Shedding Light on Bias: Consumer Complaint Disclosure and Racial Equity in Financial Services *

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Abstract

This study investigates how the public disclosure of consumer complaint narratives in 2015 by the Consumer Financial Protection Bureau affects racial disparities in financial services. Using triple-difference estimation, we show that minority consumers receive better treatment from financial institutions under CFPB supervision after the disclosure. These improvements manifest as higher deposit rates and lower fees in savings markets, and reduced rates for auto loans and credit cards in lending markets. Financial institutions receiving discriminatory complaints face deposit outflows. Our evidence demonstrates the broad impact of service quality disclosure in reducing racial inequalities across both savings and lending markets.

Keywords: Disclosure; Racial disparities; Financial services

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1 Introduction

Disclosure is a widely adopted regulatory tool across various industries. Unlike traditional enforcement that relies on mandates and penalties, disclosure aims to influence stakeholders by improving transparency and providing information for informed decision-making. Studies have documented its effectiveness in various settings - from improving restaurant hygiene (Jin and Leslie (2003)) to enhancing environmental governance through air pollution information disclosure (Barwick et al. (2024); Tomar (2023)).

In financial services, disclosure assumes even greater importance given the sector's vital role in shaping economic activities and daily financial decisions. While extensive research has examined the disclosure of financial institutions' risk exposures, capital adequacy, and financial reporting (Goldstein et al. (2014); Acharya and Ryan (2016)), little attention has been paid to the disclosure of service quality - particularly regarding potential discrimination in day-to-day financial services. This lack of transparency makes it difficult to monitor and address persistent racial disparities in financial services.

This study investigates how disclosing financial service quality affects racial disparities across financial markets. Racial bias remains a persistent issue in financial services (Cohen-Cole (2011); Faber and Friedline (2020); Butler et al. (2023)) despite governmental efforts to promote fairness (Begley and Purnanandam (2021)). As a result of this pervasive bias, minority consumers currently receive lower-quality services compared to white consumers. Compounding this problem, limited financial literacy makes minority consumers even more vulnerable to exploitation in their interactions with financial institutions (Guiso et al. (2022); Scott et al. (2023)), ultimately leading to their exclusion from mainstream financial systems. While finding effective policy solutions is essential but challenging, our study provides the first examination of how disclosure policies impact racial discrimination in financial services, with a focus on savings and lending markets.

Our analysis demonstrates that the disclosure policy significantly reduces racial disparities across different financial services. The consistent findings in both savings and lending markets indicate disclosure's broad effectiveness as a regulatory tool in addressing unequal treatment. In the savings market, we find that branches of financial institutions with publicly disclosed complaint narratives adjust their practices in minority communities by offering more favorable deposit rates and lower account maintenance fees after the disclosure pol-

icy. In the lending market, these branches reduce their loan rates for both auto loans and credit cards compared to the branches not under CFPB oversight. Furthermore, we find that branches of financial institutions frequently cited for racially discriminatory practices in complaint narratives face the threat of deposit outflows, which may serve as a key channel for the policy's impact. Finally, we find these improvements translate into meaningful real effects for minority households. These effects include increased bank account ownership, higher auto ownership rates among low-income households, and greater confidence in credit card approval - all suggesting improved access to mainstream financial services.

We utilize the natural experiment created by the Consumer Financial Protection Bureau's (CFPB) complaint narrative disclosure policy. As the primary regulatory agency for consumer financial markets in the United States, the CFPB plays a crucial role in protecting consumer interests (Hayes et al. (2021)). On June 25, 2015, the CFPB began publicly disclosing detailed narratives of consumer complaints with consumer permission (CFPB (2015)). Through this disclosure policy, the CFPB provides consumers, media, investors, and competing financial institutions with direct access to negative consumer evaluations of financial services. Unlike regulatory disclosures that rely on complex legal processes with limited public involvement, submitting complaints is more accessible and encourages broader public participation. This accessibility enables general stakeholders like financial consumers to become aware of issues and adjust their engagement (Flannery et al. (2023)). The public disclosure of these complaint narratives may bring reputation concerns and litigation risks to the targeted institutions. Our findings show that the disclosure of complaint narratives prompts financial institutions to improve both their complaint resolution outcomes and service quality.[1] We use a difference-in-difference (DID) model at the complaint level and find that financial institutions respond more attentively to complaints with narratives than to complaints without narratives, as reflected by lower consumer dispute rates, more timely handling, and increased likelihood of monetary relief after the narratives become public.

