The Impact of Fair Lending Litigation on Mortgage Markets

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Abstract: Does fair lending litigation impact mortgage lender decisions? We answer this question in the affirmative, using a novel dataset of all fair lending legal actions from 1991 to 2017. We find that, in the wake of legal settlements for discrimination against Black borrowers, lenders significantly reduced denial rates for Black applicants. The reductions near-fully offset pre-litigation racial disparities in denial rates by litigated banks, relative to those banks' competitors. Origination rates for Black applicants also increased post-litigation. We further observe evidence of a spillover effect on the approval decisions of non-litigated banks operating in the same city as a litigated bank. Altogether, the evidence suggests that the enforcement of fair lending laws is an effective tool to reduce racial discrimination in credit markets.

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1 Introduction

An important factor that contributes to the long-run economic well-being of individuals is the location where one lives (Chetty, Hendren, and Katz, 2016). Families who can purchase a home in the neighborhood of their choice at a fair price—and see the value of their home grow over time—do better economically in the long run, as surveyed by Rouse, Bernstein, Knudsen, and Zhang (2021). Over the course of U.S. history, numerous policies have discriminated against racial minorities who wish to pursue the path of homeownership. Over the decades, Congress passed "fair lending laws" such as the Fair Housing Act of 1968 to combat this problem.

We focus on *litigation* as a particular method of enforcing the fair lending laws. Specifically, we assess how mortgage lenders and borrowers respond to fair lending litigation. We find that lenders significantly reduce denial rates for Black applicants in the wake of legal settlements, largely eliminating pre-litigation racial disparities in denial rates at litigated banks relative to their local competitors. This change persists at least through four years post-litigation. Origination rates by Black applicants increase post-litigation even more than denial rates increase indicating that litigated banks improve their offered loan terms as well. Finally, we find some evidence on a spillover effect wherein non-litigated banks "exposed" to the news of a suit against a local competitor also reduce denial rates for Black applicants.

The economic impact of discrimination in mortgage lending has been significant. Appel and Nickerson (2016) study the long-term effects of redlining policies that restricted access to credit in urban communities. They find that redlined neighborhoods had 4.8 percent lower home prices in 1990 relative to adjacent areas. Aaronson, Hartley, and Mazumder (2021) show that the redlining maps reduced home ownership rates, house values, and rents and also increased racial segregation in later decades. The authors' results suggest the maps had meaningful and lasting effects on the development of urban neighborhoods through reduced credit access and subsequent disinvestment. Relatedly, Aaronson, Faber, Hartley, Mazumder, and Sharkey (2021) estimate the long-run effects of the 1930s redlining maps on census tract-level measures of socioeconomic status and economic opportunity. They find that the maps had large and statistically significant causal effects on a

wide variety of outcomes measured at the census tract level for cohorts born in the late 1970s and early 1980s. Similarly, Li (2022) argues that early constraints on Black households' neighborhood choices explain the persistence in segregation across cities between 1960 and 2010.

In 1968, as part of the Civil Rights Act, Congress passed the Fair Housing Act, which initially prohibited discrimination in residential real estate transactions based on race, color, religion, sex, or national origin (Horowitz, 2018). However, before the 1970s, it was unclear whether federal law prohibited lenders from discriminating against prospective borrowers based on the perceived race of the borrower or the borrower's neighborhood. In 1974, Congress passed the Equal Credit Opportunity Act, which (including subsequent expansions) prohibited discrimination in any aspect of a credit transaction (Rohner, 1978). And, in 1977, Congress passed the Community Reinvestment Act, which encouraged federally insured banks and thrifts to meet the credit needs of the entire communities that they serve, including low- and moderate-income areas, consistent with safe and sound banking practices (Barr, 2005). By 1980, it was settled that federal law prohibited such discriminatory lending practices, at least when carried out overtly with respect to race, color, national origin, religion, sex, familial status, or disability (Nash, 2008).

In the decades since the passage of these statutes, we still witness discrepancies with respect to lenders providing loans to racial minorities. Munnell, Tootell, Browne, and McEneaney (1996) show that minorities were more than twice as likely to be denied a mortgage as whites in the Boston area. Zhang and Willen (2020) show that discrimination exists even when accounting for a menu problem wherein mortgage borrowers can choose to either avoid closing costs and pay a high interest rate or contribute to closing costs and get a lower rate. These discrepancies across racial groups even persist with respect to FinTech lenders (Bartlett, Morse, Stanton, and Wallace, 2022).

Given the continued existence of discrimination in lending markets, is it possible that the enforcement of fair lending laws is not effective? Or have the laws simply not been enforced enough? The academic literature has yet to fully address this question empirically. We are aware of only two related working papers: First, An, Bushman, Kleymenova, and Tomy (2022) explore whether banking supervision plays a role in improving access to credit for minorities by investigating enforce-

ment decisions and orders (EDOs). They note that regulators bring enforcement actions against banks as a measure of last resort and exercise some discretion in issuing EDOs. While a few EDOs directly reference fair lending practices, EDOs are generally not concerned with banks' adherence to fair lending laws, as fair lending laws are overseen via a separate and distinct supervisory process (as we discuss below). The authors find that mortgage lending to minority borrowers does significantly increase post EDO and that this positive effect increases with the severity of an EDO.

Our article does not examine actions taken by bank supervisors but rather litigation in court. In addition to quantifying the impact of fair lending litigation on a bank's lending behavior, we analyze whether there are spillover effects to other banks in the area. To do so, we assemble a novel dataset of all fair lending legal actions from the early 1990s through to 2017 and pair it with regulatory mortgage application data. We use this data to analyze patterns in mortgage application decisions at litigated lenders relative to their non-litigated local competitors.

