jumbo cutoff			120% of actual jumbo cutoff		
	20% Band	10% Band	5% Band	20% Band	10% Band	5% Band
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Log of tract median income in 2005	-0.0247***	-0.0239**	-0.0307***	-0.0325***	-0.0408***	-0.0410***
	(-2.64)	(-2.09)	(-2.73)	(-6.64)	(-5.31)	(-3.56)
Log of applicant income	-0.0351***	-0.0256	-0.0315**	-0.0374***	-0.0245	0.0656***
	(-3.77)	(-1.58)	(-2.34)	(-2.58)	(-0.94)	(3.21)
Loan-to-income ratio	0.00402	0.00737	0.00418	0.00583	0.0127	0.0481***
	(1.42)	(1.28)	(1.02)	(1.24)	(1.41)	(7.49)
Minority	0.0542***	0.0523***	0.0520***	0.0525***	0.0423***	0.0380*
	(5.89)	(4.97)	(3.71)	(4.08)	(3.38)	(1.93)
Female	0.00383	0.00409	0.00237	0.00900**	0.0114	0.00967
	(1.45)	(1.04)	(0.42)	(1.99)	(1.56)	(0.87)
False Jumbo dummy	0.00350	0.00320	0.00536	0.0165**	0.00813	-0.00116
	(0.51)	(0.36)	(0.40)	(2.07)	(0.90)	(-0.09)
False jumbo dummy*Judicial dummy	0.00798	0.00511	-0.00458	0.00118	-0.00637	0.000822
	(1.10)	(0.52)	(-0.32)	(0.16)	(-0.71)	(0.05)
False jumbo dummy*Redemption dummy	-0.00640	-0.00654	-0.00310	-0.0425**	-0.0432	-0.0339
	(-0.56)	(-0.65)	(-0.14)	(-2.57)	(-1.20)	(-0.90)
False jumbo dummy*Deficiency dummy	0.00279	-0.00206	-0.00942	0.0444	-0.00531	0.0744
	(0.16)	(-0.09)	(-0.32)	(1.22)	(-0.13)	(1.47)
Distance	0.194	0.0318	-0.190	0.181	0.495	0.173
	(1.08)	(0.10)	(-0.97)	(0.55)	(1.50)	(0.42)
Distance squared	-2.424	-14.14	-5.674	16.34	31.04	41.96**
	(-0.23)	(-1.29)	(-0.31)	(0.91)	(1.43)	(2.11)
Number of Observations	116059	57552	28524	71919	29096	14288
R-squared	0.111	0.116	0.128	0.131	0.129	0.140

Table A7

Falsification test: USFN timelines

This table presents the coefficient estimates from the same regressions in Table 5 in the main paper with the exception that jumbo cutoff is chosen to be, as a falsification test, at 80% or 120% of the actual cutoff. The key explanatory variable is the USFN timelines. We show the results of the 80% of the actual cutoff in Columns 1–3 and that for the 120% of the actual cutoff in Columns 4–6. We continue to control for application characteristics and county, bank, and year fixed effects and cluster standard errors at both state border and bank level. t-statistics are reported in brackets. ***, **, * indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	80% of actual jumbo cutoff			120% of actual jumbo cutoff		
	20% Band	10% Band	5% Band	20% Band	10% Band	5% Band
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Log of tract median income in 2005	-0.0329***	-0.0349***	-0.0369***	-0.0338***	-0.0369***	-0.0365***
	(-4.45)	(-4.01)	(-4.91)	(-7.47)	(-3.91)	(-3.21)
Log of applicant income	-0.0379***	-0.0339***	-0.0368***	-0.0454***	-0.0523***	-0.0597***
	(-4.94)	(-3.41)	(-3.75)	(-5.36)	(-4.07)	(-3.43)
Loan-to-income ratio	0.00347*	0.00400	0.00219	0.00264*	0.00430*	0.00333
	(1.68)	(1.31)	(0.83)	(1.69)	(1.81)	(1.61)
Minority	0.0554***	0.0522***	0.0511***	0.0592***	0.0502***	0.0442**
	(6.40)	(5.28)	(4.81)	(4.95)	(3.69)	(2.32)
Female	0.00493**	0.00750**	0.00454	0.00823	0.0119	0.0116
	(2.03)	(2.25)	(1.09)	(1.52)	(1.63)	(1.36)
False Jumbo dummy	0.00701*	0.00516	0.00240	0.0159**	0.0111	0.00755
	(1.75)	(0.98)	(0.31)	(2.52)	(1.41)	(0.76)
False jumbo dummy*USFN timelines	0.00790	0.00335	0.00422	0.00910	-0.0111	-0.00865
	(1.32)	(0.32)	(0.26)	(0.97)	(-0.67)	(-0.34)
False jumbo dummy*Redemption dummy	0.00214	0.00644	0.00109	0.00206	-0.00200	0.0203
	(0.35)	(0.80)	(0.07)	(0.12)	(-0.11)	(1.00)
False jumbo dummy*Deficiency dummy	-0.0123*	-0.0141	-0.00407	0.0190	0.0187	0.0211
	(-1.81)	(-1.62)	(-0.26)	(1.46)	(1.19)	(0.56)
Distance	0.252	0.302	0.156	0.201	0.671**	0.603**
	(1.19)	(1.54)	(0.81)	(1.08)	(2.57)	(2.11)
Distance squared	-21.60	-24.94	-21.15	-3.531	0.504	14.70
	(-1.35)	(-1.62)	(-1.06)	(-0.22)	(0.02)	(0.61)
Number of Observations	216058	105956	52518	117977	45796	22401
R-squared	0.121	0.127	0.140	0.139	0.139	0.143