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### Judging Judicial Foreclosure

Brian D. Feinstein

brian.feinstein@chicagounbound.edu

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# Judging Judicial Foreclosure

Brian D. Feinstein\*

For the third time in the last several decades, policymakers are contemplating an overhaul of mortgage-finance regulations. Despite the considerable attention paid to how *ex ante* regulations affect the availability of credit and the appropriateness of the mortgage products that lenders offer, however, our understanding of how the legal framework governing foreclosures—a form of *ex post* borrower protection—affects mortgage lending is incomplete. Leveraging data on loan applicants that are geographically proximate and subject to the same federal mortgage-finance regulations and nearly identical state foreclosure regimes—but for the presence or absence of a judicial foreclosure requirement—this analysis enables the identification of the independent effects of judicial-foreclosure requirements on loan approval decisions and the share of approved applicants who are offered subprime loans. I find that lenders adopt a more conservative posture in evaluating loan applications in jurisdictions where they must haul delinquent borrowers into court. All else equal, loan applications are less likely to be approved and approved borrowers are less likely to be offered subprime loans in judicial-foreclosure states. Further, some models indicate that these results may be amplified for borrowers with lower socioeconomic status, suggesting that judicial supervision of foreclosures may have tempered one of the more flagrant practices of the subprime era: providing high-rate mortgages with a greater likelihood of default to lower-income and minority borrowers. These results suggest that, in contemplating changes to the regulation of mortgage lenders, policymakers should consider state foreclosure law to be among the tools in their regulatory toolkit.

## I. INTRODUCTION

Approximately one decade after a global financial crisis sparked by U.S. mortgage lending, policymakers are still actively debating the appropriate regulatory framework for mortgage lending. For instance, on May 4, 2017, the House Financial Services Committee passed the Financial CHOICE Act. If enacted, the Act would, *inter alia*, strip the Consumer Financial Protection Bureau (CFPB) of its enforcement authority concerning unfair, deceptive, or abusive lending practices (Financial Services Committee 2017). On June 12, 2017, the Treasury Department responded to an executive order

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\*Address correspondence to Brian D. Feinstein, Assistant Professor of Business Law and Legal Ethics, The Wharton School of the University of Pennsylvania, 3730 Walnut St., Ste. 600, Philadelphia, PA 19104; email: feinstein@wharton.upenn.edu.

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directing the department to provide recommendations on how to “rationalize” federal financial regulations with a call to exempt a greater share of financial institutions from Dodd-Frank-related restrictions, divest the CFPB of substantially all its authority, and replace the Dodd-Frank orderly liquidation framework with a new provision of the Bankruptcy Code (Treasury 2017). Not to be left out, the judicial branch also is weighing changes to the mortgage-finance regulatory architecture; sitting en banc, the DC Circuit is currently considering mortgage servicer PHH Corporation’s constitutional challenge to the CFPB’s structure as a single-director independent agency. If any of these changes are made, it would constitute the third major reconfiguration of the nation’s mortgage-finance regulatory regime in the past 15 years, following a period of aggressive federal preemption of state laws and loosening of federal regulations during the Bush Administration and the construction of a more robust postcrisis infrastructure during the Obama years.

Lost in these debates is the potential role of state foreclosure law in regulating mortgage lending. Almost half of U.S. states mandate judicial foreclosure, that is, that lenders seeking to foreclose on a mortgage file an action in state court. State courts provide a forum for borrowers to challenge both their lenders’<sup>1</sup> adherence to the state’s foreclosure procedures (the back end) as well as their behavior at the loan origination stage (the front end), by bringing, for instance, Truth-in-Lending Act claims and raising the equitable defenses of fraud and unconscionability.

In light of the importance of mortgage finance to the overall economy and the psychological value that Americans place on homeownership, the stakes are too high not to understand the effects of judicial-foreclosure laws on mortgage lending. With the post financial crisis turn toward federalism in consumer-protection law (Metzger 2011), and more recent cracks in the federal banking regulatory infrastructure, a firm grasp of the effects of foreclosure law on housing-finance markets is needed.

The benefits to borrowers of mandatory judicial foreclosure are readily apparent. Judicial supervision helps ensure that lenders meet all requirements to foreclose, and court involvement slows down the foreclosure process, enabling borrowers to remain in their homes, without making payments, for a longer period. Yet, as the conflicting findings in the extant literature show, the *costs* to borrowers of a mandatory judicial forum are contested. If the procedure’s obvious costs to lenders are passed on to borrowers in the form of higher interest rates, then—depending on one’s view of delinquent borrowers—judicial foreclosure either serves as an inefficient form of insurance paid by all borrowers to compensate unfortunate ones or provides an unfair windfall to irresponsible borrowers at the expense of responsible ones. However, what if judicial foreclosure imposes few (or no) costs on borrowers? Then the cost-benefit analysis

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<sup>1</sup>This article adopts the nomenclature “borrower” and “lender,” rather than, for example, mortgagor and mortgagee. I acknowledge the following: the original lender typically sells its interest in the mortgage to other entities; mortgages often are securitized, making chains of ownership difficult to discern; Mortgage Electronic Registration Systems, Inc. (MERS) or others often act as agent for the beneficial owner; and these agents typically hire mortgage servicers to act on their behalf. For simplicity, the term “lender” refers to all these entities.

becomes more lopsided—with judicial foreclosure appearing to be more of an unmitigated good for borrowers.

To determine the effect of judicial-foreclosure requirements on mortgage pricing, I compare loan application decisions within metropolitan areas that straddle state lines and in state border regions, where one state requires judicial foreclosure and the other state does not. This research design builds on past work on the relationship between judicial foreclosure and the mortgage market by rigorously considering features of mortgage-lending and foreclosure law that could affect mortgage pricing, and thus must be controlled for in the research design.

Specifically, this article considers two key features of the legal landscape that directly bear on mortgage pricing, but that previous work ignores. First, the analysis is limited to national banks, which—unlike state-chartered institutions—were governed exclusively by uniform federal banking and mortgage-servicing regulations during the period under study. Second, the study is geographically restricted to regions on either side of a state border for which the two states' foreclosure regimes are substantially similar except for the presence or absence of a judicial-foreclosure requirement. Similarity in cross-state foreclosure regime is vitally important because state law differs in several respects that reasonably could affect mortgage pricing; specifically, states differ in the number of presale notices that must be sent to the borrower, the timing of these notices, the borrower's postdefault right to cure and postforeclosure right to redeem, and the lender's ability to seek a deficiency judgment. Accordingly, a research design that ignores differences in the regulatory treatment of financial institutions or glosses over the myriad differences in state foreclosure law in addition to the judicial-/non-judicial-foreclosure differences would generate biased results. Departing from past work, this article brings the law into the analysis, considering differences in the regulatory treatment of financial institutions and in-state foreclosure requirements (apart from the judicial-/non-judicial-foreclosure distinction).

To preview the results, I find that lenders adopt a more conservative posture in judicial-foreclosure states, exhibiting greater caution in loan-approval decisions and, for those applicants who are approved, offering fewer subprime loans. There are two competing explanations for this result. First, lenders may reject a greater proportion of high-risk applicants in judicial-foreclosure states. To the extent that these applicants, commensurate with their risk profiles, would otherwise receive higher-rate loans, their exclusion from the pool of approved applicants drives down the average rate offered to approved applicants. Second, because lenders have a heightened interest in avoiding foreclosure in judicial-foreclosure states, they may offer prime rates to approved applicants in these states but offer subprime loans to identical applicants in non-judicial-foreclosure states. Although this analysis cannot distinguish between these two explanations, both explanations involve judicial-foreclosure requirements causing lenders to moderate their high-risk lending.

This article proceeds in five sections. Section II provides an overview of past scholarship on the connection between state foreclosure law and mortgage approval and pricing decisions and previews this article's contribution to the extant literature, namely, that this study's identification strategy accounts for legal issues—that is,

mortgage-finance regulations, aspects of foreclosure law apart from judicial-foreclosure requirements, and the component parts of a court-supervised foreclosure—that introduce bias if ignored. Section III describes the legal framework in which foreclosures are conducted: the mechanics of judicial versus non-judicial foreclosure, how these procedures typically play out in practice, and how other features of state foreclosure law could affect mortgage markets. Section IV presents the research design for this study. Section V reports the results, showing that lenders adopt a more conservative posture in judicial-foreclosure states and suggesting that this posture may be particularly pronounced for minority and lower-income borrowers. Finally, Section VI isolates the independent effects of judicial foreclosure as a legal forum versus judicial foreclosure as merely a means for borrowers to elongate the foreclosure timeline to remain in their homes.

## II. EXTANT AND INSTANT RESEARCH

### A. Literature Review

A large literature examines the relationship between foreclosure law and the behavior of borrowers at the “back end.” For instance, Gerardi et al. (2013) find that the borrower protections, including mandatory judicial foreclosure, serve to delay, but not to avoid, foreclosure; by elongating the foreclosure process, these laws enable borrowers to remain in their homes for longer periods postdefault, but do not prevent borrowers from ultimately losing their homes. Demiroglu et al. (2014) find that borrower protections, again including judicial foreclosure, are associated with higher default rates among underwater borrowers; the authors infer that by lowering the costs to borrowers of default, these laws encourage strategic default.

Whereas the effects of foreclosure on borrower behavior at the back end is well-established, the manner in which the legal environment influences *lender* behavior at the *front end*, that is, approval decisions and the loan terms offered, is hotly contested. One strand of research concludes that borrower protections, including judicial foreclosure, increase loan costs. Meador (1982) and Schill (1991) find that states with greater borrower protections tend to have higher average mortgage interest rates; specifically, a judicial-foreclosure requirement, bar on deficiency judgments, and existence of a statutory right of redemption are all associated with higher interest rates.

While novel at their time of publication in the 1980s and 1990s, the Meador and Schill studies contain methodological shortcomings; both involve regression models with relatively few observations—each state in each year during a several-year period serves as the unit of analysis in both studies—and a small number of state-level demographic variables included as controls. Both studies’ use of states as the unit of analysis also assumes that there are no unobserved differences among states—for example, different local or regional economic conditions—that are correlated both with borrower protections and mortgage interest rates.

Pence (2003) determines that borrower-friendly legal regimes are associated with a reduction in mortgage quantity. Employing a methodologically rigorous state-border discontinuity design, Pence examines approved mortgage applications in the mid-

1990s—before subprime loans became prevalent—in counties on either side of a judicial-/non-judicial-foreclosure state border. She determines that lenders offer loans that are 3 percent to 7 percent smaller in judicial-foreclosure states. In a similar vein, Curtis (2014) finds that legal protections are associated with fewer subprime originations, but does not observe a statistically significant effect concerning prime loans. In other words, judicial-foreclosure requirements are associated with a reduction in the overall amount of lending, rather than a measurable shift from subprime to prime loans. Curtis combines Pence's methodological rigor (focusing on state-border areas) with data from 2005 and 2006, which, unlike Pence's study from a decade before, include a nontrivial number of subprime loans (Gramlich 2007). Although the precise mechanism by which borrowers absorb the costs of foreclosure protections differ in the Meador, Schill, Curtis, and Pence studies, the basic takeaway is the same: whether through increased costs or decreased quantity (or both), borrowers pay for legal protections.

A second strand of articles reaches a contrary conclusion. Harrison and Seiler's (2015) sample of almost 27,000 rate quotes presents findings at odds with Meador, Schill, Curtis, and Pence. Controlling for local economic conditions and, in some models, focusing on cities on either side of a judicial/non-judicial border, Harrison and Seiler find that—whereas borrower protections such as a statutory right of redemption, anti-deficiency-judgment laws, and a lengthy foreclosure process are associated with higher-rate quotes—rate quotes are *lower* in states that require judicial foreclosure.

Cao and Liu (2016) also find an association between judicial-foreclosure laws and loan terms that favor borrowers. These authors build on past work by examining how differences in state law along several dimensions—including judicial foreclosure, a statutory right of redemption, and a bar on deficiency judgments—bear on loan origination decisions. Using the same Home Mortgage Disclosure Act (HMDA) data and a similar border estimation strategy as Pence (2003), Cao and Liu find that subprime loans are 0.16 percent less likely to be originated in judicial-foreclosure states; FHA loans are 0.57 percent less likely to be originated in a judicial-foreclosure state; and conventional prime loans are 0.74 percent *more* likely to be originated in a judicial-foreclosure state, controlling for a battery of applicant- and county-level variables. That these changes almost completely balance each other out strongly suggests that lenders substitute prime loans in place of less-borrower-friendly products in judicial-foreclosure states.

Mian et al. (2015) further muddy the waters. These authors employ a border-discontinuity design to measure the association between state law and the size of the credit supply in that state. Their reported coefficient estimates suggests a smaller credit supply in judicial-foreclosure states between 1992 and 1995, and a larger credit supply in these states between 1996 and 2006. None of these estimates are statistically significant, however, and in most years the associated standard errors dwarf the coefficient estimates—a textbook null result.

### *B. Contribution*

This article combines best practices from the existing literature concerning research design with greater emphasis on the *legal* climate in which mortgage lending and

foreclosures occur. Taking a page from previous work, the study considers individual borrowers' demographic profiles and exploits border-region discontinuities in foreclosure regimes to isolate judicial foreclosure's signal—and crowd out the noise of the many other local factors that may contribute to loan terms. My research design then builds on the extant literature by more fully accounting for the legal complexity around mortgage lending and foreclosure. Specifically, the research design pays careful attention to the legal framework in which home loans are made, including variations in the legal regime that are likely correlated with lending decisions. Three areas of the law come into play.

*First*, the article takes seriously the range of other state laws regulating mortgages. As detailed in Section II, states impose a range of other requirements on lenders seeking to foreclose, concerning, for example, the number and timing of notices that the lender must send, whether the borrower holds a statutory right to cure the default, the length of any postsale redemption period, and whether the lender is permitted to pursue a postsale deficiency judgment. The same logic that suggests that judicial-foreclosure requirements should have price effects applies to these other borrower safeguards. Indeed, Harrison and Seiler find that several of these laws are correlated with higher-rate quotes. Yet research designs that compare demographically similar applicants on either side of judicial/non-judicial state borders ignore these other differences in state law. This project—like Cao and Liu (2016) but in contrast to much of the rest of literature—focuses on borders between states with substantially similar foreclosure laws—but-for a difference in judicial-foreclosure requirements.