Beyond these ex-post handling outcomes, we explore whether financial institutions proactively improve service quality and reduce racial gaps. To identify changes in racial gaps, we exploit the CFPB disclosure policy to construct a triple-difference (DDD) model. We begin by classifying counties as majority-minority or majority-white based on their de-

[1]Based on our discussions with CFPB officials, financial institutions actively monitor and analyze consumer complaints to assess and improve their products and services.

mographic composition.[2] Using the CFPB's published list of regulated institutions, we then identify financial institutions under CFPB oversight and locate their branches in the RateWatch dataset. These branches, designated as treated, are subject to the CFPB's complaint disclosure requirements, while other branches serve as controls. Our triple-difference approach examines how racial disparities in service quality between treated and control branches evolve following the disclosure policy implementation.

Our triple-difference approach offers a key advantage for identification: it focuses on changes in racial disparities rather than requiring direct comparability between treated and control branches. While CFPB-regulated depository institutions are typically larger, and we impose asset size restrictions to enhance comparability, some unobservable differences may remain. The inclusion of majority-minority and majority-white counties as the third difference allows us to examine racial gaps specifically, requiring that these gaps would have evolved similarly between treated and control branches absent the disclosure policy. Our analysis confirms this parallel trend assumption.

Our study provides a comprehensive evaluation of disclosure's impact by examining both savings and lending markets, as CFPB oversight extends across these markets. This multi-market analysis enables us to assess the broad effectiveness of disclosure in reducing discrimination across different financial services.

We begin with the savings market, which represents a crucial entry point for consumers into the financial system and plays a vital role in wealth accumulation.[3] Despite its importance, this market has historically received less regulatory attention regarding discrimination than the lending market, making it particularly important to understand financial inclusion and disparities in wealth accumulation.[4] Our analysis focuses on two key dimensions of the savings market from 2013 to 2022: deposit rates and account maintenance fees. These measures capture both the return on savings that directly affects individuals' wealth ac-

[2]We define minorities as all non-white racial groups. A county is classified as majority-minority if its minority population exceeds 50 percent of the total population.

[3]The savings market is substantial in size. According to the Federal Reserve Bank of St. Louis, U.S. depository institutions held $9.34 trillion in deposits in 2019, increasing to $10.63 trillion in 2020. The U.S. personal saving rate reached 16.8 percent of disposable income in 2020.

[4]While major consumer protection laws such as the Equal Credit Opportunity Act, Fair Housing Act, and Community Reinvestment Act aim to ensure equal access to financial services, they primarily focus on lending activities. Regulation in the savings market mainly addresses deposit insurance and bank stability through the Federal Deposit Insurance Act and Truth in Savings Act. The CFPB's complaint-based approach provides a new regulatory channel to address discrimination in the savings market.

cumulation and the barriers to financial access, providing a comprehensive view of service quality.

Our analysis reveals significant improvements in financial service terms for minority communities following the disclosure policy. For 12-month CDs with a $10,000 minimum balance, branches in minority communities increase their deposit rates by 6.3 basis points.[5] This pattern extends to other mainstream deposit products, generating at least $37.5 million in annual welfare gains for minority consumers. We also find that these branches reduce their account maintenance fees by 30.5% compared to branches in white communities. This reduction substantially lowers entry barriers, decreasing minimum balance requirements by $1,871 for checking accounts and $86 for savings accounts in minority communities.

We next investigate how disclosure affects the lending market, where financial services are both substantial in volume and essential to consumers' daily lives. While prior research extensively examines mortgage lending due to regulatory oversight and data availability (Li (2023b)), we focus on two understudied but important loan types: auto loans and credit cards. Auto loans typically lack the structured oversight and transparency of mortgage lending (Butler et al. (2023)), making quality disclosure particularly important for consumers. Credit cards, as the most widely used credit product, significantly influence consumers' future credit access. By examining these less-regulated market segments, we assess disclosure's effectiveness in mitigating racial biases where traditional oversight is limited. We find that branches in minority communities subject to the disclosure policy reduce their loan rates by 13.5 basis points for auto loans and by 30 basis points for regular credit card rates compared to those in predominantly white communities.

Our comprehensive analysis of both savings and lending markets captures the full spectrum of financial inclusion and economic mobility for minority households. The joint examination is particularly important because these markets are interconnected in determining household financial outcomes: savings market efficiency affects wealth accumulation capacity while lending market access influences households' ability to make important investments and smooth consumption. We document that the disclosure policy generates opposing movements in interest rates across these two markets: deposit rates increase while loan rates decrease

[5] Adjustments to deposit rates made by branches beyond macroeconomic policies reflect their discretionary preferences in providing deposit services. Few studies examine how disclosure policies affect such branch-level decisions and their implications for minority communities.

for minority communities. These contrasting patterns strengthen our identification strategy by ruling out alternative explanations. For example, our findings cannot be explained by monetary policy changes, which would typically move interest rates in both markets in the same direction.