In a second related project, Ballew and Pears (2023) analyze the significant drop in fair lending enforcement actions brought by the Department of Justice between the Obama and Trump administrations. Indeed, the authors note that the administration change in 2017 led to an immediate 99 percent drop in Department of Justice fair lending enforcement actions. The authors find that, following the regime change, banks charged higher interest rate spreads to Black or Hispanic borrowers and borrowers in lower- and middle-income areas. While we analyze similar mortgage loan data in our project, our analysis is based on individual cases brought from the 1990s through 2017, and focuses on denial rates. The cases in our sample were also brought by municipalities and private parties, in addition to the federal government.

2 Data

To conduct our analysis, we made use of six separate datasets: (1) a hand coded original data set of 56 separate fair-lending litigation actions, (2) the Home Mortgage Disclosure Act (HMDA) dataset, (3) "The Avery File," a government dataset for cross walking between bank respondent IDs

in HMDA and Federal Financial Institutions Examination Council (FFIEC) financial institution RSSD codes, (4) the FFIEC financial institution "Relationships" dataset, (5) the FFIEC financial institution "Transformations" dataset, and (6) a hierarchical dataset of Census geographic units.

The dataset of fair-lending litigation draws from the Civil Rights Litigation Clearinghouse run by the University of Michigan Law School and cases listed and brought by the Department of Justice (DOJ).[1] We searched the Clearinghouse and DOJ website for fair lending litigation against *loan originators* for alleged discrimination in the mortgage market, and then hand coded the details of such cases.[2] In particular, we identified case names, years of complaint filing, the names of defendant loan originators, the type of discrimination alleged in the suits: discrimination in mortgage interest rates, discrimination in mortgage application denial rates, redlining, and reverse redlining. We also observe the operative geographies where the alleged discrimination occurred though many complaints allege that the discrimination occurred in all geographies where the originator does business.

The HMDA dataset records the near-universe of mortgage applications every year. We downloaded the HMDA dataset for every year from 1991 to 2021, filtered to applications for conventional mortgages for owner-occupied home purchases within designated core-based statistical areas, dropped applications for manufactured homes, and kept observations in which the listed application outcome was: approval without origination, approval with origination, or a denial. We use a random 10% sub-sample of these mortgage applications for our analysis with the following variables of interest: approval/denial, applicant race and ethnicity, applicant income, Census tract of application, year of application, and originator respondent ID and financial regulator.

We use datasets (3)-(5) to merge the litigation data with the HMDA dataset. Respondent IDs in HMDA are not the same as RSSD IDs, which are unique identifiers assigned to each financial institution by the Federal Reserve. Dataset (3) allows us to map each HMDA respondent ID onto a Federal Reserve RSSD ID. Given financial institution mergers, acquisitions, and internal

[1] See https://clearinghouse.net/search/case/?case_type=5048ordering=-summary_approved_date and https://www.justice.gov/crt/housing-and-civil-enforcement-section-cases-prior-2018#lending.

[2] Due to limited loan data on Indian reservations, we restricted our sample to litigation for alleged discrimination within the United States but not on Indian reservations.

re-organizations, RSSD IDs are not always constant from one year to the next. Dataset (4) tracks each change in an RSSD ID, what that RSSD ID transforms into, and whether the transformation results from a merger or acquisition. We use dataset (4) to map each RSSD ID onto the *most recent* RSSD ID that *does not* reflect an RSSD ID change attributable to a merger or acquisition. We then use dataset (5) to "roll up" each RSSD ID to its highest traceable parent financial institution or bank holding company. These steps allow us to treat every loan originator in a conglomerate of financial institutions as one unitary entity.[3]

In Table 1 below, we present a handful of summary statistics related to the litigation cases in our sample. In total, we have 56 fair lending cases spanning the four allegation types. The most common allegations in our sample involve discriminatory pricing (48 percent) and redlining (29 percent), though some cases also include a secondary allegation. The plaintiffs are federal (e.g., the Department of Justice), municipal (e.g., the City of Oakland), or a private party. The majority of defendants—71 percent—are banks, and we will refer to all lenders as "banks" in the discussion of results for simplicity. Notably, 14 of the defendants in our sample were acquired (via a merger-and-acquisition transaction) following the allegation. And, among these 14 instances, the average time was three years following the allegation.

In Table 2, we provide summary statistics from our HMDA dataset. The sample contains over eight million mortgage records, with seven percent filed by Black applicants. Unconditional denial rates are 13 percent for White applicants, 21 percent across all non-White applicants and 31 percent for specifically Black applicants.

On the income statistics–which are presented in thousands of dollars–we see that the average applicant made $85,000, with White applicants at $86,000 and Black applicants at $67,000. As expected, the incomes of approved applicants are higher than the average and the incomes of denied applicants are much lower. We also see that the average loan amount of $199,000 is more than twice the average income of approved applicants. Finally, 29 percent of all loans were sold to one of the GSEs.

[3] Our hypothesis is that if Alpha Bank Holding Company owns Bank A, Bank B, and Mortgage Lender C, a lawsuit against Bank B will affect the loan origination patterns of all entities held by Alpha.