*Second*, I recognize (and control for) the complex patchwork of federal and state laws governing banking. In 2005 (the year on which this study focuses), lenders were assigned a federal regulator based on the lender's functional form. The Office of Comptroller of the Currency (OCC) regulated nationally chartered banks and federal savings associations; the Federal Reserve System regulated state-chartered banks, bank holding companies, and loan holding companies that are members of the system; the Federal Deposit Insurance Corporation (FDIC) regulated state banks that are not members of the Federal Reserve System and state savings associations; the now-defunct Office of Thrift Supervision (OTS) regulated savings and thrift institutions and savings-and-loan holding companies; and the National Credit Union Administration (NCUA) regulated federally chartered or insured credit unions (Jackson et al. 2006). In addition to Federal Reserve or FDIC regulations, state-chartered institutions also were subject to state banking regulations insofar as these state regulations did not conflict with federal law (Hoskins & Labonte 2015). Finally, independent mortgage companies, which are nondepository institutions, were regulated mostly at the state level, with the Department of Housing and Urban Development and the Federal Trade Commission playing ancillary roles (White et al. 2011). Further complicating matters, federal mortgage-finance law preempted state law with respect to federally chartered institutions—that is, lenders under OCC, OTS, or NCUA purview—but merely supplemented state law with respect to other lenders.

This regulatory tangle stymies comparisons of lenders located within different states or having different functional forms. Accordingly, one cannot evaluate lending

practices in states with different foreclosure regimes simply by examining loan-application decisions from *all* financial institutions in these states. Doing so erroneously assumes both that the same legal framework governs lenders within a given state and that the same legal framework governs lenders across state lines, but for differences in foreclosure law.

I sidestep these identification issues by focusing exclusively on OCC-regulated national banks. Because OCC regulations preempted state banking regulations with respect to national banks at least from 2004 through the passage of Dodd-Frank, restricting the sample to OCC-regulated lenders eliminates a major potential source of bias in the estimation of the independent effects of state foreclosure law on mortgage pricing.

*Third*, the article presents a more nuanced understanding of judicial foreclosure. The procedure benefits borrowers in two respects: it provides a forum for borrowers to contest predatory loans and ensure that lenders seeking to foreclose meet the legal requirements to do so; it also delays foreclosures, allowing borrowers to remain in their homes for longer periods while in default. In other words, judicial foreclosure provides borrowers with both a legal forum and a transfer payment. By including the average time from default to foreclose as an independent variable in the analysis in Section V, the article sheds light on how lenders respond to each of these components of judicial foreclosure.

To summarize, this article contributes to the literature on foreclosure procedure and mortgage finance by recognizing the complex ways in which the law affects the mortgage market. Specifically, this article's research design accounts for the following features of the legal environment: (1) the battery of state foreclosure laws—aside from whether judicial foreclosure is required—that are discontinuous at state borders; (2) the alphabet soup of regulators involved in mortgage-finance regulation; and (3) the dual benefits that the use of judicial foreclosure provides to borrowers.

### III. FORECLOSURE LAW

Before proceeding to the analysis, this section provides a short primer on foreclosure law. State law governs the foreclosure process (Fox 2015). The lead-up to a foreclosure is broadly similar across states. After the borrower has been delinquent in her payment of the debt secured by the mortgage (or has failed to perform another obligation under the mortgage) for a period defined by state law, the lender may consider the borrower in default (Rao & Williamson 2005).<sup>2</sup> Once the lender or its servicer has provided the state-required notice of default and informed the borrower of any loss mitigation options, the foreclosure process can be initiated (Rao & Williamson 2005). An acceleration clause in the mortgage is then triggered, causing the entire debt to become due (Stark 1997). This acceleration starts the clock on a period during which the borrower

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<sup>2</sup>After the study period, federal regulations set a minimum 120-day delinquency period before which a borrower may be declared in default. 12 C.F.R. § 1024.41(f)(1) (Regulation X).

holds an equitable right of redemption enabling her to pay off the debt and redeem the property (Stark 1997).

At the end of this period, the lender may file a *lis pendens* (in a judicial-foreclosure state) or simply foreclose (in non-judicial-foreclosure states) (Stark 1997).<sup>3</sup> The key difference between the two procedures is that in a judicial-foreclosure state, a lender seeking to foreclose the borrower's equitable right to redeem the property must do so by filing a court action, whereas in a non-judicial-foreclosure state, the mortgage or deed of trust, on its face, grants the lender the power to foreclose without judicial intervention after the borrower's default (Fox 2015).

States' initial decisions whether to require judicial foreclosure were idiosyncratic. According to Andra Ghent (2012), foreclosure procedures typically developed "very early in states' histories," often before the Civil War. Ghent finds little evidence that economic conditions motivated these state-by-state differences in foreclosure procedure. Neither was there any discernable geographic pattern that could explain these states' initial decisions to adopt judicial versus non-judicial foreclosure. Instead, these differences are attributable to "path dependent quirks in the wording of various proposed statutes and"—more frequently—"decisions of individual judges" (Ghent 2012).

Once established, states rarely change their foreclosure regimes. Since 1938, only eight states have switched between non-judicial and judicial foreclosure (Ghent 2012). Of the 37 states or territories for which Ghent was able to obtain data from 1863, only 11 enacted significant alterations to their foreclosure procedures between that year and 2008. Once a state decided—typically, in the 19th century—whether to permit non-judicial foreclosure, that initial decision usually remained unperturbed through the present day (Ghent 2012). (Today, however, there is a discernable geographic tilt; states in the Northeast and Upper Midwest disproportionately utilize judicial foreclosure, whereas among the western states, only Hawaii favors that procedure.)

Further, states' current foreclosure regimes do not appear related to current state-level economic conditions or other factors, including mortgage default rates (Mian et al. 2015). During the study period, judicial-foreclosure requirements were not connected to state-level mortgage interest rates, default rates, leverage, the level of or growth in house prices, the size of the subprime market, loan-to-value ratios, household income, racial composition, education levels, or the unemployment or poverty rates (Mian et al. 2015). States' decisions whether to require judicial foreclosure appear unrelated to either the contemporary housing market or other political or economic factors currently existing in those states. Thus, states' past and current political and economic characteristics appear to be exogenous to states' foreclosure regime (Ghent 2012).

Because the differences between judicial and non-judicial foreclosure are foundational to this study, the following subsection provides an overview of the two mechanisms.

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<sup>3</sup>Following the financial crisis, the Dodd-Frank Act and associated regulations mandated that servicers—in both judicial-foreclosure and non-judicial-foreclosure states—provide notice of default and take additional steps prior to filing for foreclosure. See 12 U.S.C. § 1024.30(c)(2); 12 C.F.R. § 1024.39(b) (Regulation X). These federal requirements were not in effect during the study period.

## A. *Judicial Versus Non-Judicial Foreclosure*

### 1. Judicial Foreclosure

Judicial foreclosure begins with the lender filing with the court and recording in the chain of title to the property a memorandum of lis pendens, which provides notice that the property is the subject of foreclosure litigation (Rao & Williamson 2005). The next steps are familiar: the filing of a complaint, service of process, and a judicial hearing (Rao & Williamson 2005).<sup>4</sup> The lender must prove that a valid mortgage exists between the borrower and lender, which typically is shown by submitting the promissory note and mortgage document or, in most states, sworn affidavits attesting to the ownership of these items (Carpenter 2015). The lender also must proffer sufficient evidence that the borrower is in default; the lender typically meets this requirement by submitting sworn affidavits concerning the amount of the debt and the length of the delinquency (Mian et al. 2015). The borrower then may file an answer or other responsive pleading. Next, the lender typically moves for summary judgment. If the court determines that the lender has proffered sufficient admissible evidence concerning the borrower's default of a valid mortgage held by the lender, the court enters a judgment of foreclosure (Mian et al. 2015).

Following entry of judgment, the lender must provide notice of the pending sale to the borrower and other lienholders, or publish notice of the sale, or both (Rao & Williamson 2005). The method and number of notices and the minimum amount of time that must elapse between each required notice varies by state (Rao & Williamson 2005). If and when these requirements are met, a court-sanctioned foreclosure sale is conducted and the purchaser receives a certificate of sale (Stark 1997).

In 2005, 18 and the District of Columbia mandated judicial foreclosure.<sup>5</sup> Another three states—Hawaii, Iowa, and Wisconsin—set such stringent requirements for non-judicial foreclosure so as to severely discourage the use of that procedure. With the non-judicial process used so infrequently, these three states can be considered *de facto* judicial-foreclosure states.

### 2. Non-Judicial Foreclosure

Non-judicial foreclosure involves the lender's exercise of a power-of-sale clause in the mortgage or deed of trust,<sup>6</sup> which permits the lender to sell the property if the borrower

<sup>4</sup>In some states, the judicial hearing is conducted before a judge; in others, by a master in chancery who serves as agent of the court (Whitman & Nelson 2004).

<sup>5</sup>These judicial-foreclosure states are: Connecticut, Delaware, Florida, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, New Jersey, New Mexico, New York, North Dakota, Nebraska, Ohio, Pennsylvania, South Carolina, and Vermont (Rao & Williamson 2005).

<sup>6</sup>While "deed of trust" is the preferred term in many states that permit non-judicial foreclosure, this article employs the terms "mortgage" and "deed of trust" interchangeably, following popular usage. The crucial difference between a deed of trust (used in some non-judicial-foreclosure states) and a mortgage is that the former involves a third party: the trustee, to whom the deed of trust grants legal title to the property. As a neutral third party, the trustee is responsible for conducting the foreclosure sale following default (Ghent 2012).

is delinquent. This process, also known as power of sale, does not require court inter-mediation. To non-judicially foreclose, the lender must send a notice of default to the bor-rower and, typically, record the notice with the relevant county or municipal recorder. If the borrower fails to either pay the debt or to dispute it within a statutorily defined period, the lender may file a notice of sale (Mian et al. 2015). After a proscribed period, a third-party trustee or sheriff conducts a foreclosure sale or auction under power of sale (Stark 1997).<sup>7</sup>

To initiate a foreclosure pursuant to the power of sale, the borrower must be in default on a valid mortgage between the borrower and the lender. Although these are the same requirements needed to judicially foreclose, non-judicial foreclosure places the burden on the borrower to file suit to affirmatively contest whether these requirements are met (Carpenter 2015). Specifically, non-judicial-foreclosure states permit the bor-rower to initiate judicial proceedings by filing a wrongful foreclosure action and seeking a permanent injunction against foreclosure at any point between default and foreclosure (Pollock 2010). (Alternatively, the borrower may file for bankruptcy, which automatically stays the foreclosure.)

While borrowers are not deprived of their day in court, placing the onus on the borrower to contest the lender's ability to foreclose—rather than automatically requiring the lender to demonstrate that the requirements to foreclose are met—imposes additional time and resource costs on the borrower. Unsurprisingly, the overwhelming majority of power-of-sale foreclosures are not challenged in court (Carpenter 2015).

In 2005, 29 states authorized non-judicial foreclosure.<sup>8</sup> Although lenders in most non-judicial-foreclosure states retain the right to judicially foreclose, they rarely exercise this right, perhaps because of longer delays and higher transaction costs associated with judicial foreclosure (Ghent 2012).

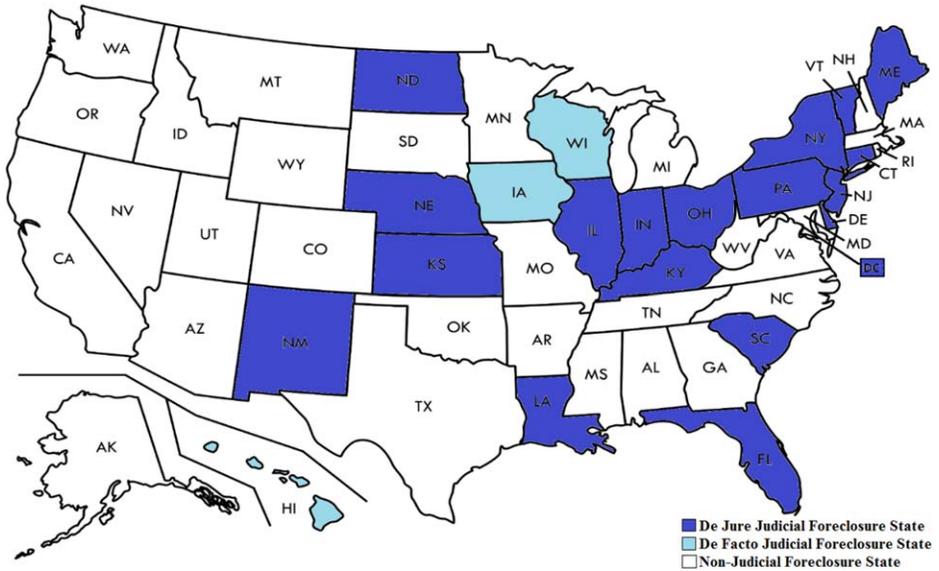
Figure 1 illustrates each state's decision to require judicial foreclosure or permit non-judicial foreclosure (Rao & Williamson 2005). The 18 states (and the District of Columbia) that require judicial foreclosure are displayed in dark blue. The three additional de facto judicial-foreclosure states discussed above are displayed in light blue.

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<sup>7</sup>Statutes authorizing non-judicial-foreclosure sales generally are not as specific as judicial-foreclosure statutes. Still, the trustee—that is, the third party to whom legal title to the property is entrusted in deed-of-trust states—has a fiduciary duty to perform his function in a manner that is most likely to maximize the purchase price (Stark 1996).

<sup>8</sup>These non-judicial foreclosure states are: Alabama, Alaska, Arizona, Arkansas, California, Colorado, Georgia, Idaho, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, North Carolina, Oklahoma, Oregon, Rhode Island, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, and Wyoming (Rao & Williamson 2005). North Carolina, which is classified as a non-judicial-foreclosure state, requires a presale hearing before a clerk of the court, in which the borrower may raise a limited set of issues, prior to a power-of-sale foreclosure. N.C. Gen. Stat. § 45-21.16.

Figure 1: Mandatory judicial-foreclosure procedures, by state. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]



## B. Defenses to Foreclosure

### 1. Substantive Defenses

Borrowers generally can raise three substantive issues, whether as defenses or counterclaims in a judicial foreclosure or as claims in a suit to enjoin foreclosure, during this period. *First*, the borrower may challenge the amount owed. In a random sample of almost 1,000 foreclosures filed in New York—a judicial-foreclosure state—Emily Poppe found that 20 percent of borrowers claimed that the lender failed to credit payments received (Poppe 2016). Although the validity of these claims is unknown, anecdotal examples abound concerning lenders attempting to foreclose despite receiving funds from the borrower that should have brought the note current (Fox 2015). Further, Katherine Porter’s (2008) study of bankruptcy filings found that in 70 percent of bankruptcies, creditors’ assertions regarding the size of the mortgage debt exceeded the borrowers’ figures, whereas borrowers’ assertions exceeded creditors’ figures in 25 percent of cases. That the borrower self-reported greater debts than the creditor in one-quarter of the cases indicates that the issue is not simply systemic underreporting by borrowers, but often reflects a genuine uncertainty on the part of one or both parties regarding the size of the debt.