Having established the broad impact of the disclosure policy, we next investigate the mechanisms driving these improvements in financial service terms. Our analysis reveals that complaint narratives serve as an important transmission channel, particularly those highlighting racial discrimination. These narratives influence financial institutions' pricing decisions through reputation and market discipline effects. We conduct two analyses to substantiate this channel. First, we examine changes in branch deposit flows, which capture market-based discipline through consumer choice and directly affect banking system stability (Egan et al. (2017)). Our results show that branches of institutions with more discriminatory complaints experience significant deposit outflows in minority communities. Second, we find that greater exposure to discriminatory complaints leads to larger improvements in product pricing for minority communities, suggesting that public scrutiny motivates institutional response.

These changes in financial service terms translate into tangible economic outcomes for minority households. Using detailed household-level data, we precisely identify racial characteristics and quantify the impact on financial inclusion. Our analysis yields three key findings that demonstrate the real effects of the disclosure policy. First, we observe a significant increase in bank account ownership among low-income minority households in areas with higher concentrations of discriminatory complaints. Second, these households show notably higher auto ownership rates following the policy implementation, indicating improved access to auto financing. Third, minority households in states with more documented discriminatory complaints report substantially greater confidence in credit card approval after the policy takes effect. These results collectively demonstrate that enhanced transparency through disclosure leads to measurable improvements in minority households' participation in the mainstream financial system.

This study makes several important contributions to the literature. First, we advance our understanding of the broad effects of disclosure policies. While prior research primarily examines disclosure at the corporate governance level (Goldstein et al. (2014); Acharya and Ryan (2016); Leuz and Wysocki (2016); Chen et al. (2018); Bertomeu et al. (2021)), we

provide the first systematic evidence on how consumer narrative disclosures shape financial service provision. Our analysis bridges previously separate literature streams - information disclosure in finance and accounting and consumer reviews in marketing (Fennis and Stroebe (2014); Zhang and Li (2021); Varga and Albuquerque (2023)) - by demonstrating how public sharing of consumer experiences can drive institutional change. Furthermore, our comprehensive examination of both savings and lending markets reveals that narrative disclosures have broad effects across different financial services, enriching our understanding of disclosure as a regulatory tool.

Second, we link service quality disclosure to issues of diversity, equity, and inclusion (DEI) in financial services. While extensive research documents unexplained racial discrimination in financial services (Cohen-Cole (2011); Faber and Friedline (2020); Bartlett et al. (2022); Butler et al. (2023)), traditional regulations often face implementation challenges and may create quantity-quality trade-offs (Begley and Purnanandam (2021)). Our study demonstrates that disclosure-based regulation can effectively complement traditional approaches in promoting equal access to financial services. Unlike conventional enforcement mechanisms that depend on regulatory monitoring and legal proceedings, the disclosure of consumer narratives creates continuous market-based pressure through public scrutiny and reputational concerns. We show that this market discipline mechanism leads to meaningful improvements in both deposit and lending terms for minority communities.

Third, we contribute to the growing literature on CFPB's regulatory effectiveness. Prior studies present mixed evidence on CFPB oversight: while some find it reduces predatory practices and stabilizes the financial system (Fuster et al. (2021); DeFusco et al. (2020); Mazur (2022)), others argue it increases compliance costs and limits credit availability (Neugebauer and Williams (2015); Fuster et al. (2021); DeFusco et al. (2020)). We extend this literature by showing how the CFPB's disclosure-based approach can reduce market unfairness through market discipline rather than its direct oversight role. Moreover, while existing research has extensively examined the CFPB's impact on mortgage lending (Dou and Roh (2023); Dou et al. (2024); Li (2023b)), we show that complaint narratives affect a broader range of financial services where traditional oversight is more limited. Our analysis of both savings products and non-mortgage credit markets reveals that disclosure-based regulation can effectively address discrimination in financial services that have historically received less regulatory scrutiny. While researchers have utilized the CFPB's complaints

database to study financial service quality (Haendler and Heimer (2021); Begley and Purnanandam (2021)), most CFPB complaints concern non-mortgage products (see Figure A2). At a broader level, our analysis provides the first comprehensive evidence of how consumer narratives shape financial institutions' behavior across different product markets.

The remainder of the paper proceeds as follows. Section 2 provides institutional background on the CFPB's complaint narrative disclosure policy and describes our data sources. Section 3 presents our main empirical analysis examining how disclosure affects racial disparities in both savings and lending markets. Section 4 investigates the economic mechanisms through which narrative disclosures influence financial institution behavior. Section 5 analyzes household-level outcomes to quantify the real effects of the disclosure policy on minority households. Section 6 introduces the website we developed to assist minority consumers. Section 7 concludes.