Table 1: Litigation Summary Statistics

	Count	*Percentage*
Allegation Type		
Disc. Pricing	27	48%
Disc. Origination	5	9%
Redlining	16	29%
Reverse Redlining	8	14%
Plaintiff Type		
Federal	36	64%
Municipal	7	13%
Private	13	23%
Defendant Type		
Bank	40	71%
Nonbank	16	29%
Total	56	100%
Defendant Acquired		
Number of Transactions	14	
Avg. Years After Complaint Filed	3	

Table 2: HMDA Summary Statistics

	White	Black	non-White	All
Total Applications	6,222,757	583,620	2,132,541	8,355,298
Pct. Total Applications	74.5%	7.0%	25.5%	100.0%
Total Denied	811,478	178,513	456,581	1,268,059
Pct. Denied	13.0%	30.6%	21.4%	15.2%
Total Originated	5,012,808	351,738	1,501,655	6,514,463
Pct. Originated	80.6%	60.3%	70.4%	78.0%
Avg. Income (Thousands)	$86	$67	$84	$85
SD Income (Thousands)	$66	$51	$64	$66
Avg. Income if Denied (Thousands)	$64	$55	$67	$65
Avg. Income if Approved (Thousands)	$89	$72	$89	$89
Avg. Loan Amount (Thousands)	$192	$170	$225	$199
SD Loan Amount (Thousands)	$160	$140	$186	$167
Pct. Sold to GSE	30.9%	16.7%	24.0%	29.1%

3 Empirical Analysis

Our main specification is an applicant level regression. The idea underlying our empirical approach is that, after controlling for other relevant variables, significant decreases in discrimination immediately following a bank being sued for discrimination can be attributed to the fair lending lawsuit.[4] We use what amounts to a triple difference estimation, where the comparison is between Black and White applicants, before and after litigation, at litigated banks relative to non-litigated banks. Thus, for applicant i applying for a mortgage at bank b in city m in year t we run:

$$\begin{aligned} Y_{ibmt} = \beta_0 &+ \beta_1 LitWindow_{mt} X PostLit_{mt} X Black_i + \beta_2 LitWindow_{mt} X PostLit_{mt} \\ &+ \beta_3 LitWindow_{mt} X Black_i + \beta_4 LitWindow_{mt} \\ &+ \beta_5 Black_i + \beta_6 LnIncome_i + \beta_7 LnLoanSize_i \\ &+ \delta_b + \delta_{mt} + \varepsilon_{ibmt}. \end{aligned} \tag{1}$$

Non-Black minority applicants are excluded from the sample. The variable $LitWindow$ turns on for a litigated banks in a window of [-4,+4] years around the litigation year, and in the geography of litigation if one is specified in the suit. Applicants to a litigated bank in the year of litigation are dropped as we do not observe the month applications are submitted, and thus whether they arrive before or after a suit is filed. The coefficient β_5 measures the average difference in denial rates for Black applicants relative to White applicants across the sample, conditional on income and loan amount sought. Coefficients β_3 and β_4 measure the extent to which denial rates at litigated banks are higher, in the four years pre-litigation, for Black and White borrowers, respectively, relative to applicants at non-litigated banks in the same year and metro area. The coefficient β_2 measures whether there is a general change in denial rates for applicants to litigated banks in the four years post-litigation. The focal parameter is β_1, which captures any change in denial rates for Black

[4] In particular, we measure discrimination based on the disparity in the probability that a loan application is denied, approved but not originated, or originated. If, after controlling for applicant income, loan size, location, the specific bank applied to, and year, that disparity *narrows* post-litigation, we can plausibly causally attribute the narrowing to the litigation.

applicants relative to White applicants post-litigation.

Because the decision to apply for a loan and to approve one is subject to local housing market conditions, we include city by year fixed effects. To make before and after litigation comparisons within bank, we include firm fixed effects. The indicator for the window stretching from four years before to four years after each litigation year narrows the period over which comparisons are made to that window. We cluster standard errors at the bank by city by year level since approval decisions are likely correlated within bank due to policies set at a management level.

We also investigate whether litigation actions have any impact on the approval decisions of local competitors to the litigated banks. Thus, for banks not subject to litigation, we estimate the below specification:

$$\begin{aligned} Y_{ibmt} = \gamma_0 &+ \gamma_1 LitExposure_{mt} X PostLit_{mt} X Black_i + \gamma_2 LitExposure_{mt} X Black_i \\ &+ \gamma_3 Black_i + \gamma_4 LnIncome_i + \gamma_5 LnLoanSize_i \\ &+ \delta_{bmt} + \delta_{mt} + \varepsilon_{ibmt}. \end{aligned} \tag{2}$$

$LitExposure$ indicates banks operating in the same city as a litigated bank within the +/- four year window of the litigation date. The coefficient γ_2 measures any difference in disparity in the denial rate for Black applicants relative to White applicants versus non-exposed banks pre-litigation and γ_1 tests for any spillover impact post-litigation. We include a bank by city by year fixed effect so that any spillover effect is measured as a change in the denial rate disparity between White and Black applicants within each bank in a given city and year.

4 Results

Table 3 contains the results from estimating specification (1)—looking at how fair lending litigation actions impact individual level mortgage application denial decisions. Column (1) shows that, sample wide, applications from Black borrowers are denied at an 11.4 percentage point higher

rate than those from White borrowers. That disparity is higher at litigated banks, where Black borrowers are denied at a 14.5 percentage point higher rate than White borrowers. Interestingly, litigated banks also deny White applications at a slightly higher rate (0.5 percentage point) than do their competitors in the same city.

Column (2) includes a control for the only credit relevant demographic variable available in the full HMDA sample: income. This control only reduces the pre-litigation Black denial rate by about 6%, suggesting that significant differences in applicant population credit profiles at litigated banks do not underpin the disparity in denial rates. Column (3) includes a control for loan size, with no reduction in the Black-White disparity in denial rates, thus suggesting that the disparity is not explained by Black borrowers seeking excessively large loans.

Column (3) suggests that, on average, a Black borrower applying to a non-litigated bank will be denied at a 10.1 percentage point higher rate than a White borrower with the same income applying for the same sized loan to the same bank. However, if the same pair of borrowers applied to a *litigated* bank in the years *before* litigation, the gap would be about 13 percentage points. This is roughly double the 15% overall denial rate in the sample.

Focusing on Column (3), we see that following litigation, litigated banks substantially reduced denial rates for Black borrowers, relative to White borrowers, to about the same level as the disparity at their non-litigated competitors. A Black and a White applicant to a litigated bank, with the same income and loan size sought, will have the gap in their denial rates reduced by 2.8 percentage points post-litigation, relative to pre-litigation. Interestingly, denial rates fall some for White borrowers as well (by about 0.3 percentage points), consistent with the findings of Bushman, Kleymenova, and Tomy (2022) in the wake of supervisory enforcement actions.