Challenges to allegedly improper fees comprise an important subcategory of challenges to the amount owed. Outside of the foreclosure context, Porter’s study of bankruptcy filings uncovered that lenders and their servicers submitted proof of claim

forms for myriad erroneous fees. These erroneous fees included payment-processing charges, for example, the inclusion of prepayment penalties regarding loans that had not been prepaid,<sup>9</sup> and illegal fees related to the foreclosure itself.<sup>10</sup>

*Second*, where the lender provided misinformation or failed to disclose certain information prior to loan origination, the Truth in Lending Act, 15 U.S.C. § 1635, enables the borrower, in limited circumstances, to rescind the loan agreement. Section 1601 of the Act protects borrowers “against inaccurate and unfair credit billing . . . practices.” For material violations of the Act, for example, failures to disclose the annual percentage rate, financing charges, or the payment schedule, the borrower may retroactively rescind the loan agreement and seek damages. Claims under the Act must be brought within three years of the loan closing, and may be raised as a cause of action or as an affirmative defense in a foreclosure action.<sup>11</sup>

*Third*, the borrower may utilize state common-law doctrines—most prominently, fraud and unconscionability—in foreclosure proceedings.<sup>12</sup> Whereas the National Bank Act of 1863 (NBA) and associated OCC regulations in effect during the study period preempted state laws regulating mortgage banking, these common-law doctrines remained in effect. Courts allow fraud- or unconscionability-based claims and defenses in a variety of situations, including extensions of credit to low-income borrowers for whom default was reasonably foreseeable; rate-and-term refinances with inferior terms; and approving loans with balloon payments to borrowers with fixed or declining income. These claims and defenses also are raised, often in conjunction with a Truth in Lending Act claim, where the borrower alleges that the lender misrepresented the terms of the loan (Rao & Williamson 2005).

Aside from these three areas, borrowers in this sample had few nonprocedural defenses to foreclosures. As detailed below, federal law preempted state anti-predatory lending and unfair and deceptive practices statutes with respect to national banks during this period.<sup>13</sup> Applicable federal law does not permit private causes of action for predatory, unfair, or deceptive practices or related violations.<sup>14</sup> Although the Home Ownership & Equity Protection Act of 1994 (HOEPA), 15 U.S.C. § 1601 et seq., provides additional

<sup>9</sup>See, e.g., *In re Haque*, 395 B.R. 799, 802 (Bankr. S.D. Fla. 2008) (criticizing a servicer for including prepayment penalties regarding loans that had not been prepaid).

<sup>10</sup>See, e.g., *In re Stewart*, 391 B.R. 327, 343–45 (Bankr. E.D. La. 2008) (faulting a servicer for charging a borrower for an excessive number of postdefault property inspections).

<sup>11</sup>See *Beach v. Ocwen Fed. Bank*, 523 U.S. 410, 411 (1998) (interpreting 15 U.S.C. § 1635(f)).

<sup>12</sup>In judicial-foreclosure states, the borrower would raise these concepts as equitable defenses or counterclaims. See, e.g., *Mfrs. & Traders Trust v. Hughes*, Case No. 99-C-5849, 2003 WL 21780956, at \*4 (N.D. Ill. July 31, 2003) (applying Illinois law). In non-judicial-foreclosure jurisdictions, they would be raised affirmatively to support injunctive relief. See, e.g., *Mitchell v. Dahlberg*, 547 N.W.2d 74, 78 (Mich. Ct. App. 1996).

<sup>13</sup>68 Fed. Reg. 46,264, 46,270 (Aug. 5, 2003).

<sup>14</sup>See *Moore v. New York Cotton Exchange*, 270 U.S. 593, 597 (1926) (holding that the Federal Trade Commission Act does not authorize private enforcement).

substantive protections, for example, prohibiting prepayment penalties for certain high-cost mortgages, HOEPA plays a trivial role in foreclosure defense; the Act applies to no more than 1 percent of subprime residential mortgages (Gramlich 2007). Claims that foreclosure is improper because the borrower is eligible for a loan modification, while common in the years after the financial crisis (Poppe 2016), were unavailable in the study period, prior to passage of the federal Home Affordable Modification Program and similar state mediation programs (National Consumer Law Center 2012). Finally, while federal law—namely, the Fair Debt Collection Practices Act, 15 U.S.C. § 1692 et seq. (1978) and Real Estate Settlement Procedures Act (RESPA), 12 U.S.C. § 12601 et seq. (1974)—provides for several rights of action against mortgage servicers for violations of mortgage-servicing and debt-collection statutes, borrowers cannot challenge foreclosures based on these violations (Rao & Williamson 2005).

## 2. Procedural Defenses

Borrowers also may utilize several procedural defenses (in judicial-foreclosure states) or procedure-based claims (in non-judicial-foreclosure states) to prevent foreclosure. *First*, they may argue that the lender failed to meet notice requirements related to the foreclosure. Although the details differ by states, lenders generally must send several notices (e.g., a notice of default and notice of foreclosure sale), with the law prescribing certain content, delivery method, and window for delivery. Should the borrower successfully contest the lender's adherence to any of these requirements, the lender must restart the entire process (Carpenter 2015).

*Second*, borrowers may challenge lenders' ownership of both the note and the mortgage document, and, thus, the lender's right to foreclose.<sup>15</sup> In judicial-foreclosure states, the party seeking to foreclose must have standing to bring a foreclosure action; in non-judicial-foreclosure states, that party must be a "person entitled to enforce the note" under the Uniform Commercial Code (Fox 2015). (For simplicity, this article will refer to requirements in both judicial- and non-judicial-foreclosure jurisdictions as "standing.") Importantly, lack of standing precludes foreclosure in both jurisdictions, regardless of whether the borrower is delinquent (Pollock 2010).<sup>16</sup>

In the rush to securitize mortgage loans in recent decades, compliance with the laws regarding assignment of mortgage notes often has fallen by the wayside (Poppe 2016). When the actual mortgage note is not properly transferred following the securitization and sale of a loan, the owner of the loan will not have standing to foreclose. As loans are sold and resold repeatedly, the likelihood that the parties to these transactions fail to properly assign the note increases. Unsurprisingly, gaps in the chain of title are common; one study found that the foreclosing entity did not show proof of ownership

<sup>15</sup>Aside from lack of standing, failure to serve constitutes the other major procedural challenge to foreclosure. Allegations that the lender failed to serve a notice of default were raised in 46 percent of the answers filed in Poppe's sample.

<sup>16</sup>The particular documentation needed to foreclose, for example, proof of mortgage assignments, varies somewhat by state (Fox 2015).

of the note in approximately 40 percent of a sample of 1,700 foreclosures (Pollock 2010). In light of these failures to document transfers, lack of standing is the most frequently raised defense in judicial foreclosures. A court's finding that the lender lacks authority to foreclose typically only leads to dismissal without prejudice of judicial foreclosures or a temporary injunction in borrower-filed suits in non-judicial-foreclosure jurisdictions. The lender then may search for missing documentation or complete the required transfers of the note or mortgage and refile the foreclosure complaint (in judicial-foreclosure states) or move to dissolve the injunction (in non-judicial-foreclosure states) (Poppe 2016).

*Third*, the borrower may claim that the documents that the lender proffered are false or fraudulent. In a practice known as "robo-signing," some lenders attempt to create a chain of title post hoc, fraudulently creating back-dated assignments of notes or (typically where the note cannot be physically produced) instructing employees to sign sworn affidavits attesting to the accuracy of documents of which, in reality, these employees lacked knowledge (Fox 2015).

Because judicial supervision is naturally more widespread in judicial-foreclosure states, defects in the chain of title and, relatedly, robo-signing practices are more frequently uncovered in those jurisdictions. In the wake of robo-signing scandals and, relatedly, lenders' inability to show ownership of mortgages during and after the financial crisis, three major servicers voluntarily stayed foreclosure sales in 23 judicial-foreclosure states. Notably, this stay did not extend to foreclosure sales in non-judicial-foreclosure states (Carpenter 2015). Because there is no reason to expect that chain of title problems and robo-signing would be more prevalent in judicial- or non-judicial-foreclosure states, servicers' decision to halt sales only in the former states indicates that for purposes of identifying defects in chain of title, mandatory judicial process is more effective than granting borrowers an opt-in right to adjudicate. Examples of forged documents and other lender misbehavior that did not interfere with power-of-sale foreclosures in non-judicial-foreclosure states, only to be uncovered in later proceedings in bankruptcy court,<sup>17</sup> further support the conclusion that a mandatory judicial forum provides greater protection to borrowers.

### *C. Foreclosures on the Ground*

The on-the-ground consequences of judicial versus non-judicial foreclosure differ in at least one important respect: the former takes substantially longer to complete than the latter. In the late 1980s, foreclosures in judicial-foreclosure states took on average 152 days longer to complete than did those in non-judicial-foreclosure states (Clauret 1989). By 2010, that difference had swelled to 363 days longer (Nelson & Whitman 2012).

Put simply, longer foreclosure timelines in judicial-foreclosure states are good for borrowers and bad for lenders. Because there is little additional recourse available to a lender postdefault for each additional month in which the borrower does not make

<sup>17</sup>See, e.g., Carrsow-Franklin, 524 B.R. 33 (Bankr. S.D.N.Y. 2015).

payments, the borrower may continue to live in the house while withholding additional mortgage payments with few associated marginal costs. By contrast, longer procedural periods in judicial-foreclosure states impose costs on lenders, who must maintain the property and pay property taxes—or be faced with a dilapidated property with tax liens postforeclosure (Harrison & Seiler 2015). By one estimate, foreclosures cost an average of \$3,112 in judicial-foreclosure states but only \$2,269 in other states (Demiroglu et al. 2014).

The longer procedural periods in judicial-foreclosure states also have second-order effects. Because lenders bear the costs of delay, lenders in the first instance are less likely to pursue foreclosures through completion in judicial-foreclosure states. In a sample of foreclosures conducted from 2006 through 2010, Atif Mian et al. (2015) found that whereas default rates in judicial- and non-judicial-foreclosure states are virtually identical, lenders are less than half as likely to foreclose on delinquent homeowners in judicial-foreclosure states.

Instead, lenders are more likely to pursue alternatives to foreclosure—namely, negotiating loan modifications with delinquent borrowers—in judicial-foreclosure states (Collins et al. 2011). Essentially, the prospect of delay and attendant expenses incurred by the lender in judicial-foreclosure states places the borrower at a relative advantage at the bargaining table (Poppe 2016; Whitman 2014). Accordingly, fewer foreclosures per default occur in judicial-foreclosure states—a win for borrowers in these states (Fox 2015).<sup>18</sup>

Evidence is mixed, however, regarding whether (conditional on the lender attempting to foreclose) the use of judicial foreclosure actually leads to substantially different outcomes. On the one hand, because judicial foreclosure places the initial burden on the lender, seeking to foreclose means that lenders must aver that all the requirements to foreclose are met. Lenders must make this averment in a court filing, subject to state court procedural rules requiring that representations to the court be made in good faith and grounded in reasonable inquiry and evidentiary support. These requirements may encourage lenders to think twice before improperly initiating a foreclosure. Should the lender proceed with filing a *lis pendens* for an unlawful foreclosure, the court presumably could serve as a backstop, rejecting attempts to unlawfully foreclose (Fox 2015).

On the other hand, borrowers generally do not avail themselves of important rights that the judicial process affords; Poppe's (2016) study of almost 1,000 judicial foreclosures found only 21 percent of borrowers were represented by counsel at any point in the process. Further, whether represented by counsel or *pro se*, most borrowers had no formal engagement with the legal system throughout the foreclosure. Only 24 percent of borrowers filed an answer. Even when borrowers did participate, they rarely

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<sup>18</sup>Owners of nearby properties and municipal governments also benefit when foreclosures are avoided. Spillover costs—for example, failures to adequately maintain properties, increased vacancy, and feelings of decreased neighborhood stability among residents—often accompany foreclosures. These features tend to lower neighborhood property values and discourage new investment (Mian et al. 2015). Because fewer defaults result in foreclosures in judicial-foreclosure states, these negative externalities are less frequently present. Similarly, because foreclosures reduce property tax assessments, the decreased likelihood of foreclosure in judicial-foreclosure states benefits municipal coffers (Wassmer 2011).

alerted the court to potential defects in lenders' claims. Even the foreclosures that are most susceptible to challenge—that is, cases in which the lender likely ignored procedural requirements—tend to be uncontested (Poppe 2016).

Even more significantly, according to Poppe, “the foreclosure process fails to ensure lenders’ compliance with foreclosure formalities or protect homeowners from unnecessary foreclosures” for the cases in her sample. In other words, borrowers’ abilities to raise procedural and substantive defenses in judicial foreclosures do not appear to incentivize lenders to comply with procedural requirements or discourage actual foreclosures in this sample.

Poppe’s analysis suggests a discomfoting conclusion: that the ultimate outcomes in both jurisdictions may be substantially similar. The notion that observed behavior under two legal regimes is similar does not imply, however, that judicial-foreclosure requirements do not exert any effect. Aware of the higher hurdles that they face in judicial-foreclosure states, lenders in these states could decline to initiate foreclosure proceedings in marginal cases in these states. Alternatively, lenders in judicial-foreclosure states could more rigorously adhere to legal requirements at the loan-origination stage, with the intention of ensuring that they do not have problems foreclosing on the subset of borrowers who later default. Finally, if lenders want to avoid facing a court in judicial-foreclosure states—whether because of the costs of delay associated with judicial foreclosure or because their actions are susceptible to challenge—they may tighten their lending standards and lean toward offering prime rather than subprime loans in an effort to reduce the incidence of later borrower default.

#### *D. Other Features of Foreclosure Law*

Judicial foreclosure is one of several borrower protections in foreclosure process that some states provide. State foreclosure law also varies in terms of (1) the frequency and temporal proximity of notices that the lender must provide; (2) whether the borrower enjoys a statutory right to cure; (3) the presence and length of any postsale redemption period; and (4) whether the lender is prohibited from pursuing a postsale deficiency judgment (Rao & Walsh 2005). All four protections impose costs on lenders—and, therefore, presumably all four could affect the market for mortgages, as lenders change their behavior in response. This subsection discusses these four key additional protections in turn.

*First*, all states require lenders to provide borrowers with preforeclosure notice, with the specific content, number, and frequencies of these notices varying by state.<sup>19</sup> At the high end, the minimum time between default and foreclosure in Idaho and Oregon is 120 days, given these states’ statutorily defined periods between notices (Rao & Williamson 2005). Because notice requirements elongate the timeframe for

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<sup>19</sup>To initiate the foreclosure process in judicial-foreclosure states, lenders must file with the court a *lis pendens*, that is, a notice providing evidence regarding the debt, and send a copy to the borrower. In non-judicial-foreclosure states, the lender must first send a notice of default to the borrower (and, typically, to the court as well), and, after waiting a statutorily prescribed period of time, file a notice of sale to begin the foreclosure sale process (Mian et al. 2015). Some jurisdictions—both judicial- and non-judicial-foreclosure states—also require other types of notices prior to sale (Rao & Walsh 2005).

foreclosure—and delinquent borrowers may remain in their homes regardless of whether they make principal and interest payments to their lenders during this notice period—more detailed notice requirements increase lenders' losses on foreclosed properties (Cordell & Lambie-Hanson 2016). Lenders, in turn, pass some of these losses on to borrowers in the form of higher mortgage costs (Harrison & Seiler 2015).