2 Background and Data

2.1 Background of CFPB Complaint Narrative Disclosure

The Consumer Financial Protection Bureau (CFPB), created under the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, is an agency dedicated to safeguarding consumer financial interests. The CFPB started accepting consumer complaints about credit cards in July 2011. It then expands its scope to include complaints about bank accounts, credit cards, consumer loans, mortgages, and other financial services. Complaints filed through this process often involve serious allegations, ranging from significant customer service failures to claims of severe misconduct by the financial institution rather than easily resolvable minor issues. The CFPB lists highly detailed product categories within these financial services, which not only facilitates targeted complaints from consumers but also provides researchers with the opportunity to separately test different products by linking CFPB complaint data with product market data.

On March 19, 2015, the CFPB finalized a policy allowing consumers to share their grievances regarding consumer financial products and services publicly.[6] Specifically, when

[6]As early as March 28, 2013, the CFPB discloses complaints about mainstream financial products and services under its regulation. However, the disclosure in 2013 does not release any complaint narratives, and

consumers complain, the CFPB asks them to describe "what happened." After entering these descriptions (i.e., complaint narratives), the CFPB provides a checkbox informing consumers that they can make the narratives public so that "others can learn from my experience." Figure A1 shows a screenshot of the page where consumers submit complaints through the CFPB website.[7]

To familiarize companies with this new system, the CFPB provides a buffer period of over 90 days during which consented-to complaint narratives are not published. This period extends until June 25, 2015, and from that date forward, narrative information begins to appear in the public-facing consumer complaint database. This means that on June 25, 2015, the CFPB publicly released the narratives of consumer complaints. Since then, the public has been able to download information related to the type of financial product involved in the complaint, the submitting consumer's zip code, the submission date, the name of the implicated bank, and the bank's brief response. This disclosure also attracts significant attention from mainstream media.[8] In Figure A2, we present the trends in the number of complaints received across major categories from 2013 to 2022. It is readily apparent that complaints in the savings and lending markets have experienced varying degrees of growth over the sample period, reflecting that the CFPB's complaints system is gaining increasing attention from the public.

We assess whether financial institutions take complaints seriously, particularly those with publicly disclosed narratives, by analyzing complaint resolution outcomes. This study period spans from March 19, 2015, to December 31, 2015. Starting on March 19, 2015, consumers had the option to make their complaint narratives public when filing with the CFPB, and on June 25, 2015, the CFPB began publicly disclosing these narratives. As shown in Table A4 and Figure A3, financial institutions significantly improve their complaint resolution practices following the public disclosure of narratives. Specifically, the disclosure leads to a 3.9% reduction in consumer disputes, a 0.5% increase in the likelihood of timely responses

the public only has access to the number of complaints.

[7]Most complaints are submitted via the portal. On the website, consumers need to complete five steps, answering the following questions: "What is this complaint about?", "What type of problem are you having?", "What happened?", "What company is this complaint about?" and "Who are the people involved?" The choice to disclose narratives occurs in the third step. After consumers submit their complaints, the CFPB then sends the complaint to the company and works to get a response to the consumer within 15 days.

[8]For example, see "Details of Consumers' Financial Complaints to Go Public," March 19, 2015, The Wall Street Journal. And "Consumer finance complaints hit the Internet," June 26, 2015, MarketWatch.

from institutions, and a 2.1% increase in the likelihood of monetary relief for complaints with narratives. These results provide preliminary evidence that the public disclosure of complaint narratives has led to changes in how institutions handle consumer complaints, ultimately benefiting consumers.

Building on this, our study primarily focuses on the changes in racial disparities in the savings and lending markets following the CFPB's public release of complaint narratives in June 2015.[9] After the disclosure policy takes effect, there are 871,960 complaints with narratives in the savings and lending markets. We apply the textual analysis method described by Li (2023a) to the complaint narratives, identifying 38,679 complaints related to racial discrimination.[10] Additionally, We provide three examples of discriminatory complaints in the savings and lending markets in Table A1 to demonstrate the accuracy of the text identification. These examples include key details such as "Date received," "Product," "Consumer complaint narrative," "Company," and "Company response." While personal data are de-identified, claims of racial discrimination are clear. For example, in panel A, one consumer writes, "...due to abuse of power by the president at the bank based on stigmatized and stereotyped views of another race," indicating potential racial misconduct by the financial institution.

It is important to note that although the CFPB supervises a range of companies to assess their compliance with federal consumer financial laws, not all financial institutions fall under its oversight. This means that not all financial institutions are directly affected by disclosing complaint narratives. Fortunately, the CFPB provides a list of supervised depository institutions and affiliates. In the following subsection, we categorize financial institutions based on this list.

[9]We consider June 25, 2015, as the critical date for the disclosure policy rather than March 19, 2015. This is because, starting June 25, the complaint narratives in the CFPB's datasets are accessible to all users. Our identification results are also robust when considering March 19, 2015, as the policy date.