In Figure 1, we look at how denial rates at litigated banks evolves year by year relative to the filing of the suit. Four years before litigation is filed, there is no observed disparity at litigated versus non-litigated banks in the average denial rate for Black versus White applications. In years three and two before litigation filing, the Black-White denial rate disparity is about 1.5 percentage points higher at litigated banks, compared with at non-litigated banks. The year before litigation

Table 3: Full Litigation Sample - Direct Effects on Black Applicants

	(1) denied	(2) denied	(3) denied
Post-lit X Black	-0.023***	-0.027***	-0.028***
	(0.008)	(0.008)	(0.008)
Post-lit	-0.002	-0.003	-0.003
	(0.003)	(0.003)	(0.003)
Pre-lit X Black	0.031***	0.029***	0.029***
	(0.005)	(0.005)	(0.005)
Pre-lit	0.005**	0.007***	0.007***
	(0.002)	(0.002)	(0.002)
Black	0.114***	0.102***	0.101***
	(0.001)	(0.001)	(0.001)
Log income		-0.055***	-0.048***
		(0.000)	(0.000)
Log loan amount			-0.011***
			(0.000)
N	6,807,043	6,807,043	6,807,043
r2	0.19	0.20	0.20

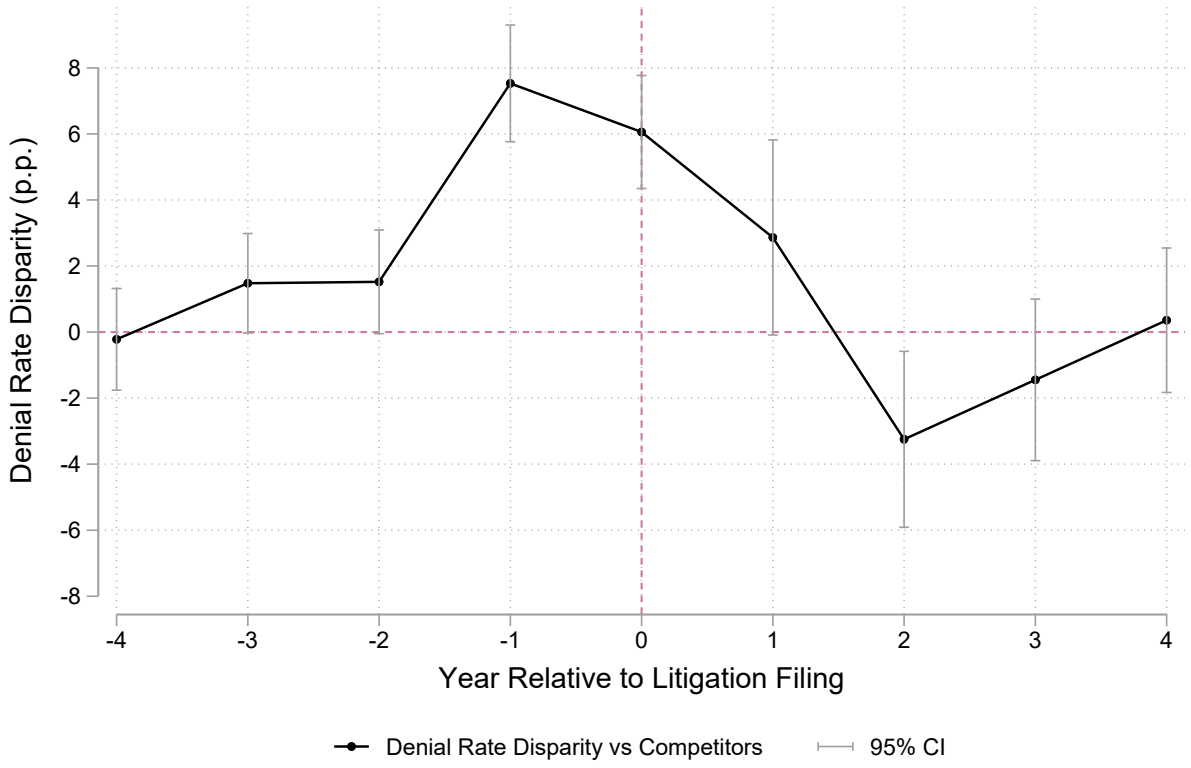
Note: Pre- and post-litigation effects estimated within a window of +/- four years. The year of litigation is excluded from the sample. All specifications include bank and MSA-year fixed effects. Standard errors clustered at the bank-MSA-year level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

filing, the disparity rised above 7 percentage points. This disparity then begins declining the year litigation is filed, and continues to do so through year plus two. In year two post-litigation, at litigated banks the denial rate for Black applicants is about 3 percentage points below the rate at non-litigated banks. THis attenuates in year three post-litigation, but even four years after litigation there remains no notable disparity in the Black-White denial rate gap at litigated banks relative to at non-litigated banks.

In Figure 2, we assess the individual impact of litigation on denial rate disparities for twenty separate litigation actions.[5] Following fourteen of these twenty litigation actions, the Black-White

[5]Due to limitations in the sample size of applications from Black borrowers to litigated banks, we are currently only able to estimate individual effects of twenty litigation actions of our sample of fifty-six litigation actions.