*Second*, 27 states and the District of Columbia provide a right for delinquent borrowers to cure a default (Harrison & Seiler 2015). In these states, if the borrower makes all missed payments within a designated period postdefault, the lender must waive all penalties and stop the foreclosure (Rao & Walsh 2005). Within the subset of states that provide this right, the specific period in which borrowers hold a right to cure differs considerably (Rao & Williamson 2005). Because cure rights compel lenders to accept resolutions that presumably they would otherwise reject and leave lenders responsible for collection and legal fees associated with abortive foreclosures, cure rights presumably increase costs for lenders. Once again, lenders may transfer some of these costs to borrowers in the form of higher mortgage costs.

*Third*, 22 states provided a postforeclosure sale statutory right of redemption to the former mortgagor during the study period (Nelson & Whitman 2001). In these states, the purchaser must wait for the statutory redemption period—which ranges by state from three months to three years—to expire before the purchaser is issued a deed of sale. After this period, if applicable, ends and the court issues an order confirming the sale, the purchaser receives a deed of trust (Stark 1997). Statutory redemption enables the former borrower to regain title *after* a foreclosure sale by compensating the foreclosure-sale purchaser the amount he or she paid to purchase the property, plus accrued interest and other expenses (Nelson & Whitman 2012).

Redemption rights may shift costs from borrowers to lenders in three respects. Most directly, while the borrower typically has the right to remain in possession of the property during the postforeclosure redemption period, the lender is responsible for tax and maintenance costs during this period (Nelson & Whitman 2012). Redemption rights also generate uncertainty regarding whether a foreclosure-sale purchaser will ever be able to take possession; this uncertainty may reduce the purchase price (Ghent 2012). Finally, because redemption in effect grants a put option to the former borrower, the foreclosure-sale purchaser's potential gains in a rising real estate market are limited, which also may reduce the purchase price. Accordingly, lenders may shift some of the costs associated with redemption rights by offering mortgage terms that are less favorable to borrowers.

*Fourth*, several states prohibit deficiency judgments (Rao & Williamson 2005). Deficiency judgments allow the lender, following a foreclosure sale that does not yield sufficient funds to cover the borrower's debt, to seize other assets that the borrower may have (Ghent 2012).<sup>20</sup> In other words, the borrower is still on the hook if the foreclosure sale does not cover the borrower's debt. By barring lenders from pursuing the

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<sup>20</sup>Although the parties can contract out of this default rule in most states permitting deficiency judgments by including an exculpatory clause in the original mortgage (which is then known as a "nonrecourse" mortgage), exculpatory clauses are rarely used (Ghent 2012). Historically, most foreclosure sales do not cover the borrower's debt, making deficiency judgments a powerful tool for lenders (Wechsler 1985).

borrower's other assets following a foreclosure and encouraging strategic defaults when the property's present value is less than the remaining debt (Ghent & Kudlyak 2011), anti-deficiency laws may increase lenders' costs. Once again, some of these costs may be passed on to borrowers.

As with a state's decision to mandate judicial foreclosure or permit non-judicial foreclosure, these four features of state foreclosure law impose costs on lenders, and thus may cause lenders to tighten their lending standards (to reduce the risk of foreclosures, which are costly in states with these provisions) or offer higher rates (to pass on the increased costs of these provisions to borrowers). Accordingly, this article's research design controls for these features, comparing states with substantially similar foreclosure regimes but for their allowance of non-judicial foreclosure.<sup>21</sup>

#### IV. RESEARCH DESIGN

This section presents hypotheses concerning the effects of judicial-foreclosure requirements on lenders' behavior in two key areas: the likelihood of loan-application approval and whether approved applicants are offered a prime or subprime rate. The section then describes the data sources used to construct the variables employed in the analysis to follow.

##### A. Hypotheses

The hypothesized effect of judicial-foreclosure requirements on loan approval decisions is straightforward. Judicial foreclosure saddles lenders with greater costs than they otherwise would incur if permitted to foreclose. These costs include not only legal fees, but also additional property taxes, insurance, and maintenance or depreciation costs because judicial foreclosures tend to take more time to complete (Fox 2015). Since lenders consider expected foreclosure-related losses in determining whether to extend credit, an increase in these expected costs should cause lenders to reject marginal borrowers. Hypothesis 1 captures this logic:

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<sup>21</sup>State-level variation in bankruptcy law presents another potential source of complication. Because the Bankruptcy Code prohibits modification of mortgages secured solely by the debtor's primary residence, 11 U.S.C. § 1322(b)(2) (2006), filing for Chapter 7 or Chapter 13 bankruptcy will not enable a borrower to remain in her home indefinitely without catching up on all missed mortgage payments (Levitin 2009). Filing for bankruptcy will, however, automatically stay a foreclosure action, 11 U.S.C. § 362(a), which increases the cost to lenders. Importantly, differences in state law regarding wage garnishment and the size of the homestead exemption in a Chapter 13 bankruptcy are associated with state-by-state variation in bankruptcy filings (Lefgren & McIntyre 2009; Lin & White 2001). Moreover, state-level differences in bankruptcy law impact mortgage pricing. For instance, Cao and Lui (2016) find that lenders adopt a more conservative lending posture in states with a more borrower-friendly homestead exemption. The theorized causal chain from state bankruptcy law to mortgage pricing decisions is somewhat attenuated: borrower-friendly state law may encourage bankruptcy filings, which in turn elongate foreclosure timelines, which in turn increase costs to lenders, which are passed on to borrowers at the loan-origination stage. Accordingly, state-level differences in bankruptcy law lie outside of the scope of this study.

*Hypothesis 1:* Lenders are less likely to approve mortgage applicants in judicial-foreclosure states than otherwise similar applicants in non-judicial-foreclosure states.

The hypothetical effects of greater borrower protections on mortgage pricing are less clear. Whereas judicial foreclosure imposes additional costs on lenders, it grants benefits to borrowers by serving as a form of insurance; if the borrower defaults, she has the right to a judicial forum and additional use of the property during an elongated foreclosure timeline (Fox 2015).

Although the first-order costs and benefits of judicial-foreclosure requirements to lenders and borrowers are straightforward, how these effects impact pricing decisions are less clear. Several features suggest that mortgages should be more costly to borrowers in judicial-foreclosure states. For instance, if borrowers are relatively price inelastic, lenders may shift all or part of their costs associated with judicial foreclosure onto them by offering high-rate quotes—with borrowers with the greatest likelihood to default on their mortgages assigned the highest rates (Pence 2003).

A judicial-foreclosure requirement also may stimulate mortgage demand via two pathways—with this increased demand enabling lenders to raise rates. First, this requirement provides a form of insurance to borrowers, allowing them to pool their risks (Schill 1991). By increasing aggregate borrower welfare, judicial foreclosure may stimulate borrower demand. Relatedly, the presence of judicial foreclosure may allay borrowers' fears about entering into a mortgage with a potentially unscrupulous lender, and therefore stimulate additional borrower demand for mortgages. Increased demand, in turn, may enable lenders to raise rates.

But lenders instead may try a different tack: *lowering* interest rates in judicial-foreclosure jurisdictions.<sup>22</sup> Loans with more onerous terms are more likely to lead to foreclosure (Pope 2016). Therefore, because foreclosures are more costly to lenders in judicial-foreclosure states (Fox 2015), lenders may offer lower rates in judicial-foreclosure states on the theory that more costly judicial foreclosures may be avoided by offering borrowers more manageable terms.

The need for lenders to face a court before foreclosing on a nonperforming loan also may encourage more borrower-friendly loan terms in judicial-foreclosure states. A lender evaluating a loan application may look down the decision tree to a potential need to foreclose. In a judicial-foreclosure state, that means considering the prospect of a borrower-friendly judge scrutinizing the mortgage for potential violations of anti-predatory lending or truth-in-lending laws, the presence of unconscionable terms, or any hint of fraudulent inducement. With this potential scrutiny at the foreclosure stage

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<sup>22</sup>A third possibility is that lenders may be indifferent to judicial-foreclosure requirements when setting the terms of new loans. Most prime loans are sold to Fannie Mae, Freddie Mac, or another third party shortly after origination (Pence 2003). (Although Fannie Mae and Freddie Mac restrict their purchases to conforming prime mortgages, other entities purchase and securitize subprime loans and then sell these mortgage-backed securities to others.) The inability of these entities and downstream purchasers of securitized loans to accurately price risk is well-established following the financial crisis. If lenders' practice of selling their loans to third parties creates moral hazard, and if these third parties cannot adequately assess the quality of the loans they purchase, then lenders may lack an incentive to account for judicial-foreclosure costs in setting loan terms.

in mind, the lender may think twice about offering a subprime loan with a high interest rate or confusing terms in the first instance. Relatedly, if lenders are concerned that judges will uncover lender misbehavior, that concern may incentivize lenders to take additional steps to avoid a default in states in which the lender must file a foreclosure action in court. Lenders, therefore, could lower interest rates in judicial-foreclosure states, relative to those in non-judicial-foreclosure states, to reduce the risk of default in the former jurisdictions. On balance, these considerations suggest that we should expect lenders to originate a smaller share of subprime loans (and a larger share of prime loans) in judicial-foreclosure states. Hypothesis 2 captures this logic.

*Hypothesis 2:* Approved applicants are less likely to be offered subprime products in states that mandate judicial foreclosure.

Mortgage-finance outcomes are markedly worse for African-American and Hispanic borrowers. In 2000, the national homeownership rate was 73.8 percent for non-Hispanic whites, 47.2 percent for African Americans, and 45.5 percent for Hispanics. That year, black applicants were denied at almost twice the rate of white applicants; Hispanic applicants were 41 percent less likely to be approved than were white applicants (Ross & Yinger 2003); and when minority applicants are approved, they are substantially more likely to receive subprime loans, even when controlling for other borrower demographic characteristics (Bocian et al. 2008).

These disparities persist after loan origination. During the financial crisis, the foreclosure rates for African-American and Hispanic borrowers were 76 percent and 71 percent higher, respectively, than the rate for non-Hispanic white borrowers. Once again, this racial gap endures after controlling for income and other factors (Bocian et al. 2008).

Judicial foreclosure may mitigate these disparities. As detailed above, mandatory judicial foreclosure provides a forum for borrowers in default to raise defenses, including claims that the lender provided erroneous information or failed to disclose material facts and that the loan terms are unconscionable. Hypothesis 2 is grounded in the notion that judicial-foreclosure requirements discourage lenders from originating loans with high interest rates or abstruse terms. To the extent that lenders are more likely to saddle minority borrowers—or other borrowers with lower socioeconomic status—with these unfavorable terms, we should expect the benefits of judicial foreclosure to be amplified for these borrowers. This logic suggests a potential interactive effect of borrower socioeconomic status and mandatory judicial foreclosure on loan terms, which Hypothesis 3 captures.

*Hypothesis 3:* Approved applicants with lower socioeconomic status, for example, racial or ethnic minorities or lower-income applicants, are even less likely to be offered subprime products in judicial-foreclosure states.

## B. Sample

To test these hypotheses, I gathered data on loan applications submitted to national banks in 2005. In that year, OCC-regulated nationally chartered banks were subject to a

particularly strong form of federal preemption of state banking law. The uniform treatment of national banks is essential to this analysis, as valid comparisons of lenders across state lines require that these lenders are subject to substantially similar legal constraints.

This uniform treatment was present in 2005. At that time, state banking law exerted trivial influence over national banks for two reasons: federal law preempted virtually all state banking law concerning national banks (Wilmarth 2004) and federal regulators possessed the exclusive authority to enforce state banking law to the extent it was not preempted (Cayne & Perkins 2004).

### *C. Data and Descriptive Statistics*

After defining the sample as loan applications processed by national banks in 2005, I turn to collecting data on individual borrower and loan characteristics. These data were obtained from the federal Home Mortgage Disclosure Act (HMDA) Final Loan Application Register dataset (FFIEC 2005). The HMDA requires mortgage lenders to provide regulators and the public with information concerning their mortgage applicants' demographic characteristics and the features of their desired loans (12 U.S.C. § 2801(b); 12 C.F.R. § 203.1).

The HMDA covers substantially all mortgage lenders, including all lenders with over \$35 million in assets and a physical presence within at least one metropolitan statistical area (MSA) (McCoy 2007). In 2005, 8,848 mortgage lending institutions filed 33.6 million loan application reports under the HMDA. The OCC regulated 1,255 of these institutions, which filed 7.3 million HMDA reports that year (FFIEC 2005).

#### 1. Dependent Variables

This study examines the effects of foreclosure law on two specific mortgage-application outcomes: whether the application is approved (*Approval Decision*), and, for approved loans, whether the applicant is offered a subprime loan (*Subprime Loan*). *Approval Decision* is coded with a 1 for all approved loan applications, and 0 for denials.<sup>23</sup>

*Subprime Loan* is operationalized two ways. In the first set of models, I consider any loan for which the "rate spread"—that is, the difference between the annual percentage rate (APR) for each approved loan and the yield on a Treasury security of comparable maturity as the loan—exceeds 3.0 percentage points. Beginning in 2004, the HMDA has required lenders to report the rate spread for all loan applications for which the offered spread meets or exceeds this threshold. This spread is notably higher than the

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<sup>23</sup>More specifically, the category of approved loans encompasses loans that were originated and loan applications that were approved by the lender but not accepted by the borrower. Applications denied by the lender, withdrawn applications, and files that are closed for incompleteness are all classified as denials. All other actions reported in the HMDA dataset, that is, loans purchased by the lender and preapproval decisions, are omitted. Because borrowers may withdraw applications or submit incomplete applications for several reasons—including, but not limited to, a belief that their application is likely to be denied—my classification of denials may be overinclusive. The results presented below are robust to an alternative specification that omits withdrawn and incomplete applications from the analysis.

Table 1: Summary Statistics: Dependent Variables

	<i>Mean</i>	<i>SD</i>	<i>Min.</i>	<i>Max.</i>	<i>n</i>
Approval decision	0.60	—	0	1	7,264,449
Rate >3.0% over Treasury yield	0.17	—	0	1	4,346,421
Rate >6.5% over Treasury yield	0.04	—	0	1	4,346,421
Rate spread	2.22	1.02	1.91	12.25	4,346,421

NOTES: Table includes all loan applications processed by OCC-regulated banks in 2005. The HMDA does not require the reporting of rate spreads less than 3 percentage points. As explained in the text, I impute a minimum rate spread of 1.91 for approved loan applications that do not meet this threshold.

approximate 1.91 percentage point spread for the median loan.<sup>24</sup> A second set of models adopts the Federal Reserve’s regulatory definition of a subprime loan as a loan with a rate spread exceeding 6.5 percentage points.<sup>25</sup>

Table 1 reports summary statistics concerning these variables. For reference, Table 1 also reports summary statistics concerning the “rate spread,” or the difference between the annual percentage rate (APR) for each approved loan and the yield on a Treasury security of comparable maturity as the loan.<sup>26</sup>

## 2. Explanatory Variables

*a. Judicial foreclosure.* The key independent variable in this study is whether the state in which a mortgaged property is located requires lenders to foreclose judicially. Eighteen of these states and the District of Columbia mandate judicial foreclosure; three additional states technically allow non-judicial foreclosure, but place such stringent requirements on it that the overwhelming majority of foreclosures occur pursuant to a judicial process (Rao & Williamson 2005).<sup>27</sup> (These three de facto judicial-foreclosure states are classified as requiring the procedure.)