[10]When narratives disclosed by the CFPB contain terms such as "discrimination", "unfair", "partial", "inequity", "prejudice", "injustice", or other similar words, we classify these as discriminatory complaints. For a more detailed explanation, please see Li (2023a).

2.2 Data Sources

2.2.1 RateWatch

We collect a broad range of branch-level financial product interest rate and fee data from RateWatch, focusing on the deposit interest rate, loan rate, and fee at the bank branch-week level. Our dataset spans from January 2013 to December 2022,[11] aggregated to the quarterly level.[12] Our analysis primarily examines product pricing performance in the savings and lending markets. We aim to identify how institutions proactively respond to disclosure policies. Therefore, we limit our examination to branches that actively set their rates (Drechsler et al. (2017)). From the wide variety of products in RateWatch, we primarily focus on CDs and maintenance fees within the savings market, as well as auto loan rates and credit card rates in the lending market. Specifically, we select the following products for our analysis:

In the savings market, we mainly focus on the interest rates of the most popular deposit products, notably 12-month CDs with an account size of $10,000, along with rates for other mainstream CDs and money market accounts (Dlugosz et al. (2024); Lin (2020); Drechsler et al. (2017)). For fees, we investigate the minimum account balances required to avoid account maintenance fees for savings and checking accounts (Migueis et al. (2022)).

In the lending market, we begin our discussion with loan rates for vehicles, including both short-term and long-term loans (36-month and 72-month terms) (Wang (2024); Yi (2022)). We also examine credit card loan rates, focusing on regular and introductory interest rates (Chava et al. (2023)).

2.2.2 CFPB Database

We utilize the publicly available CFPB consumer complaints database to assess the nature of complaints against institutions in the savings and lending markets. In June 2015, the CFPB started publicly disclosing consumer complaint narratives. We collect all complaints from the CFPB complaints database between 2015 and 2022 and identify complaints in the

[11] In this study, the primary sample period is 2013-2022. We exclude samples prior to 2013 because the CFPB made several adjustments to its complaints database during that time, which could introduce unknown identification biases (Dou and Roh (2023); Haendler and Heimer (2021)).

[12] We consider the last record of each selected product in a single quarter as the observed value for that product's interest rate or fee for the quarter.

savings and lending markets (including both auto loans and credit card loans) based on the product information related to the complaints.

According to the official regulation rules, the CFPB exercises supervisory authority over banks, thrifts, and credit unions with assets exceeding $10 billion and their affiliates. We match these supervised institutions with our main datasets (e.g., RateWatch) using the institution ID (Research Statistics Supervision Discount Identifier) from the CFPB's regulated institution list.[13] Moreover, the CFPB oversees non-depository mortgage originators and servicers, payday lenders, and private student lenders of all sizes, as well as larger participants in other consumer financial markets as defined by CFPB rules. Institutions of these types appearing in our datasets are also considered under the influence of disclosure regulations.

2.2.3 Others

Summary of Deposits (SOD): This dataset provides branch-level deposit amounts from FDIC-insured institutions. It includes annual data collected as of June 30 for the years 2013 through 2022.

Current Population Survey (CPS): This dataset provides household-level bank account ownership and household characteristic variables, including income level, maximum education level, household size, and employment category. It includes annual data for the years 2013 through 2022, but only odd-numbered years contain the required dependent variable for our analysis.

American Community Survey (ACS): This dataset provides household-level auto ownership and household characteristic variables. It includes annual data for the years 2013 through 2022.

Survey of Household Economics and Decisionmaking (SHED): This dataset provides household-level self-reported confidence in credit card approval and household characteristic variables. It includes annual data for the years 2013 through 2022.

County Characteristics Data: We collect county-level demographic indicators from the Bureau of Economic Analysis and the Census Bureau, including total population, racial composition, and per capita income. The dataset covers annual data from 2013 to 2022.

[13]The institution list is available at (see: `link`). For our analysis, we categorize institutions based on the list from the March 31, 2015 edition, which is the closest date to when the CFPB finalizes the disclosure policy.

The proportion of minority groups in each county is used to identify minority communities.

2.3 Summary Statistics

Table 1 displays the summary statistics for the key variables in our data samples spanning from 2013 to 2022. Panel A of Table 1 showcases the distribution of branch-level variables. These include interest rates for deposits, auto and credit cards, account maintenance fees from RateWatch, and deposit amounts for each branch from the SOD dataset. Due to varying data frequencies across different datasets, variables from RateWatch are presented on a year-quarter basis, while deposit amounts from the SOD are on an annual basis. Panel B presents household-level indicators from three different survey datasets: the ownership of bank accounts and vehicles, as well as respondents' confidence in being approved for a credit card. Panel C offers insights into county-level characteristics, with these data points also measured annually.