Figure 1: Black Applicant Denial Disparity

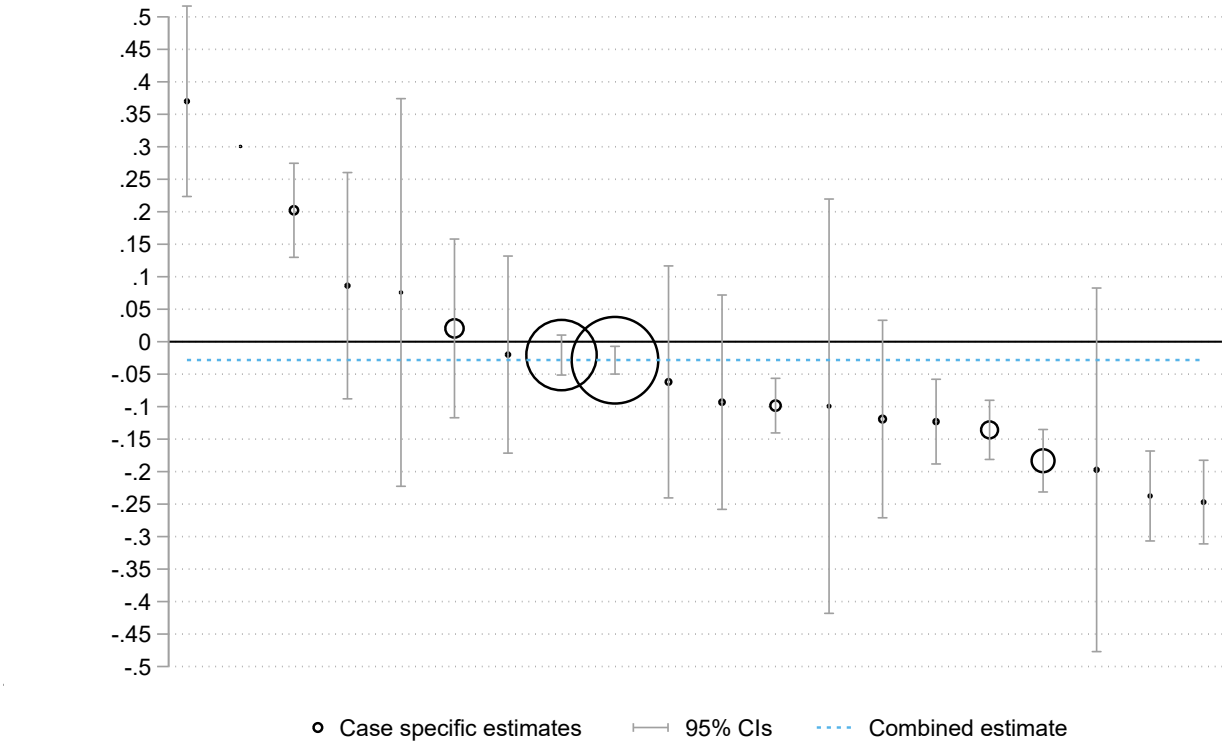


Note: Estimated denial rate disparities between Black and White applicants over time at banks subject to litigation. Estimated denial disparities only include by-year disparities at such banks, with the year that litigation was filed defined as 0. The figure does not include overall racial disparities at such banks, nor does it include industry-wide denial disparities.

denial rate disparity decreases, relative to before litigation, consistent with our results pooling all litigation actions together. For these actions, the disparity decreases by a range of approximately 2.5 to 25 percentage points.

The disparity increases following six of these twenty actions, but is statistically significant for only three of these six. For the actions that increase the denial rate disparity, the disparity increases by a range of just above zero to approximately 35 percentage points. It is unclear why exactly the disparity increases after any of these actions. One possible explanation is that, post-litigation, creditworthy Black borrowers look elsewhere for credit, meaning that only those most likely to be

Figure 2: Distribution of Post-litigation change in Black Applicant Denial Rate



Note: Markers sized by lender's post-litigation loan volume.

denied *anywhere* apply to such banks, thereby driving up the estimated denial rate disparity.

Further study is warranted to assess specific reasons why some litigation actions decrease lending discrimination more than others do. One possibility is that discrimination decreases more when the magnitude of pre-litigation discrimination was greater. A second possibility, which could work in tandem with the first, is that the litigation strategies employed, or remedies won, affect the magnitude of the decrease in discrimination.

4.1 Alternative responses to litigation

One avenue by which the impact of litigation on combating discrimination could be undermined would involve a litigated bank approving more Black loan applications but offering unfavorable interest rates to such applicants, relative to what their competitors offer. If a bank wants to decrease observed disparities in denial rates, but nonetheless does not want to originate loans for Black borrowers, it could offer loans with uncompetitive interest rates, leading applicants to opt against loan origination. We test for this possibility in Columns (1) and (2) of Table 4 by estimating specification (1) with the outcome variables of whether a loan application is approved but not originated (Column (1)) or eventually originated (Column (2)).

Table 4: Alternative Responses to Litigation

	(1) not accepted	(2) originated	(3) sold to GSE
Post-lit X Black	-0.014***	0.042***	0.136***
	(0.004)	(0.008)	(0.015)
Post-lit	-0.031***	0.034***	-0.097***
	(0.002)	(0.003)	(0.010)
Pre-lit X Black	0.013***	-0.041***	-0.088***
	(0.003)	(0.004)	(0.007)
Pre-lit	-0.004**	-0.004*	0.077***
	(0.002)	(0.002)	(0.006)
Black	0.002***	-0.103***	-0.055***
	(0.001)	(0.001)	(0.001)
Log income	0.008***	0.040***	-0.081***
	(0.000)	(0.000)	(0.001)
Log loan amount	-0.006***	0.017***	0.044***
	(0.000)	(0.000)	(0.001)
N	6,807,043	6,807,043	5,364,794
r2	0.07	0.24	0.34