<sup>24</sup>The difference between the average APR for a 30-year conventional mortgage in 2005 and the yield for a 30-year Treasury bond when that security was reintroduced in early 2006 is 1.91 percentage points (Board of Governors of the Federal Reserve System 2017).

<sup>25</sup>See 12 C.F.R. § 1026.32 (Regulation Z) (defining high-cost first-lien mortgages as, inter alia, those with rate spreads exceeding 6.5 percentage points).

<sup>26</sup>Beginning in 2004, HMDA has required lenders to report the rate spread only where the difference between the loan’s APR and the comparable security’s yield exceeds 3 percentage points. For rates that do not exceed this threshold, the value of *Rate Spread* is set at 1.91 percentage points, which is the difference between the average APR for a 30-year conventional mortgage in 2005 and the yield for a 30-year Treasury bond when that security was reintroduced in early 2006 (Board of Governors of the Federal Reserve System 2017).

<sup>27</sup>According to Gerardi et al. (2013), while “no two . . . lists [of judicial-foreclosure versus non-judicial-foreclosure states] are exactly the same . . . most categorizations largely coincide.” Indeed, Nelson and Whitman (2007)—which was published two years after this article’s 2005 study period—classify Arkansas and Missouri as judicial-foreclosure states, whereas Rao and Williamson label them non-judicial-foreclosure states. The results presented in this article are robust to this alternative classification of Arkansas and Missouri.

*b. Other features of state foreclosure law.* As detailed above, state foreclosure law varies in several other significant respects. I control for the three most important sources of interstate variation: (1) whether the borrower holds a right to cure the defect, (2) whether the borrower holds a statutory right to redeem the property, and (3) whether the lender is barred from pursuing a deficiency judgment. The right to cure a default (*Right to Cure*) grants borrowers in arrears the option of paying the amount due (plus interest), thereby reinstating the mortgage postdefault. The statutory right of redemption (*Right to Redeem*) grants borrowers the right to redeem the mortgage for a defined period postforeclosure sale by paying the total purchase price plus interest and costs. Finally, 13 states prohibit or severely restrict lenders' ability to seek a deficiency judgment, that is, a judicial order that the borrower's wages be garnished or his other property attached when the sale price of a foreclosed property is insufficient to pay off the balance of the loan (*Anti-Deficiency*) (Rao & Williamson 2005).

*c. Applicant demographic characteristics.* The connections between potential borrowers' demographic profiles and lending activity are well-established. Accordingly, I include applicant-level demographic variables denoting whether the applicant is African American, non-white Hispanic, or female, the natural log of the applicant's income, and the reported loan-to-income ratio. All these variables are included in, or derived from, the HMDA dataset, reported at the applicant level.

Loan applicants' incomes and their prospective loan-to-income ratios are key measures of applicants' likelihood of repayment and, hence, necessary control variables in studies of mortgage lending decisions (Bayer et al. 2016). Accordingly, I include *Income*, which is the natural log of the applicant's gross reported income, and *Loan/Income Ratio*, which is calculated as the requested loan size divided by *Income*.

Concerning race and ethnicity, the large racial gaps in homeownership, loan-approval rates (Ross & Yinger 2003), and rate quotes (Bocian et al. 2008) motivate the inclusion of *Black* and *Hispanic* variables. I also include a *Female* independent variable, based on similar concerns regarding gender discrimination in mortgage lending (McCoy 2007).<sup>28</sup>

*d. Area demographic characteristics.* This analysis also includes four variables concerning the demographic composition of the census tract in which the applicant's contemplated

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<sup>28</sup>The HMDA dataset lacks information on one potentially significant feature of applicants: a measure of their credit histories, for example, FICO scores. To be sure, an applicant's income and the loan-to-income ratio of the desired loan, taken together, may capture a portion of that applicant's risk profile. Still, this omission is unfortunate. An alternative dataset, Freddie Mac's Single Family Loan-Level Dataset (Freddie Mac 2017), includes the borrower's FICO score for a portion of loans that Freddie Mac purchased between 1999 and 2016. That dataset, however, has several shortcomings. First, it does not include unapproved loan applications. Given that information on unapproved applications is needed for this article's research design, this omission is fatal. Second, the Freddie Mac dataset does not include other covariates, such as applicants' incomes, that are as important as credit history. Third, it does not classify loans by the type of financial institution, thereby making it impossible to exclude lenders other than national banks or otherwise control for the financial regulatory regime that governed each lender. For these reasons, the HMDA dataset is preferable to the Freddie Mac dataset for this project, despite the fact that the former dataset does not include a measure of applicants' credit histories.

Table 2: Summary Statistics for All Applications: Independent Variables

	<i>Mean</i>	<i>SD</i>	<i>Min.</i>	<i>Max.</i>
<b>Applicant-Level Covariates</b>				
JF requirement	0.42	—	0	1
Right to cure	0.49	—	0	1
Right to redeem	0.55	—	0	1
Anti-deficiency	0.26	—	0	1
Black	0.10	—	0	1
Hispanic	0.11	—	0	1
Income (log)	4.61	1.40	0.00	8.24
Loan-to-income ratio	2.70	2.02	0.00	875.35
<b>Census-Tract-Level Covariates</b>				
Median HH income*	\$46.5	\$22.4	\$9	\$317
Tract-to-metro area HH income	1.12	0.39	0.20	5.39
Owner-occupied units (%)	0.628	0.353	0.010	0.694
Minority population percent	0.29	0.24	0.00	1.00
<i>n</i> = 7,264,449				

NOTES: \* Denotes that median and median absolute deviation, rather than mean and standard deviation, are reported. Median household income measured in thousands of 2005 dollars. Table includes all loan applications processed by an OCC-regulated bank in 2005.

property is located: *Median Household Income*, *Tract-to-Metro Area Household Income*, *Proportion of Owner-Occupied Units*, and *Minority Population Percent*.<sup>29</sup> These variables were obtained or derived from a census-tract-level dataset maintained by the Federal Financial Institutions Examination Council. I then merged these data with the HMDA dataset, which identifies each mortgage applicant by his or her census tract. Because census tracts are relatively low-population units,<sup>30</sup> these variables capture the demographic profiles of the neighborhoods immediately surrounding the relevant property.

\* \* \*

Tables 2 and 3 provide summary statistics concerning these variables. Table 2 reports statistics for all 7.3 million loan applications in the dataset, which is the

<sup>29</sup>Other similar studies also include county-level demographic variables. For instance, Curtis (2014) includes county unemployment rate and housing vacancy rate, and Cao and Liu (2016) include the level of lender competition in the county, and whether the county can be classified as having high or low housing costs. I take a more parsimonious approach and do not include county-level variables for two reasons. First, there is no scholarly consensus regarding which county-level variables ought to be included in studies of this type. Compare, for example, Curtis (2014) and Cao and Liu (2016). Second, many of these variables, for example, lender competition and housing costs, are better measured at the regional level, and thus presumably are captured in my bi-state metro areas and border regions research designs. Third, several of the included tract-level variables measure substantially similar underlying concepts as these county-level variables. For instance, if a model already includes tract-level *Median Household Income* and *Tract-to-Metro Area Household Income*—which serve as proxies for the tract's absolute and relative affluence, respectively—then it is not clear what additional explanatory power is gained by including county-level unemployment. Including multiple measures for a substantially similar underlying concept raises the prospect of overfitting.

<sup>30</sup>For the census tracts included in the FFIEC data used in this study,  $\mu = 5,091$ ;  $\sigma = 2,145$ .

Table 3: Summary Statistics for Approved Versus Nonapproved Applications: Independent Variables

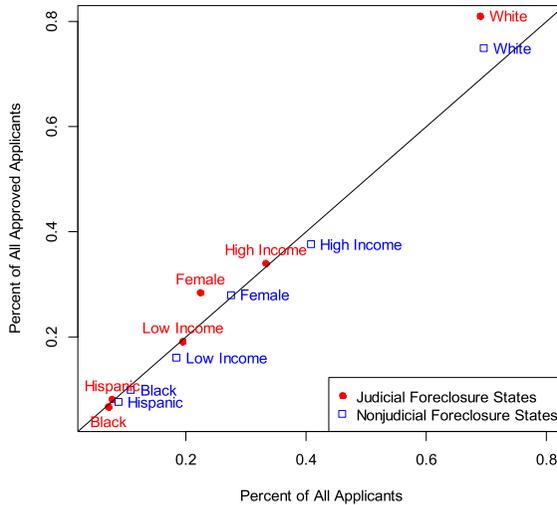
	<i>Approved App.</i>		<i>Nonapproved Apps.</i>		Diff. in Means   (95% C.I.)	KS Test p Value
	<i>Mean</i> (SD)	<i>Min., Max</i>	<i>Mean</i> (SD)	<i>Min., Max</i>		
<b>Applicant-Level Covariates</b>						
JF requirement	0.428	0, 1	0.409	0, 1	0.020 (0.019, 0.020)	0.000
Right to cure	0.564	0, 1	0.571	0, 1	0.008 (0.007, 0.008)	0.000
Right to redeem	0.491	0, 1	0.477	0, 1	0.015 (0.014, 0.015)	0.000
Anti-deficiency	0.273	0, 1	0.267	0, 1	0.006 (0.006, 0.007)	0.000
Black	0.077	0, 1	0.123	0, 1	0.046 (0.045, 0.046)	0.000
Hispanic	0.098	0, 1	0.139	0, 1	0.041 (0.041, 0.042)	0.000
Income (log)	4.533 (1.094)	0, 8.24	4.980 (1.759)	0, 8.47	0.447 (0.444, 0.449)	0.000
Loan-to-income ratio	2.017 (1.843)	0, 30.47	1.890 (3.437)	0, 29.48	0.128 (0.123, 0.132)	0.000
<b>Census-Tract-Level Covariates</b>						
Median HH income*	\$51.3 (\$23.8)	\$15, \$317	\$48.6 (\$24.2)	\$13, \$281	2.743 (1.62, 3.78)	0.000
Tract-to-metro area HH income	1.141 (0.390)	0.35, 5.40	1.087 (0.359)	0.30, 4.96	0.054 (0.042, 0.066)	0.000
Owner-occupied units (%)	0.643 (0.349)	0.01, 0.92	0.603 (0.342)	0.015, 0.905	0.040 (0.034, 0.046)	0.000
Minority population percent	0.324 (0.250)	0, 0.97	0.318 (0.271)	0, 0.96	0.006 (0.005, 0.006)	0.000
<b>Observations</b>	4,346,421		2,918,028			

NOTES: \*Denotes that median and median absolute deviation, rather than mean and standard deviation, are reported. Median household income measured in thousands of 2005 dollars. Table includes all loan applications approved by an OCC-regulated bank in 2005. Associated standard deviations (or, for medians, median absolute deviations) reported in parentheses.

population used in Models 1 and 2 (dependent variable: whether the application was approved); Table 3 reports these descriptive statistics for approved applications, that is, the subset of observations used in the other models, for which the dependent variable is whether a subprime loan was offered. (For comparison, Table 3 also reports these statistics for nonapproved applicants.) Taken together, the figures show only minor differences in loan applications and approvals across these covariates.<sup>31</sup>

<sup>31</sup>Approved applicants are slightly skewed toward nonblack, non-Hispanic applicants, have slightly more conservative loan-to-income ratios, and reside in slightly more affluent areas. Contrary to expectations, however, they also are slightly less wealthy themselves and reside in areas with slightly higher concentrations of minority residents.

Figure 2: Loan approval-to-application ratios, by group and jurisdiction. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]



Applicants from judicial-foreclosure states are treated in a substantially similar manner as those from other states. Figure 2 highlights these demographic similarities among applicants and approved applicants in both types of jurisdictions. Each point on the figure conveys the ratio of total applicants (the  $x$ -coordinate) to accepted applicants (the  $y$ -coordinate) for a given demographic group. Coordinates located to the left of the  $x = y$  diagonal line indicate that the demographic group enjoys a disproportionately large share of accepted applications relative to its share of all application; coordinates to the right of the line indicate the converse.

Strikingly, most groups are clustered around the  $x = y$  line, suggesting that their share of loan approvals are in line with their share of loan applications.<sup>32</sup> For many of the included demographic categories, the approved-applications-to-all-applications ratio is higher in judicial-foreclosure states than in non-judicial-foreclosure states; that is, the point is located higher above and further to the left of the diagonal line in judicial-foreclosure states. White, female, and upper-income applicants are particularly likely to gain approval in the former jurisdictions relative to the latter.

## V. ANALYSIS

### A. Full Model

Before introducing more sophisticated techniques, this section presents first-cut estimates of the effect of judicial foreclosure laws on loan approval decisions (Models 1

<sup>32</sup>Of course, this finding does not address potential demographic disparities in lenders' facilitation of loan applications, potential borrowers' decisions to apply for loans, or the terms of approved loans.

and 3) and the likelihood of receiving a subprime loan conditional on approval (Models 3–6). Each model controls for applicant-level demographic characteristics, census-tract-level community features, and other state-level features of foreclosure law, as described above. Because judicial foreclosure may differentially impact borrowers with lower socioeconomic status (see Hypothesis 3), Models 2, 4, and 6 also interact covariates capturing borrowers' racial and ethnic identity with the judicial-foreclosure covariate. These models take the following form:

$$y_i = \alpha + \beta_1 * JF_i + \beta_2 * JF_i * Black_i + \beta_3 * JF_i * Hispanic_i + \beta_4 * JF_i * Income_i \\ + \beta_5 * Black_i + \beta_6 * Hispanic_i + \beta_7 * Income_i + \gamma_1 * X_{i1} + \dots + \gamma_k * X_{ik} + \varepsilon_i,$$

where:

- $y_i$  is the value of the dependent variable—*Loan Approval* in Models 1 and 2, *Subprime Loan* in the other models—for loan applicant  $i$ ;
- $JF$  is a dummy variable equal to 1 when  $i$  is located in a judicial-foreclosure jurisdiction;
- *Black*, *Hispanic*, and *Income* capture these applicant features;
- $X_{1-k}$  is a set of independent variables concerning the demographic characteristics of the applicant's census tract and other features of state foreclosure law in the applicant's state, as described in Section III; and
- $\varepsilon_i$  is random error term for  $i$ .