In compiling these statistics, we apply a cap of 100 billion total assets, including only branches from institutions with total assets below 100 billion dollars as of the second quarter of 2015. We drop large banks to ensure that institutions affected by the disclosure policy (treatment group) and those not affected (control group) are comparable without systematic differences (Li (2023b)).[14] To analyze racial differences in financial services pricing, we define counties where the minority (non-white) population exceeds 50% of the total in 2015 as minority communities, based on the racial distribution in each county. These communities account for 7% of the national population yet represent 82.5% of the nation's minority residents.

[Insert Table 1 about here]

Furthermore, Table A3 displays the distribution of interest rates in our primary dataset, RateWatch. Column (1) focuses on the sample of CFPB-oversight institutions, while Column (2) examines non-CFPB-oversight institutions. Panel A shows the composition of Deposit interest rates. Column (1) indicates that 127 CFPB-oversight institutions operate 537 branches capable of actively setting interest rates in 310 counties. Each institution has 1.1

[14]Banks with larger asset sizes, in comparison to smaller banks, might have unique capital structures or benefit from economies of scale. Additionally, these banks face increased regulatory oversight after the Dodd-Frank Act's implementation. Specifically, bank-holding companies with assets over $100 billion are now under more rigorous supervision and must undergo regulatory stress tests as part of the Comprehensive Capital Analysis and Review (CCAR) framework established in 2011.

branches per county, with these branches adjusting interest rates 5.82 times during the sample period. For the institutions not under CFPB oversight, as shown in Column (2), they operate an average of 1.03 branches per county and adjust rates fewer than 8 times, which is consistent with the branches of CFPB-supervised institutions. Panels B and C present similar distributions for auto loan rates and credit card rates. Rate-setting branches adjust auto loan rates more frequently, reflecting the flexibility of this market. In contrast, fewer branches engage in credit card rate setting, suggesting that these rates are more likely to be determined by standardized policies. Overall, after excluding large financial institutions, the variations of interest rates remain relatively balanced, with a sufficient number of rate changes to provide adequate variation for our analysis (Begenau and Stafford (2023)).

3 The Impact of CFPB Disclosure on Racial Gaps in the Financial Services

This section empirically assesses the impact of CFPB complaint narrative disclosure on racial gaps in both savings and lending markets. We analyze deposit interest rates and account maintenance fees at the institutional level within the savings market and focus on auto loans and credit cards as representative types in the lending market.

3.1 Model Specification

We begin our analysis by examining the impact of complaint narratives disclosure on racial gaps in the prices of the four products, using a triple-difference estimation method as follows:

$$\begin{aligned} Y_{i,c,t} =& \alpha + \beta_1 Treat_i \times Post_t \times Minority_c \\ &+ \mathbf{X}\theta + \mu_{Branch} + \mu_{YearQuarter} \\ &+ \mu_{Institution \times Year} + \mu_{Product \times Year} + \epsilon_{i,c,t} \end{aligned} \tag{1}$$

Where the Y_{ict} represents the pricing for four prevalent financial services: deposit rates, account maintenance fees, auto loan rates, and credit card rates of branch i in county c at time t. $Treat_i$ is a binary variable; it equals one if branch i belongs to an institution under

the oversight of the CFPB in the first quarter of 2015. A zero value of $Treat_i$ indicates that branch i is not under CFPB regulation. $Post_t$ captures the period before and after the CFPB made complaint narratives public, equating to one if the time is in the second quarter of 2015 or later. We categorize the counties where branches are located into two groups based on the minority ratio. If the ratio exceeds 50%, the dummy variable $Minority_c$ is set to one. Otherwise, it is zero. $\mathbf{X}$ is a vector that consists of the remaining interaction items from the triple-difference setting and county characteristics, including the county's population and the growth rates of per capita income.

We employ a series of fixed effects to capture unobservable variations across different years in the entities setting deposit rates. Branch fixed effects control for the unique characteristics of different branches (such as the quality of the branch's service). Time (year-quarter) fixed effects absorb changes in the savings market over time (such as government transitions and adjustments to economic policies). Institution-year fixed effects control for pricing differences in interest rates among different institutions. This fixed effect allows us to identify pricing disparities adopted by banks with similar characteristics solely due to the racial composition of the communities they serve. When our analysis encompasses more than one product discussed in a single regression, we include product-year fixed effects to mitigate time-varying disturbances between products. We cluster standard errors at the institution, county, and year level to address potential bias arising from correlated disturbances. The coefficient of triple difference interaction item β_1, which we focus on, identifies changes in the racial gap regarding the setting of four prevalent financial services—deposit rates, account maintenance fees, auto loan rates, and credit card rates— in the treatment group after the disclosure of the complaint narrative, compared to the control group.