Note: Pre- and post-litigation effects estimated within a window of +/- four years. The year of litigation is excluded from the sample. All specifications include bank and MSA-year fixed effects. Standard errors clustered at the bank-MSA-year level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Column (1) of Table 4 shows that, post-litigation, the Black-White disparity in the rate at which Black applications are accepted but not originated decreases by 1.4 percentage points. This result is consistent with litigated banks *less frequently* offering unfavorable loan terms to Black borrowers after litigation. Column (2) shows that Black origination rates increase by 4.2 percentage points post-litigation. Taken together, this shows the increase in originated loans to black borrowers is about two thirds due to lower denial rates and one third to a lower rate at which applications are approved but not accepted. Origination rates increase nearly as substantially for white applicants post-litigation, almost entirely due to lower rates of non-acceptance, consistent with these banks lowering their offered interest rates for all apllicants.[6]

Column (3) of Table 4, in turn, estimates specification (1) with the outcome variable of whether, after being originated, a loan is sold to one of the GSEs to be securitized. Purchase by a GSE happens to nearly 30% of mortgages across the whole sample. The coefficients in Row 3 indicate that, pre-litigation, litigated banks securitized loans to Black borrowers at a substantially lower rate and to White borrowers at a substanitally higher rate than their local competitors. Rows 1 and 3 taken together indicate that, after litigation, this behavior flips with litigated banks selling to the GSEs loans originated to Black borrowers at a higher rate and those to White borrowers at a slightly lower rate than other local lenders.

A straightforward interpretation of the results of Column (3) of Table 4 may be elusive. At a minimum, the increased securitization rate of loans to Black borrowers, relative to White borrowers, suggests that litigated banks may have perceived post-litigation loans to Black borrowers as more risky. As a result, these banks securitized such loans at a higher rate. In turn, the decrease in the securitization rate for White borrowers at litigated banks, from before to after litigation, may suggest that before litigation these banks perceived loans to White borrowers as more risky.

Finally, as noted in Table 2, litigated banks are frequently acquired in wake of a fair lending suit.

[6]Of course, the result in Column (2) does not rule out the possibility that (1) denial rates decrease but (2) litigated banks offer Black applicants less favorable terms than their competitors would and (3) some Black applicants only apply to litigated banks, meaning that they move forward with loan origination, in spite of (2). However, to the extent that Black applicants apply to several banks, some litigated and others not, the higher origination rate post-litigation suggests that litigated banks do not offer less favorable terms to Black applicants than they did pre-litigation. Moreover, the results of Column (1) further suggest that banks do not offer less favorable terms to Black borrowers post-litigation.

Of the 56 cases, 14 banks were acquired within a few years of their case and two more ceased their mortgage lending operations entirely. Taken together this means more than a quarter of litigated banks were no longer making mortgages as independent entities by four years post suit.

4.2 Allegation type

Next, we examine how the effects of litigation change based on the alleged type of discrimination. Table 5 presents results of regressions estimating how the Black-White denial rate disparity changes after litigation challenging each of four alleged types of discrimination: discriminatory origination, discriminatory pricing, redlining, and "reverse redlining." Consistent with our overall results, the Black-White denial rate disparity decreases after litigation alleging discriminatory origination rates, discriminatory pricing, and redlining. Interestingly, the estimated coefficient is only significant for litigation alleging discriminatory pricing.

Pre-litigation, banks sued for discriminatory origination rates apparently deny *all* applicants at higher rates than other banks do. Post-litigation, that overall higher denial rate decreases, as does the specific denial rate for Black applicants (although not at a statistically significant level). Banks sued for discriminatory origination tend to have lower overall application volume, particularly for Black applicants. Thus, the non-significant decrease in Black denial rates may in part result from a low overall number of Black applications to such banks.

Banks sued for discriminatory pricing eliminate their pre-litigation disparity in Black-White denial rates. Pre-litigation, such banks deny Black applicants at a 3.1 percentage point higher rate than they deny White applicants, relative to the disparity at non-litigated banks. Post-litigation, banks sued for discriminatory pricing reduce the disparity by a statistically significant 3.4 percentage points, eliminating the previous disparity.

Banks sued for redlining do not have an observed pre-litigation disparity in denial rates (at least, relative to the disparity at non-litigated banks). While this result may seem counterintuitive, redlining may often occur when banks refuse to conduct business in predominantly Black neighborhoods to begin with. As a result, banks sued for redlining may have an overall low volume of

Table 5: Estimates by Allegation: Denial Rates as Outcome

	(1) Disc. Orig.	(2) Disc. Pric.	(3) Redlining	(4) Rev. Redlining
Post-lit X Black	-0.048	-0.034***	-0.024	0.028
	(0.106)	(0.008)	(0.030)	(0.144)
Post-lit	-0.043**	-0.004	-0.008	0.020
	(0.018)	(0.003)	(0.009)	(0.038)
Pre-lit X Black	-0.027	0.031***	-0.015	0.112***
	(0.103)	(0.005)	(0.014)	(0.013)
Pre-lit	0.046***	0.008***	-0.008	-0.018
	(0.014)	(0.002)	(0.006)	(0.014)
Black	0.104***	0.101***	0.104***	0.104***
	(0.001)	(0.001)	(0.001)	(0.001)
Log income	-0.048***	-0.048***	-0.048***	-0.048***
	(0.000)	(0.000)	(0.000)	(0.000)
Log loan amount	-0.011***	-0.011***	-0.011***	-0.011***
	(0.000)	(0.000)	(0.000)	(0.000)
N	6,903,005	6,827,841	6,901,497	6,903,094
r2	0.20	0.20	0.20	0.20

Note: Pre- and post-litigation effects estimated within a window of +/- four years. The year of litigation is excluded from the sample. All specifications include bank and MSA-year fixed effects. Standard errors clustered at the bank-MSA-year level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

applications from Black borrowers, and Black borrowers who do apply to such banks may simply be creditworthy enough to have their applications approved at the same rate as the applications of White borrowers. Post-litigation, banks sued for redlining decrease their denial rate of Black borrowers by 2.4 percentage points, although that figure is not statistically significant. For banks accused of redlining, the relevant outcome variable may thus be *application volume*, not application denial rates.