Table 4 reports the results.

The interpretations of the logit coefficients in Table 4 are not intuitive. Accordingly, I calculate simulated first differences in both outcome variables (*Loan Approval* and *Subprime*). I find that moving from a non-judicial-foreclosure state to a judicial-foreclosure state is associated with a 2.1 percent reduction in the likelihood of loan approval (Model 1) and, conditional on loan approval, a 1.0 percent decrease in the likelihood of being offered a subprime loan (Model 5). (The other models, including those that add the demographic-variable interaction terms, yield similar results.)<sup>33</sup>

The bottom-line conclusion from Table 4 and these simulated first differences is that judicial foreclosure is associated with more rigorous lending standards. Fewer loan applications are approved in judicial-foreclosure states—but those loans that are approved have lower interest rates and are less likely to be classified as subprime.

These effects are amplified for loan applicants with lower socioeconomic status. The coefficient estimates on the  $JF * Black$ ,  $JF * Hispanic$ , and  $JF * Income$  interaction terms in Model 2 show that applicants with lower socioeconomic status are even less likely to be approved for mortgages in judicial-foreclosure states than they are in

<sup>33</sup>Quantities of interest estimated by running 1,000 simulations in Zelig using logistic regression models. See Choirat et al. (2015). Due to computational limitations, these simulated first differences were generated using a randomly selected sample of 1 million loan applications. Aside from the  $JF$  variable, all indicator variables are set at their central tendency.

Table 4: Nationwide Regression Analysis

	Subprime Loan?					
	App. Approved?			Rate > 6.5% Over Treasury Yield		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
JF requirement	-0.091*** (0.002)	-0.154*** (0.008)	-0.120*** (0.004)	-0.200*** (0.017)	-0.154*** (0.005)	-0.448*** (0.013)
App.'s income (log)	0.047*** (0.003)	0.023*** (0.001)	0.005** (0.002)	-0.003 (0.002)	0.009*** (0.002)	-0.277*** (0.003)
Black app.	-0.352*** (0.005)	-0.316*** (0.004)	-0.003 (0.008)	0.022* (0.010)	-0.006 (0.008)	0.522*** (0.007)
Hispanic app.	-0.021*** (0.010)	-0.181*** (0.011)	0.025 (0.020)	0.038 (0.022)	0.035 (0.021)	-0.209*** (0.023)
JF * Income	—	0.058*** (0.003)	—	0.012*** (0.004)	—	0.058*** (0.005)
JF * Black	—	-0.086*** (0.006)	—	-0.056*** (0.015)	—	-0.119*** (0.012)
JF * Hispanic	—	-0.062** (0.019)	—	-0.061 (0.048)	—	-0.118** (0.039)
Demographic variables	Models include the following census-tract-level demographic variables: median household income; ratio of tract median income to metro area median income; minority population percent; owner-occupied units (%); population. Models also include individual-level variables for the applicant's loan-to-income ratio and whether the applicant is female.					
Other features of foreclosure law	Models include dichotomous variables for whether state law contains a mortgagor's right to cure, mortgagor's right to redeem, and mortgagor's right to seek a deficiency judgment.					
Observations	7,264,449	7,264,449	4,346,421	4,346,421	4,346,421	4,346,421

Notes: *Unit of analysis:* Models 1 and 2: loan applications; Models 3-6: approved loan applications. *Dependent variable:* Whether applicant was approved (Models 1 and 2); whether the offered rate is greater than 3 percentage points (Models 3 and 4) or 6.5 percentage points (Models 5 and 6) higher than the Treasury yield of the same length as the offered loan. *Models:* Logistic regression. Parameter estimates for the intercepts are omitted. \*\*\**p* < 0.001, \*\**p* < 0.01, \**p* < 0.05. Parentheses contain standard errors clustered at the state level.

non-judicial-foreclosure states. The estimates on these terms in Models 4 and 6, however, reveal that, conditional on loan approval, lower-status individuals are less likely to be shuffled into subprime products in judicial-foreclosure states than are borrowers with similar demographic profiles in non-judicial-foreclosure states. With respect to lower-status applicants, Table 4 shows:

- Lower-status applicants are less likely to be approved than their higher-status counterparts in both types of states.
- The loan-approval gap between lower- and higher-status applicants is larger in judicial-foreclosure states. Lower-status applications fare appreciably worse in judicial-foreclosure states than they do in non-judicial-foreclosure states.
- Conditional on loan approval, borrowers with lower socioeconomic status receive less favorable loan terms than their higher-status counterparts in both types of states.
- The loan-quality gap between lower- and higher-status borrowers is larger in non-judicial-foreclosure states. Phrased another way, lower-status borrowers receive more favorable terms in judicial-foreclosure states.

The takeaway from these findings is that lower-status borrowers are less likely to be approved for mortgages but, once approved, they tend to receive better terms in judicial-foreclosure states.

#### *B. Bi-State Metro Areas*

Although Table 4 provides an important first look at the relationship between judicial foreclosure and lender behavior, the picture it provides is incomplete. Although that analysis controls for many demographic and legal features that may influence lender behavior, it does not account for the full battery of unobserved features that affect mortgage supply and demand, and thus may be correlated with mortgage-application decisions. This subsection addresses this identification problem by comparing lending decisions in metropolitan areas that straddle judicial-foreclosure and non-judicial-foreclosure states but have otherwise similar foreclosure regimes. I refer to these regions as “bi-state metro areas.” Applicants within a given bi-state metro area are subject to the same housing market: the same supply and demand of housing units, economic conditions, housing preferences, and other location-specific unobserved variables.

Importantly, I only include bi-state metro areas that not only straddle a border between judicial- and non-judicial-foreclosure states, but also that have substantially similar state foreclosure laws in other respects. Specifically, the following features are substantially similar within each of the included metro areas: the required number of postdefault notices; the minimum amount of time in which a lender may send all these notices; and the presence or absence of a borrower’s right to cure, borrower’s statutory right of redemption, and lender’s right to seek a deficiency judgment. Appendix Table A1 provides more information concerning the foreclosure regimes in the states in which these metro areas are located.

Thirteen metro areas meet these conditions.<sup>34</sup> Therefore, I constructed a set of fixed effects regression models in which a separate intercept is generated for each metro area. These models add the following fixed effects to the earlier national regression models:  $\sum_{j=0}^J \beta_j * MSA_{ij}$ , where *MSA* is a series of dummy variables taking the value 1 when applicant *i* is located in metropolitan statistical area  $j \in J$ .<sup>35</sup> Other than the addition of metro area fixed effects, these models are identical to the earlier national regression models. The results of these models are reported in Table 5.

The results reported for the bi-state metro areas in Table 5 are somewhat more mixed than those for the nationwide regression models. Model 7 indicates that judicial foreclosure is associated with a tighter supply of credit. Model 8, which adds several interaction terms, includes a null result for the main *JF* variable.

Concerning the relationship between judicial foreclosure and the likelihood of approved applicants being offered subprime loans, the coefficient estimates for *JF* in Models 9–12 are negatively signed and, in three of the four models, statistically significant.

As before, for ease of interpretation I calculate simulated first differences.<sup>36</sup> These first differences show that judicial foreclosure is associated with a 2.5 percent reduction in the likelihood of loan approval (Model 7); when one adds the borrower-demographics interaction terms, judicial foreclosure is associated with a 2.8 percent reduction in the likelihood of loan approval (Model 8). The 0.2 percent estimated reduction in the likelihood of being offered a subprime loan in Model 11 is not statistically significant at the  $p < 0.05$  level. When one adds the borrower-demographics interaction terms in Model 12, the 0.4 percent estimated reduction is barely statistically significant at this level.

The interactive effects of applicants' socioeconomic status and judicial foreclosure on loan terms also are mixed. The coefficient estimates for *JF \* Income* indicate that lower-income applicants are less likely to be approved for mortgages in judicial-foreclosure states than in non-judicial-foreclosure states, but when they are approved, they are more likely to receive prime loans. Concerning *JF \* Black* and *JF \* Hispanic*, however, we cannot reject the null hypothesis that the outcomes for African-American

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<sup>34</sup>Specifically, there are 11 census-defined metropolitan areas and two small "micropolitan" areas that meet these conditions. The metropolitan areas are: Augusta-Richmond County, GA-SC; Charlotte-Gastonia-Concord, NC-SC; Duluth, MN-WI; Huntington-Ashland, WV-KY-OH; La Crosse, WI-MN; Minneapolis-St. Paul-Bloomington, MN-WI; Parkersburg-Marietta-Vienna, WV-OH; Philadelphia-Camden-Wilmington, PA-NJ-DE-MD; Sioux City, IA-NE-SD; Weirton-Stuebenville, WV-OH; and Wheeling, WV-OH. The two micropolitan areas are Natchez, MS-LA and Point Pleasant, WV-OH. Metropolitan (micropolitan) statistical areas include an urbanized area with a population of greater than (less than) 50,000 and an integrated labor market with adjacent areas (OMB 2009).

<sup>35</sup>Notwithstanding the inclusion of fixed effects, these models also include standard errors clustered at the MSA level. MSA-specific fixed effects likely control for only part of any within-MSA correlation or heteroscedasticity in errors (Cameron & Miller 2013).

<sup>36</sup>Quantities of interest estimated by running 1,000 simulations in Zelig using logistic regression models. See Choirat et al., supra note 33. Aside from the *JF* variable, all indicator variables are set at their central tendency.

Table 5: Bi-State Metro Area Regression Analysis

	App. Approved?			Subprime Loan?		
	Rate > 3.0% Over Treasury Yield			Rate > 6.5% Over Treasury Yield		
	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
JF requirement	-0.147*** (0.019)	-0.138 (0.077)	-0.074* (0.032)	-0.641*** (0.146)	-0.029 (0.033)	-0.648*** (0.134)
App.'s income (log)	0.008 (0.005)	-0.007 (0.007)	-0.357*** (0.014)	-0.376*** (0.015)	-0.310*** (0.013)	-0.331 (0.015)
Black app.	-0.431*** (0.023)	-0.432*** (0.021)	0.953*** (0.033)	0.948*** (0.034)	0.723*** (0.033)	0.718*** (0.033)
Hispanic app.	-0.362*** (0.075)	-0.330*** (0.078)	0.162 (0.150)	-0.184 (0.155)	-0.277 (0.142)	-0.288 (0.150)
JF * Income	—	0.068*** (0.016)	—	0.123*** (0.033)	—	0.134*** (0.031)
JF * Black	—	0.004 (0.068)	—	0.063 (0.101)	—	0.080 (0.093)
JF * Hispanic	—	-0.432 (0.309)	—	0.403 (0.588)	—	0.207 (0.550)
Demographic variables	Models include median household income; ratio of tract median income to metro area median income; minority population percent; owner-occupied units (%); population. Models also include individual-level variables for the applicant's loan-to-income ratio and whether the applicant is female.					
Metro area fixed effects	Models include fixed effects for each of 13 metropolitan areas that encompass both judicial- and non-judicial-foreclosure states.					
Observations	403,068	403,068	130,808	130,808	130,808	130,808

Notes: *Unit of analysis.* Models 7 and 8: loan applications; Models 9–12: approved loan applications. *Dependent variable.* Whether applicant was approved (Models 7 and 8); whether the offered rate is greater than 3 percentage points (Models 9 and 10) or 6.5 percentage points (Models 11 and 12) higher than the Treasury yield of the same length as the offered loan. *Model.* Logistic regression. Parameter estimates for the intercepts and fixed effects are omitted. \*\*\* signifies  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ . Parentheses contain standard errors clustered at the MSA level.

and Hispanic applicants in judicial-foreclosure states do not differ from applicants with these profiles in non-judicial-foreclosure states.

### C. Border Regions

A state-border regression discontinuity design provides another angle on the connection between state foreclosure procedures and mortgage pricing. State-border discontinuity designs figure prominently in research on state law (Pence 2003; Mian et al. 2015), and for good reason: Mian et al. (2015) found that a discontinuity regarding foreclosure propensity exists at state borders but, importantly, there is no similar shift in other features known to be correlated with lender decisions—for example, applicant income, credit score, and so forth—at these borders. Taking a page from other border-region discontinuity studies, I examine borders between states that differ in their adoption of judicial foreclosure; I build on these past studies by *examining only those borders between judicial- and non-judicial-foreclosure states with otherwise substantially similar foreclosure procedures on both sides of the border.*

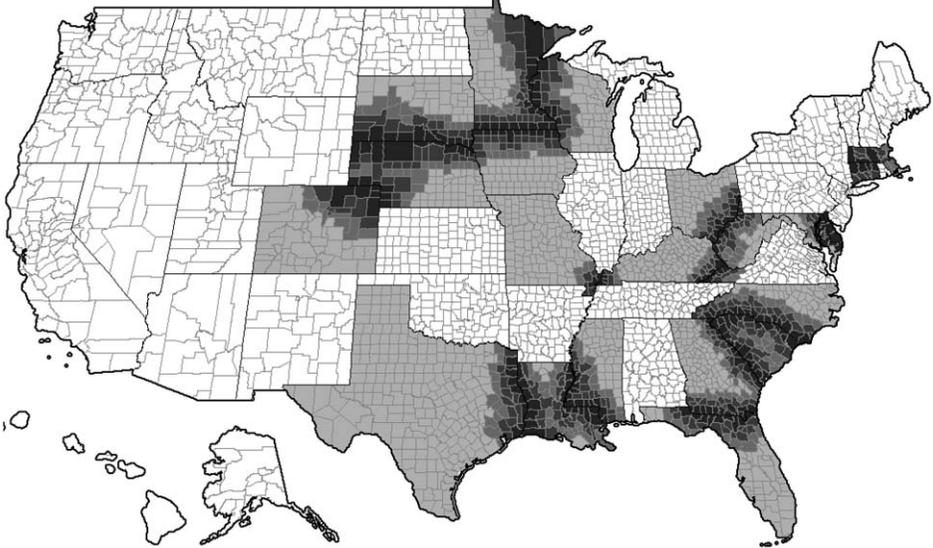
There are 14 pairs of states in which lenders must go to court to foreclose only on one side of the border—but where other features of state foreclosure law that could affect mortgage pricing, namely, the number of presale notices that must be sent to the borrower, the timing of these notices, the borrower's postdefault right to cure and post-foreclosure right to redeem, and the lender's ability to seek a deficiency judgment, are substantially similar.<sup>37</sup> (Appendix Table A1 lists the included states' relevant laws.) These 14 border regions include all loan applicants within 50 miles of either side of one of these 14 borders; accordingly, these regions encompass—but extend far beyond—the 11 metro areas in the previous analysis.

Figure 3 depicts these state border discontinuities. The included states appear in grayscale; darker shading signifies greater proximity to the relevant state border.