3.2 Results in Deposit Interest Rates

The savings market serves as a vital gateway for individuals to access financial services. However, it has historically faced less stringent regulatory oversight regarding discriminatory practices, highlighting the need for a comprehensive analysis. This section primarily focuses on deposit rates, which are particularly significant among the various metrics in this market for their direct impact on wealth accumulation.

To estimate the impact of complaint narratives disclosure on deposit rates, we focus on

the most commonly used CDs and MMs, specifically 12-month CDs with an account balance of $10,000 (12MCD10K). As shown in Table 2, the coefficient for the triple-difference item ($Treat \times Post \times Minority$) in Column (1) is significantly positive. The results indicate that, on average, the disclosure policy leads branches in minority communities to raise their deposit rates by 6.3 basis points, which corresponds to 12.1% of the sample mean. These findings suggest that treated banks reduce the racial gaps in setting deposit rates across different communities after implementing the disclosure policy. We also employ the same specification with county-institution-year fixed effects in Column (2) to control for unobservable potential biases. The results are highly consistent with those in Column (1), with the triple interaction coefficient in Column (2) remaining positive and statistically significant at the 1% level.

Furthermore, Columns (3) and (4) include data from 12 types of CDs and MMs products from the savings market, following the specifications of Columns (1) and (2) respectively.[15] Product-year effects are controlled to address time-varying differences among products, and the results remain positive and significant. The large sample estimation provides strong evidence for a direct effect of the disclosure policy on deposit rates that increase within minority communities. Based on the estimates from Column (3), the coefficient of $Treat \times Post \times Minority$ indicates that a treated branch in minority communities will, on average, increase the deposit rate by 3.2 basis points. We roughly calculate that the CFPB disclosure brings to consumers in minority communities by the CFPB disclosure amounts to at least $37.5 million per year.[16] Considering that this disclosure policy is not specifically designed to resolve racial disparities, this effect is substantial.

[Insert Table 2 about here]

A potential concern is that our specification uses a cap (total assets within $100 billion

[15]The 12 products refer to six types of CDs: 03MCD10K, 06MCD10K, 12MCD10K, 24MCD10K, 36MCD10K, and 12MCD100K, as well as six MM accounts: MM2.5K, MM10K, MM25K, MM50K, MM100K, and MM250K.

[16]Our calculation is based on the following process: the average total deposit amount per branch for treated branches operating in minority communities is $174.37 million. In Column (3) of Table 2, the coefficient for Treat×Post×Minority indicates that a treated branch in minority communities will increase the deposit rate by 3.2 basis points. Simplifying this, it means that each branch must pay an additional $0.06 million per year in deposit interest to consumers in minority communities. As reported by the Summary of Deposits, 928 treated branches are operating in minority communities. Some loans have consistently been noninterest-bearing and, therefore, are unaffected by changes in disclosure policies. Accordingly, we examine data indicating that FDIC-insured domestic noninterest-bearing loans account for approximately 27.5% of total loans in 2015 Q4. Based on these figures, we estimate that, across the savings market for one year, consumers in minority communities receive an improvement in interest payment of at least $37.5 million.

for institutions) that might artificially restrict the institutions analyzed, thereby possibly biasing the results. To address this, we adjust the cap thresholds based on the setting in Column (1) of Table 2 and display the triple interaction items estimated at different caps for robustness.

As shown in the figure, we set a new cap every $20 billion from $20 to $500 billion and perform an estimation at each point. The significance of the coefficients displayed in Figure A4 validates the effectiveness of our estimation results. The trend in the coefficients suggests that smaller caps yield more pronounced estimation effects, which may be due to systemic differences between large financial institutions and smaller ones. When we use $20 billion as the asset cap for institutions in the treatment group, the estimation coefficient in this figure (the leftmost bar) indicates that the disclosure policy leads branches in minority communities to increase their deposit rates by 7.5 basis points. When the cap is set at $500 billion, the effect of disclosure on increasing deposit rates can still reach 4.8 basis points (the rightmost column bar). Considering the distribution of observations in treated and control branches, we conclude that the baseline cap (indicated by the red bar in the figure) is appropriate.

Furthermore, it is important to note that the validity of the triple-difference model in estimation hinges on the satisfaction of the parallel trends assumption. In our setting, this assumption can be described as follows: the racial gaps between treated branches in minority counties and control branches in minority counties, and racial gaps in white counties, share parallel trends (prior to the disclosure policy). When this assumption is met, we have grounds to believe that the triple-difference model can accurately estimate the true effects of the disclosure policy. To verify the validity of the assumption of parallel trends, we conduct event study tests based on Equations (1). The event study not only statistically validates the parallel trend assumption but also provides a dynamic estimation of the impact of the disclosure policy. Figure 1 reports these results. In the quarters before the disclosure, no effects significantly different from zero are identified, and the estimated coefficients for the pre-trend are stable over time, showing no abnormal trends. After the disclosure, immediate and long-lasting changes in the deposit rate settings for minority communities occur. The disclosure policy is not a one-time policy shock but a long-term design that has been in effect since its inception. This means that the CFPB continuously receives and discloses narratives related to complaints. Therefore, the observation of the long-term impacts of this policy in

the event study is undoubtedly consistent with expectations.