Lastly, banks accused of reverse redlining *increase* their Black-White denial rate after being sued, although not at a statistically significant level. This result may follow from the fact that, with reverse redlining, banks specifically target borrowers from minority neighborhoods, offering them

credit at supracompetitive interest rates. After litigation, such banks may become more discerning in which applications they approve, yet offer approved applications more favorable loan terms. If this is the case, it would explain the observed increase in denial rates. Notably, Row 4 of Column (4) of Table 5 indicates that, pre-litigation, the Black-White denial rate disparity is higher at banks accused of reverse redlining than at non-litigated banks. However, this result need not be inconsistent with a practice of reverse redlining. If a bank targets minority neighborhoods, it may receive a disproportionate volume of applications from Black borrowers who do not meet underwriting standards.

Table 6: Direct Effect by Race/Ethnicity

	(1) Black	(2) Hispanic	(3) AAPI	(4) AIAN
Post-lit X Demo	-0.028***	-0.010	-0.018***	0.027
	(0.008)	(0.006)	(0.005)	(0.017)
Post-lit	-0.003	-0.003	-0.004	-0.004
	(0.003)	(0.003)	(0.003)	(0.003)
Pre-lit X Demo	0.029***	0.035***	0.018***	0.018**
	(0.005)	(0.004)	(0.003)	(0.008)
Pre-lit	0.007***	0.007***	0.008***	0.009***
	(0.002)	(0.002)	(0.002)	(0.002)
Demo	0.101***	0.045***	0.016***	0.049***
	(0.001)	(0.001)	(0.001)	(0.002)
Log income	-0.048***	-0.048***	-0.046***	-0.046***
	(0.000)	(0.000)	(0.000)	(0.000)
Log loan amount	-0.011***	-0.011***	-0.010***	-0.012***
	(0.000)	(0.000)	(0.000)	(0.000)
N	6,807,043	7,059,816	6,826,120	6,283,257
r2	0.20	0.19	0.18	0.19

Note: Pre- and post-litigation effects estimated within a window of +/- four years. The year of litigation is excluded from the sample. All specifications include bank and MSA-year fixed effects. Standard errors clustered at the bank-MSA-year level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 6 demonstrates the effect of litigation across the demographics of applicants available

in HMDA: Black applicants, Hispanic applicants, Asian-American and Pacific Islander ("AAPI") applicants, and American Indian and Alaskan Native ("AIAN") applicants. Notably, nearly all litigation actions analyzed allege discrimination against Black borrowers. Further, the sample size of AAPI and AIAN applicants is small enough that results may be unreliable. Nonetheless, a few trends are clear. First, Row 3 indicates that, pre-litigation, these borrowers are all denied at higher rates than White applicants, even conditional on income. Hispanic borrowers are denied at a statistically significant 3.5 percentage point higher rate than White borrowers, and AAPI and AIAN borrowers are denied at a statistically significant 1.8 percentage point higher rate. Second, litigation reduces the Hispanic-White denial rate gap by a statistically insignificant 1 percentage point, and the AAPI-White gap by a statistically significant 1.8 percentage points. Third, the AIAN-White denial rate gap increases post-litigation, although the estimate is insignificant.

4.3 Geography specific litigation

Some litigation cites only a specific city or county as the site of the alleged discriminatory practice. In Table 7 we look at the effect of this subset of legal actions on Black applicants. Column (1) estimates how litigation affects the probability that an application is denied. Column (2) assesses the probability that an application is approved but not originated, and Column (3) assesses the probability that a loan is originated.

Column (1) demonstrates that for geographic-specific litigation, litigation reduces the Black-White gap in denial rates by an insignificant 1.2 percentage points. Column (3), in turn, indicates that geographic-specific litigation substantially and statistically significantly increases the probability that loans are originated for Black borrowers–by 6.4 percentage points. The outcome of Column (3) is somewhat curious, given the result of Column (1) indicating a trivial effect of geographic-specific litigation on denial rates.

Column (2) provides the key for this puzzle. Row 3 demonstrates that, pre-litigation, the Black-White gap in the probability that applications were approved but not originated was 6.8 percentage points higher at banks targeted for geographic-specific litigation, compared with other banks. On

Table 7: Geographic Litigation: Overall Direct Effects on Black Borrowers

	(1) denied	(2) not accepted	(3) originate
Post-lit X Black	-0.012	-0.052***	0.064**
	(0.027)	(0.015)	(0.029)
Post-lit	-0.000	-0.005	0.005
	(0.008)	(0.006)	(0.011)
Pre-lit X Black	-0.011	0.068***	-0.057***
	(0.016)	(0.010)	(0.018)
Pre-lit	-0.011**	0.005	0.006
	(0.006)	(0.004)	(0.006)
Black	0.104***	0.003***	-0.107***
	(0.001)	(0.000)	(0.001)
Log income	-0.048***	0.008***	0.040***
	(0.000)	(0.000)	(0.000)
Log loan amount	-0.011***	-0.006***	0.017***
	(0.000)	(0.000)	(0.000)
N	6,901,182	6,901,182	6,901,182
r2	0.20	0.07	0.24

Note: Pre- and post-litigation effects estimated within a window of +/- four years. The year of litigation is excluded from the sample. All specifications include bank and MSA-year fixed effects. Standard errors clustered at the bank-MSA-year level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

average, Black applicants with accepted applications were 6.8 percentage points more likely than analogous White borrowers with the same income to not proceed with loan origination. This result is consistent with banks targeted for geographic specific litigation offering Black borrowers particularly unfavorable loan terms, which such borrowers did not accept. Row 1 of Column (2) indicates that geographic-specific litigation narrows the disparity in question by a statistically significant 5.2 percentage points, or 76 percent of the pre-litigation disparity. This narrowing explains much of the increased probability of origination observed in Column (3).