The central identifying assumption of this state-border discontinuity design is that, aside from the presence or absence of judicial foreclosure, systemic differences relevant to mortgage pricing do not exist on either side of these state borders. Appendix Table A1, which reports the relevant foreclosure procedures used in each component state within these 14 state dyads, shows that the states' adoption of other foreclosure procedures is substantially similar. This exclusive focus on state pairs with substantially similar foreclosure laws—except for the presence or absence of a judicial-foreclosure requirement—constitutes a significant advance over past research designs, which include all adjacent judicial-/non-judicial state pairs, regardless of other differences in these states' legal regimes. The method, therefore, assumes only that the values of other variables that could affect mortgage prices—for example, median incomes, home prices, and so forth—do not differ immediately on either side of the state border.

<sup>37</sup>These 14 state dyads are: Connecticut-Massachusetts, Delaware-Maryland, Florida-Georgia, Iowa-Minnesota, Kentucky-Missouri, Kentucky-Virginia, Louisiana-Mississippi, Louisiana-Texas, Nebraska-Colorado, Nebraska-South Dakota, Ohio-West Virginia, South Carolina-Georgia, South Carolina-North Carolina, and Wisconsin-Minnesota. In each of these dyads, the state that requires judicial foreclosure is listed first.

Figure 3: State borders included in regression discontinuity design.



For each loan application in one of the 14 state dyads, I used Thomas Holmes's State Border Data Set to identify the approximate distance between the applicant's county and the relevant state border (Holmes 1998). In each model, the assignment variable *distance* is defined as the distance from the relevant state border. Observations for which  $distance_i > 0$  signify loan applications in judicial-foreclosure states, while observations for which  $distance_i < 0$  signify applications in non-judicial-foreclosure states. Formally:

$$y_i = \alpha + W_i * \tau + \beta_1 * distance_i + \varepsilon_i,$$

where:

- $y_i$  is the outcome measure for loan applicant  $i$ ;
- $W_i$  is a dummy variable  $\in \{0, 1\}$ , such that  $W = 1$  if the applicant is in a judicial-foreclosure state and 0 if it is not;
- $\tau$  is the treatment effect of  $i$ 's location in a judicial-foreclosure state;
- *distance* is the distance between the applicant and the state borders, with  $distance > 0$  for applicants in judicial-foreclosure states and  $distance < 0$  otherwise;<sup>38</sup> and
- $\varepsilon_i$  is random error term for  $i$ .

<sup>38</sup>The sample is restricted to applicants residing in census tracts that are located within 50 miles of the border.

Table 6: Regression Discontinuity Estimates

	<i>App. Approved?</i>		<i>Subprime Loan?</i>	
	<i>Model 13</i>	<i>Rate &gt; 3.0% Over Treasury Yield</i>		<i>Rate &gt; 6.5% Over Treasury Yield</i>
			<i>Model 14</i>	<i>Model 15</i>
All Applicants <i>n</i> = 217,319	-0.071† (0.040)	-0.020** (0.011)	-0.014* (0.013)	
Black apps. only <i>n</i> = 24,451	-0.102† (0.024)	-0.097† (0.062)	-0.084 (0.059)	
Hispanic apps. only <i>n</i> = 6,618	-0.089 (0.075)	-0.060 (0.054)	-0.057 (0.051)	
Apps. at or below 25th income ptile. <i>n</i> = 51,671	-0.093† (0.052)	-0.017** (0.010)	-0.015*** (0.006)	
Apps. at or above 75th income ptile. <i>n</i> = 46,217	-0.030 (0.094)	-0.001 (0.001)	-0.001 (0.001)	

NOTES: Bias-corrected standard errors in parentheses. *Assignment variable.* Location in JF state. *Unit of analysis.* Model 13: loan applications; Models 14 and 15: approved loan applications. *Dependent variable.* (1) Whether applicant was approved; (2) whether the offered rate is greater than 3 percentage points higher than the Treasury yield of the same length as the offered loan; (3) whether the offered rate is greater than 6.5 percentage points higher than the Treasury yield of the same length as the offered loan. \*\*\* signifies  $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$ , †  $p < 0.10$ . Parentheses contain standard errors.

As before, the dependent variable in Model 13 is a dichotomous measure of whether the loan was approved, and in Models 14 and 15 it is a dichotomous measure of whether the applicant was approved for a subprime loan, conditional on loan approval. I ran the models separately for all applicants (for Model 13) or all approved applicants (for Models 14 and 15), then ran them separately for following subsets: African-American applicants, Hispanic applicants, female applicants, and applicants in the 25th and 75th percentiles for household income.<sup>39</sup> Table 6 reports the results.

Consistent with the previously reported results, Table 6 shows that judicial foreclosure tempers lenders' behavior. The likelihood of approval is lower in these states but, conditional on approval, loan terms are more favorable to borrowers. Further, there is suggestive evidence that these effects are particularly pronounced concerning lower-socioeconomic-status borrowers—particularly those with lower incomes.

## VI. LEGAL FORUM OR TRANSFER PAYMENT?

The overall message from the preceding analyses is that lenders adopt a more sober posture in judicial-foreclosure states; they are less willing to extend credit in these states.

<sup>39</sup>I used the R package "rdwselect" to select the coverage-error-rate-optimal bandwidth of 9.62 miles, using a triangular kernel function and nearest-neighbor matching of residuals to compute the variance-covariance matrix estimator (Calonico et al. 2005).

When they do extend credit, they offer more conservative, borrower-friendly terms. The natural next question is: Why?

Three features of judicial foreclosure suggest competing possible explanations for lenders' differential behavior in judicial-foreclosure states. *First*, because judicial foreclosure offers borrowers a forum to contest predatory loan terms, the procedure discourages lenders from originating loans with predatory terms. *Second*, because borrowers can use the process to contest foreclosure based on other forms of lending misbehavior, judicial foreclosure discourages lenders from originating loans that they think have a greater likelihood of becoming delinquent. *Third*, that the use of judicial foreclosure extends foreclosure timelines, thereby imposing additional costs on lenders, also counsels in favor of lender restraint in originating loans that are more likely to become delinquent (Demiroglu et al. 2014; Whitman 2014).

The first two of these pathways consider judicial foreclosure as providing a mechanism for borrowers to vindicate their legal rights. Because the balance of legal rights between borrowers and lenders is tipped in borrowers' favor in judicial-foreclosure states vis-à-vis non-judicial-foreclosure states, lenders alter their behavior in the former states to reduce their likelihood of having to answer in court for their actions. By contrast, the third pathway emphasizes the economic effects of judicial foreclosure. By elongating foreclosure timelines, mandatory judicial foreclosure imposes costs on lenders. Thus, judicial foreclosure confers both legal rights and economic benefits on borrowers in default (but also is associated with less lending activity ex ante).

In light of these competing mechanisms, how can we determine whether lenders alter their behavior in judicial-foreclosure states in response to borrowers' enhanced ability to exercise legal rights in these jurisdictions or in response to the increased costs that judicial foreclosure imposes on lenders?

To disentangle these effects, I add a new variable to the analysis: the mean time from default to foreclosure in the state in which the applicant resides (Cutts & Merrill 2008). This *Months to Foreclose* variable captures delay caused by all features of a state's foreclosure law, including delays attributable to judicial-foreclosure requirements. By interacting *Months to Foreclose* with the *Judicial Foreclosure Requirement* variable used in previous models, one can compare the differential effects of a one-month increase in the average foreclosure timeline in judicial- and non-judicial-foreclosure states, thereby isolating the independent impact on mortgage pricing of (1) judicial foreclosure as a means of ensuring that lenders adhere to the law and (2) judicial foreclosure as a means of transferring value from lenders to delinquent borrowers by delaying foreclosure.

Table 7 reports the results of these analyses. (Note that the models in the table include all of the variables that appear in the bi-state metro area regression models reported in Table 5. For ease of reference, the coefficient estimates on these control variables are omitted.)

Table 7 suggests that longer foreclosure timelines are not what is driving changes in lender behavior in judicial-foreclosure states. The coefficient estimates for *Months to Foreclose* in all four models are trivial in magnitude and do not achieve conventionally accepted levels of statistical significance. Likewise, based on the  $JF * Months to Foreclose$

Table 7: Effects of Judicial-Foreclosure Requirement and Length of Foreclosure Timeline on Lender Behavior

	<i>App. Approved?</i>		<i>Subprime Loan?</i>			
	<i>Model 16</i>	<i>Model 17</i>	<i>Rate &gt; 3.0% Over Treasury Yield</i>		<i>Rate &gt; 6.5% Over Treasury Yield</i>	
			<i>Model 18</i>	<i>Model 19</i>	<i>Model 20</i>	<i>Model 21</i>
JF requirement	-0.192** (0.072)	-0.117 (0.109)	-0.133*** (0.016)	-0.213*** (0.023)	-0.127 (0.118)	-0.564** (0.184)
Months to foreclose	0.001 (0.002)	0.001 (0.002)	-0.007 (0.004)	-0.002 (0.001)	0.004 (0.004)	-0.004 (0.004)
JF * Months to foreclose	-0.002 (0.006)	-0.002 (0.006)	-0.001 (0.001)	0.001 (0.001)	-0.014 (0.010)	-0.015 (0.010)
Applicant-level demographic variables (& interactions with JF)	N	Y	N	Y	N	Y
Tract-level demographic variables & metro area fixed effects	Y	Y	Y	Y	Y	Y
Observations	403,068	403,068	130,808	130,808	130,808	130,808

NOTES: *Unit of analysis:* Models 16 and 17: loan applications; Models 18–21: accepted loan applications. *Dependent variable:* (1) Whether applicant was approved; (2) whether the offered rate is greater than 3 percentage points higher than the Treasury yield of the same length as the offered loan; (3) whether the offered rate is greater than 6.5 percentage points higher than the Treasury yield of the same length as the offered loan. *Model:* Logistic regression. Parameter estimates for the intercepts are omitted. \*\*\* signifies  $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$ . Parentheses contain standard errors clustered at the MSA level.

interaction terms in all four models, one cannot reject the null that increased foreclosure timelines are unconnected to lender behavior in judicial-foreclosure states. The *JF Requirement* estimate, however, retains its substantive and, in most models, statistical significance. In other words, the same results concerning *JF Requirement* that were reported for the bi-state metro area models in Table 5 persist when one controls for the average length of the foreclosure process.

These findings suggest that the need to seek court approval for foreclosures is what causes lenders to change their behavior at the loan-origination stage. The concomitant longer foreclosure schedules in judicial-foreclosure states do not affect loan-approval or rate-quote decisions.

## VII. CONCLUSION

This article shows that lenders adopt a more conservative posture in judicial-foreclosure states. Most models indicate that lenders are less likely to extend credit in these states and, conditional on loan approval, they are more likely to offer a prime-rate loan rather than a subprime product. These findings are consistent across the nationwide linear regression and the border-states regression-discontinuity models, and also are present in four out of the six models focused on metropolitan areas that straddle states with substantially similar foreclosure regimes, but for the presence or absence of a judicial-foreclosure requirement.

Substantively, the effects of judicial foreclosure on these two outcomes are not trivial. The simulated first differences reported above show that judicial-foreclosure requirements are associated with an approximate 2.1–2.8 percent reduction in the likelihood of loan approval and, conditional on loan approval, a 0.2–1.0 percent reduction in the likelihood of being offered a subprime loan.

While not monumental, reductions of this size in a sample of 7.3 million loan applications are noteworthy. That these effects are observed in sample from 2005—when relatively few properties entered foreclosure and, according to the conventional wisdom, securitization led lenders to give scant attention to loan performance—is particularly striking. If these results are generalizable to all mortgage lenders and for other years, then judicial-foreclosure requirements may have altered hundreds of thousands of individuals' ability to access credit and secure a prime rate each year. Given the economic and psychological importance of homeownership, and the potentially devastating risks of subprime loans to individuals and communities, these effects are significant.

Further, there is suggestive evidence that the observed connections between judicial-foreclosure requirements, tighter credit, and better loan terms are amplified for borrowers with lower socioeconomic status. These connections are apparent for lower-income, African-American, and Hispanic applicants in the full model and for lower-income applicants in the bi-state metro area and border-discontinuity models. By contrast, the notion that lenders “pass on” the costs of this borrower protection in the form of higher rates is firmly rejected.

By paying careful attention to legal differences in mortgage-finance and foreclosure law, this study offers a more rigorous look at the impact of judicial foreclosure on mortgage lending than previous studies. Nonetheless, some qualifications are in order. For one, the need to use 2005 data for national banks—which, crucially, were subject to uniform regulations—raises questions concerning external validity. The possibility that national banks mirror the activities of their state-regulated counterparts presents another concern. If a national bank operating in, for instance, New Jersey bases its loan-approval decisions and rate quotes on the behavior of its state-regulated competitors, then New Jersey banking law exerts an indirect influence on that national bank. Finally, despite the fact that most states' foreclosure regimes generally do not change for decades and the use of a quasi-experimental border-discontinuity design, endogeneity concerns are still present; namely, it is possible that states either select or decide not to change their foreclosure laws based on features of the borrower and lender populations in those states.

The findings in this article suggest two potentially fruitful areas for future work. *First*, an understanding of *why* lenders adopt a more conservative posture, approving fewer applicants and offering a larger proportion of prime loans, in judicial-foreclosure states is needed. One possibility is that because subprime loans have a greater likelihood of leading to default and foreclosure (Pennington-Cross 2004), and foreclosure costs are higher in judicial-foreclosure states (Demiroglu et al. 2014), lenders reduce rates for *all* borrowers in these states. Another possibility is that lenders offer high-cost loans to risky, marginal applicants in non-judicial-foreclosure states but reject these marginal applicants in judicial-foreclosure states, which leads to an increase in the share of

approved applicants who are offered subprime loans. Under this second theory, the typical approved applicant is offered the same rate in both types of states; the entire observed rate reduction in judicial-foreclosure states can be attributed to the smaller, higher socioeconomic status set of approved applicants in these states. Assessing these competing theories represents a promising area for future research.<sup>40</sup>

*Second*, a more complete theory of foreclosure law's place in the financial regulatory architecture is needed. Law and economics scholars recognize that ex post tort liability can serve a similar function as ex ante regulation (see, e.g., Landes & Posner 1987). Judicial foreclosure shares some broad similarities with tort law; both involve courts making ex post assessments of parties' past conduct and imposing penalties for misbehavior (in tort law, damages; in judicial foreclosure, authorizing or disallowing the foreclosure based on the borrower's and lender's past actions). Specifically, the prospect that a lender seeking to foreclose may be penalized for its behavior at this stage may incentivize the lender to alter its behavior at the loan-origination stage, taking greater care to abide by the Truth in Lending Act and other laws. Given the costs to lenders of judicial foreclosure, lenders in judicial-foreclosure states also may take greater care not to engage in lending practices—like offering balloon payments to low-income borrowers—that increase the likelihood of default. In this way, borrower protections at the foreclosure stage may function as a form of back-end regulation of mortgage lending.