In sum, the problem with banks targeted with geographic-specific litigation is not so much with higher denial rates for Black people, but indirect evidence that such banks offer Black bor-

rowers worse terms than White borrowers, leading Black borrowers to not proceed with origination. Columns (2) and (3), taken together, indicate that litigation substantially addresses this problem. These results are consistent with geographic-specific litigation substantially involving allegations of discriminatory pricing and reverse redlining. While Table 5 indicates that litigation over discriminatory pricing leads to overall lower disparities in Black-White denial rates, this result may not carryover to *geographic-specific* litigation. With geographic-specific litigation, litigation over discriminatory pricing may simply reduce disparities in loan terms, but not meaningfully affect denial rates. Moreover, Table 5 indicates that reverse redlining does not reduce disparities in denial rates, consistent with the results of Table 7. Rather, as previously discussed, litigation over reverse redlining may narrow disparities in loan terms, but leave untouched (or even *increase*) the disparity in denial rates.

4.4 Spillovers

In Table 8 we show results from estimation of specification 2, looking for spillover effects of litigation. The idea is that anti-discrimination litigation may deter discrimination even for non-litigated banks. A lawsuit against a bank's competitor may signal to the bank that it could face liability if it does not curb discriminatory practices. We test this hypothesis by examining how banks in particular MSAs respond after a competitor in their MSA is targeted with MSA-specific litigation.

There is evidence that litigation has spillover effects on non-litigated banks. After geographic-specific litigation of their local competitors, non-litigated banks reduced denial rates for Black applicants by 1.7 percentage points relative to White applicants at the same bank. Banks also increased relative origination rates for Black borrowers by 1.9 percentage points, substantially reversing a 2.2 percentage point pre-litigation disparity in the Black-White origination rate. Both of these estimates are statistically significant at the 5 percent level. This suggests that raising the salience of the threat of litigation has a non-trivial impact on lender behavior.

Table 8: Spillover Effects of Litigation

	(1) denied	(2) originate
Post-lit X Black	-0.017**	0.019**
	(0.009)	(0.009)
Pre-lit X Black	0.008	-0.022***
	(0.006)	(0.006)
Black	0.095***	-0.095***
	(0.001)	(0.001)
Log income	-0.045***	0.035***
	(0.000)	(0.000)
Log loan amount	-0.005***	0.009***
	(0.000)	(0.000)
N	6,455,655	6,455,655
r2	0.30	0.34

Note: Pre- and post-litigation effects estimated within a window of +/- four years. The year of litigation is excluded from the sample. All specifications include bank-MSA-year fixed effects. Standard errors clustered at the bank-MSA-year level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

5 Conclusion

We began this project by questioning the efficacy of fair lending enforcement actions. We find that, in the wake of legal settlements for discrimination against Black borrowers, lenders significantly reduced denial rates for Black applicants. The reductions almost fully offset pre-litigation racial disparities in denial rates by litigated banks, relative to those banks' competitors. Origination rates for Black applicants also increased post-litigation. We further observe evidence of a spillover effect on the approval decisions of non-litigated banks operating in the same city as a litigated bank. We therefore conclude that the evidence strongly suggests the enforcement of fair lending laws is an effective tool to reduce racial discrimination in credit markets.

6 References

Aaronson, Daniel, Daniel Hartley, and Bhashkar Mazumder. 2021. The Effects of the 1930s HOLC 'Redlining' Maps. American Economic Journal: Economic Policy.

Aaronson, Daniel, Jacob Faber, Daniel Hartley, Bhashkar Mazumder, and Patrick Sharkey. 2021. The Long-Run Effects of the 1930s HOLC "Redlining" Maps on Place-Based Measures of Economic Opportunity and Socioeconomic Success. Regional Science and Urban Economics.

An, Byeongchan, Robert Bushman, Anya Kleymenova, and Rimmy E. Tomy. 2022. Social Externalities of Bank Enforcement Actions: The Case of Minority Lending. Federal Reserve Finance and Economics Discussion Series.

Appel, Ian and Jordan Nickerson. 2016. Pockets of Poverty: The Long-Term Effects of Redlining. SSRN Working Paper.

Ballew, Hailey and Geoffrey Pears. 2023. Banks' Commitment to Social Responsibility in Lending Amid Reduced Enforcement of Fair Lending Laws. SSRN Working Paper.

Baradaran, Mehrsa. 2019. Jim Crow Credit. UC Irvine Law Review.

Barr, Michael. 2005. Credit Where It Counts: The Community Reinvestment Act and Its Critics. N.Y.U. Law Review.

Butler, Alexander W., Erik J. Mayer, and James Weston. 2022. Racial Disparities in the Auto Loan Market. SSRN Working Paper.

Chetty, Raj, Nathaniel Hendren, and Lawrence F. Katz. 2016. The Effects of Exposure to Better Neighborhoods on Children: New Evidence from the Moving to Opportunity Experiment. American Economic Review.

Horowitz, Ben. 2018. Fair Lending Laws and the CRA: Complementary Tools for Increasing Equitable Access to Credit. Federal Reserve Bank of Minneapolis Blog Post.

Li, Nicholas. 2022. Racial Sorting, Restricted Choices, and the Origins of Residential Segregation in U.S. Cities. Working Paper.

Nash, Andrew. 2008. The Origins of Fair Lending Litigation. Washington U. School of Law Working Paper.

Rohner, Ralph. 1978. Equal Credit Opportunity Act. Business Law.

Rothstein, Richard. 2017. The Color of Law: A Forgotten History of How Our Government Segregated America. Liveright.

Rouse, Cecilia, Jared Bernstein, Helen Knudsen, and Jeffery Zhang. 2021. Exclusionary Zoning: Its Effect on Racial Discrimination in the Housing Market. CEA Blog Post.