These possible effects, however, are speculative. Given the potentially dramatic changes in mortgage-finance and consumer-production law that are on the horizon in Washington, a better understanding of the role that state foreclosure law can play in filling gaps in the ex ante regulatory structure would be useful.

Normatively, whether tighter mortgage markets are desirable is in the eye of the beholder. In light of the role that easy credit (often on subprime terms) played in the financial crisis—with lenders particularly eager to reverse-redline by providing inappropriately priced mortgages to minority and lower-income borrowers—the facts that judicial foreclosure *both* provides a judicial check on lender misbehavior in the foreclosure process *and* encourages lenders to be more responsible in the loan-approval process are strong points in favor of the procedure. On the other hand, that judicial-foreclosure

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<sup>40</sup>A third possibility is that the presence or absence of judicial foreclosure encourages different applicant pools in the two jurisdictions. Judicial foreclosure may lead to adverse selection of loan applicants in the states that require it, and the observed results may constitute lenders' attempt to mitigate against this phenomenon. If potential loan applicants view judicial-foreclosure requirements as a form of insurance, this insurance feature would be more attractive to higher-risk individuals. As a result, high-risk individuals may constitute a larger proportion of the pool of loan applicants in judicial-foreclosure states. Lenders would respond by adopting tighter lending standards to screen out the greater numbers of high-risk borrowers in judicial-foreclosure states. This theory, though plausible, seems unlikely, as it assumes that potential borrowers not only have knowledge about their type, but also about their state's foreclosure law and the marginal benefits of judicial foreclosure over non-judicial foreclosure to delinquent borrowers. These assumptions are unlikely to be met. Although borrowers tend to understand the basic terms of their mortgage, they often are ignorant of slightly more complex features like the extent to which the interest rate on an adjustable-rate mortgage can change (Bucks & Pence 2008). In light of borrowers' lack of knowledge of these terms, the notion that borrowers consider their state's foreclosure law when applying for mortgages seems unlikely.

requirements lead lenders to reject loan applications that they would otherwise accept (and, naturally, that applicants also believe would benefit them) suggests that there are attendant welfare losses. By raising the stakes to banks of lending to borrowers who then default, borrower protections encourage banks to commit the converse error: rejecting applicants who would perform on their mortgages. To the extent that (reverse-redlining notwithstanding) minority and lower-income borrowers have lesser access to mortgage markets (Goodman 2017), these losses fall disproportionately on these communities.

Tradeoffs of this type are familiar across many areas of regulatory policy (e.g., a minimum-wage law may benefit those who are employed but increase unemployment). Whether the tradeoff enhances or diminishes social welfare here is beyond the scope of this article. Instead, the article suggests a more modest—but previously overlooked—conclusion: that foreclosure law should be seen as a form of ex post financial regulation, with similar attendant costs and benefits as with other types of regulations. As policy-makers continue to restructure the national and state-level financial regulatory architecture, they would be well-advised to consider judicial foreclosure as an important form of regulation.

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## APPENDIX

This appendix contains information concerning the 14 state dyads employed in the state-border regression discontinuity design and bi-state metro area regression (each of these metro area is contained within one of the 14 dyads).

Table A1 lists the relevant foreclosure laws in the states within these dyads, showing that, while not completely identical, each pair of states has substantially similar foreclosure laws (except for the judicial-/non-judicial-foreclosure difference).

Table A2 reports the demographic composition of the populations of applicants and approved applicants in both judicial- and non-judicial-foreclosure jurisdictions. The table also includes descriptive statistics concerning features of the census tracts in which those applicants reside, as well as the rate spread for loans offered to approved applicants. These summary statistics show that, with limited exception, the characteristics of applicants and approved applications are broadly similar across jurisdictions. (The most prominent exception is that applicants in judicial-foreclosure jurisdictions tend to reside in census tracts with a high proportion of minority residents, compared to applicants in other jurisdictions and accepted applicants in all jurisdictions.)

Tables A3 and A4 report the same demographic characteristics nationwide, for all loan applications (Table A3) and for approved loan applications (Table A4). These tables also report the differences in means and differences in the distributions of these covariates in judicial- versus non-judicial foreclosure states.

Table A1: Foreclosure Procedures in the 14 State Dyads

<i>State (Jud. Forecl.)</i>	<i>Min. Notice Period (No. of Notices)</i>	<i>Right to Cure</i>	<i>Redemption</i>	<i>Deficiency Judgment</i>
<b>Colorado-Nebraska</b>				
Colorado	48 days (2)	Yes, until sale	No	Obtainable up to fair market value (FMV)
Nebraska (J.F. required)	28 days (1)	Yes, until sale	No	Obtainable up to FMV
<b>*Connecticut-Massachusetts</b>				
Connecticut (J.F. required)	21 days (1)	No	No	Obtainable
Massachusetts	21 days (1)	No	No	Obtainable

Table A1 *Continued*

<i>State (Jud. Forecl.)</i>	<i>Min. Notice Period (No. of Notices)</i>	<i>Right to Cure</i>	<i>Redemption</i>	<i>Deficiency Judgment</i>
<b>*Delaware-Maryland</b>				
Delaware (J.F. required)	10 days (1)	No	No	Obtainable
Maryland	12 days (2)	No	No	Obtainable
<b>Florida-Georgia</b>				
Florida (J.F. required)	14 days (2)	No	No	Obtainable
Georgia	15 days (1)	No	No	Obtainable up to FMV
<b>Georgia-South Carolina</b>				
Georgia	15 days (1)	No	No	Obtainable up to FMV
South Carolina (J.F. required)	21 days (3)	No	No	Obtainable up to FMV
<b>*Iowa-Minnesota</b>				
Iowa (J.F. mostly)	28 days (1)	Yes, until 30 days after notice of default	Yes, 12 mos. after sale	Obtainable
Minnesota	28 days (1)	Yes, until decree	Yes, until 6–12 mos. postsale	Obtainable up to FMV
<b>Kentucky-Missouri</b>				
Kentucky (J.F. required)	15 days (1)	No	No	Obtainable
Missouri	20 days (1)	No	No	Obtainable
<b>Kentucky-Virginia</b>				
Kentucky (J.F. required)	15 days (1)	No	No	Obtainable
Virginia	14 days (1)	No	No	Obtainable
<b>Louisiana-Mississippi</b>				
Louisiana (J.F. required)	21 days (1)	Yes, until sale	No	Obtainable
Mississippi	21 days (1)	Yes, until sale	No	Obtainable
<b>Louisiana-Texas</b>				
Louisiana (J.F. required)	21 days (1)	Yes, until sale	No	Obtainable
Texas	20 days (2)	Yes, until 20 days after notice of default	No	Obtainable up to FMV
<b>*Minnesota-Wisconsin</b>				
Minnesota	28 days (1)	Yes, until sale	Yes, until 6–12 mos. postsale	Obtainable up to FMV
Wisconsin (J.F. mostly)	21 days (1)	Yes, until judgment	Yes, until 6–12 mos. postsale	Obtainable
<b>Nebraska-South Dakota</b>				
Nebraska (J.F. required)	28 days (1)	Yes, until decree	No	Obtainable up to FMV
South Dakota	28 days (1)	No	No	Obtainable up to FMV

Table A1 *Continued*

<i>State (Jud. Forecl.)</i>	<i>Min. Notice Period (No. of Notices)</i>	<i>Right to Cure</i>	<i>Redemption</i>	<i>Deficiency Judgment</i>
<b>North Carolina-South Carolina</b>				
North Carolina	60 days (3)	No	No	Obtainable up to FMV
South Carolina (J.F. required)	21 days (1)	No	No	Obtainable up to FMV
<b>Ohio-West Virginia</b>				
Ohio (J.F. required)	30 days (1)	No	No	Obtainable
West Virginia	“reasonable” period (1)	Yes, until ~15 days postdefault	No	Obtainable

\*Signifies that while judicial foreclosure is not technically required, use of non-judicial foreclosure is sufficiently onerous such that the judicial process is employed in the overwhelming majority of foreclosures.

Table A2: Characteristics of Loan Applications in the 14 State Dyads

	<i>All Applications</i>			<i>Accepted Applications</i>		
	<i>Total</i>	<i>JF States</i>	<i>Non-JF States</i>	<i>Total</i>	<i>JF States</i>	<i>Non-JF States</i>
<b>Applicant Level</b>						
Total applicants (thousands)	3,407.1	1,514.7	1,892.4	2,091.5	892.3	1,199.3
# of Caucasian applicants	2,360.0	1,043.7	1,316.4	1,621.8	723.0	898.8
# of Hispanic applicants	282.1	116.3	165.8	165.2	73.2	91.9
# of African-American applicants	313.0	108.1	205.0	179.1	60.1	119.0
# of single female applicants	908.3	388.4	520.0	589.0	253.3	335.7
# in 25th income percentile	642.9	294.9	348.8	363.6	170.5	193.0
# in 75th income percentile	1,275.7	504.0	771.7	754.3	303.3	451.0
Mean rate spread	—	—	—	2.22 (1.02)	2.18 (0.94)	2.25 (1.06)
Applicant median income	\$70 (\$46)	\$68 (\$45)	\$71 (\$46)	\$77 (\$45)	\$85 (\$45)	\$72 (\$46)
<b>Census-Tract Level</b>						
Median pop.	5,202 (2,244)	5,136 (2,187)	5,123 (2,194)	5,038 (1,557)	5,038 (1,420)	5,005 (1,527)
Mean minority pop. %	15.4 (49.1)	21.0 (62.2)	11.1 (35.4)	15.6 (48.2)	16.2 (43.1)	15.3 (51.2)
Median household income	\$54 (\$20)	\$54 (\$21)	\$55 (\$21)	\$55 (\$20)	\$58 (\$23)	\$51 (\$22)
Tract HH income-to-metro area HH income ratio	1.19 (0.42)	1.18 (0.44)	1.19 (0.45)	1.23 (0.44)	1.21 (0.46)	1.24 (0.46)
Proportion of owner-occupied units	0.384 (0.179)	0.375 (0.154)	0.403 (0.160)	0.311 (0.143)	0.309 (0.146)	0.304 (0.141)
<b>County Level (all figures in miles)</b>						
Mean distance to border with other state in dyad	113.2 (69.8)	118.2 (64.0)	110.4 (72.3)	129.3 (63.5)	142.6 (55.3)	120.7 (66.9)

NOTE: Income figures in thousands of 2005 dollars. Table includes all loan applications processed by an OCC-regulated bank within the 14 state dyads in 2005. Applicants in the 75th percentile for income excludes applicants with over \$1 million in annual income. Associated standard deviations (or, for medians, median absolute deviations) reported in parentheses where appropriate.

Table A3: Differences Between Loan Applications in Judicial- Versus Non-Judicial-Foreclosure States

	<i>JF States</i>	<i>Non-JF States</i>	<i>! Difference in Means ! (95% Conf. Interval)</i>	<i>KS Test p Value</i>
<b>Applicant Level</b>				
% of Caucasian applicants	0.863 (0.344)	0.827 (0.378)	0.036 (0.035, 0.037)	0.000
% of Hispanic applicants	0.093 (0.291)	0.121 (0.327)	0.028 (0.028, 0.029)	0.000
% of African-American applicants	0.090 (0.286)	0.094 (0.292)	0.005 (0.003, 0.005)	0.000
% of single female applicants	0.267 (0.442)	0.253 (0.435)	0.014 (0.013, 0.015)	0.000
% in 25th income percentile	0.265 (0.442)	0.218 (0.413)	0.048 (0.047, 0.048)	0.000
% in 75th income percentile	0.227 (0.419)	0.271 (0.444)	0.044 (0.043, 0.045)	0.000
Mean rate spread	2.098 (0.812)	2.098 (0.810)	0.001 (0.001, 0.002)	0.000
Applicant median income	\$73 (\$43)	\$70 (\$46)	3.023 (2.874, 3.149)	0.000
<b>Census-Tract Level</b>				
Median pop.	6,124 (3,035)	5,221 (2,543)	903 (893, 912)	0.000
Mean minority pop. %	0.241 (0.245)	0.202 (0.165)	0.039 (0.007, 0.071)	0.000
Median household income	\$53 (\$21)	\$55 (\$24)	2.096 (1.859, 2.333)	0.000
Mean tract HH income-to-metro area HH income ratio	1.11 (0.39)	1.13 (0.39)	0.021 (0.017, 0.025)	0.000
Proportion of owner-occupied units	0.225 (0.107)	0.279 (0.119)	0.054 (0.049, 0.059)	0.000

NOTE: Income figures in thousands of 2005 dollars. Table includes all loan applications processed by an OCC-regulated bank in 2005. Applicants in the 75th percentile for income excludes applicants with over \$1 million in annual income. Associated standard deviations (or, for medians, median absolute deviations) reported in parentheses.

Table A4: Differences Between Loan Approvals in Judicial- Versus Non-Judicial-Foreclosure States

	<i>JF States</i>	<i>Non-JF States</i>	<i>† Difference in Means ‡ (95% Conf. Interval)</i>	<i>KS Test p Value</i>
<b>Applicant Level</b>				
% of Caucasian applicants	0.863 (0.344)	0.827 (0.378)	0.036 (0.035, 0.037)	0.000
% of Hispanic applicants	0.093 (0.291)	0.121 (0.327)	0.028 (0.028, 0.029)	0.000
% of African-American applicants	0.090 (0.286)	0.094 (0.292)	0.005 (0.004, 0.005)	0.000
% of single female applicants	0.284 (0.451)	0.270 (0.444)	0.014 (0.013, 0.015)	0.000
% in 25th income percentile	0.265 (0.442)	0.218 (0.413)	0.048 (0.047, 0.048)	0.000
% in 75th income percentile	0.241 (0.417)	0.274 (0.442)	0.043 (0.042, 0.043)	0.000
Mean rate spread	2.098 (0.812)	2.098 (0.810)	0.001 (-0.002, 0.001)	0.000
Applicant median income	\$70 (\$46)	\$81 (\$56.3)	10.564 (7.026, 14.102)	0.000
<b>Census-Tract Level</b>				
Median pop.	4,671 (2,175)	4,957 (2,258)	286.025 (271.162, 300.888)	0.000
Mean minority pop. %	0.258 (0.248)	0.234 (0.236)	0.024 (0.024, 0.025)	0.000
Median household income	\$56 (\$22)	\$54 (\$22)	1.956 (1.355, 2.557)	0.000
Mean tract HH income-to-metro area HH income ratio	1.16 (0.43)	1.13 (0.37)	0.036 (0.030, 0.042)	0.000
Proportion of owner-occupied units	0.351 (0.195)	0.308 (0.182)	0.043 (0.039, 0.047)	0.000

NOTE: Income figures in thousands of 2005 dollars. Table includes all loan applications processed by an OCC-regulated bank in 2005. Applicants in the 75th percentile for income excludes applicants with over \$1 million in annual income. Associated standard deviations (or, for medians, median absolute deviations) reported in parentheses.