[Insert Figure 1 about here]

Additionally, we employ various robustness strategies to corroborate the reliability of our findings. First, we use two different forms of the dependent variable. The first is the average rate of a branch within a given quarter. The second is the rate spread, defined as the difference between the rate in the last week of the quarter and the Federal Funds target rate.[17] The results presented in Table A5 reinforce our findings, showing that our conclusions are robust and not sensitive to the form of the outcome variable. Second, we substitute the dummy variable representation of minority communities with the continuous minority ratio for each county in our main results presented in Table 2. The outcomes remain consistent, as demonstrated in Table A6. Third, we further examine the impacts of the disclosure policy on key minority racial groups. Table A7 indicates that the disclosure of complaints primarily improves deposit rates for Blacks.

Fourth, we employ a difference-in-discontinuities (diff-in-disc) design (Bennedsen et al. (2022); Grembi et al. (2016)) to identify the effects of any potential preexisting discontinuities at the threshold. This model captures the difference between the pre-disclosure and after-disclosure periods at institutions with total assets of $10 billion within both minority and white communities.[18] As shown in Table A8, in minority communities, deposit rates at institutions with total assets above $10 billion increase significantly after the implementation of the disclosure policy. In contrast, deposit rates in white communities remain relatively stable throughout the study period. Lastly, branch ownership changes during the sample period—such as transfers between institutions—could potentially influence the identification results, especially if they occur across the treatment and control groups. Using data from RateWatch, we identify branches that experienced ownership transitions during the sample period. After excluding these branches from the analysis, the regression results remain consistent and robust, as shown in Table A9.

[17] We collect the Federal Reserve Economic Data (FRED) on the Fed funds target rate from 2013 to 2022 to identify the rate spread of the products of interest.

[18] According to the regulation rules, the CFPB has supervisory authority over banks, thrifts, and credit unions with assets exceeding $10 billion, as well as their affiliates. In this analysis, to ensure that the $10 billion asset threshold represents a sharp discontinuity, we concentrate on banks, thrifts, and credit unions while excluding their affiliates.

3.3 Results in Account Maintenance Fees

After discussing the effects on deposit rates, we next focus on account fees within the savings market. Although existing research rarely addresses account fees, this topic is crucial for consumers. Once an individual opens an account, they may encounter fees to maintain it. Our discussion centers on maintenance fees for the two most commonly used accounts: checking and savings. Existing qualitative studies on financial services suggest that these high costs may prevent some consumers from engaging in traditional banking (Servon (2017)). Faber and Friedline (2020) empirically demonstrate that Black and Latinx populations need higher minimum balances to avoid service fees. Our research examines how the CFPB's disclosure policy improves the unfair treatment of minority consumers regarding fees.

We still estimate the impact on maintenance fees based on the setting in Equation (1). The data structure used to identify fees is consistent with the data structure when discussing deposit interest rates. However, here, the dependent variable becomes maintenance fees, specifically the minimum balances required to avoid fees. For these threshold-based fees, we consider their performance on both checking and savings accounts simultaneously. Therefore, product-year fixed effects are included in the regression.

[Insert Table 3 about here]

Table 3 shows how the racial gaps in minimum balances required to avoid fees on savings and checking accounts are influenced by CFPB disclosure. Column (1), based on the baseline setting, reveals that after the disclosure of complaint narratives, treated branches in minority communities reduce maintenance fees for savings accounts by 30.5% compared to white communities. Column (2) builds on Column (1) by adding county-institution-year fixed effects to control for unobservable potential biases. Columns (3) and (4) extend the analysis to checking accounts, yielding results consistent with those observed for savings accounts. Based on the results presented in Columns (1) and (3), we calculate that this reduction corresponds to a decrease of $1,871 in the minimum balance requirement for a checking account and $86 for a savings account for each consumer in minority communities.[19] Given the extensive use of savings and checking accounts, this effect has a significant economic magnitude. Additionally, we conduct an event study analysis of this effect, demonstrating that our analysis does not have pre-trend issues, as detailed in Figure 2.

[19]In this dataset, the average minimum balances set by treated branches in minority communities to avoid service fees are $5,455.4 for checking accounts and $282.8 for savings accounts.

[Insert Figure 2 about here]

3.4 Results in Auto Loan Rates

Auto loans are a widely used loan product. However, the regulatory oversight on these loans is not strong, and information such as applicant/borrower race, which is used to identify discrimination, is often not required to be reported by auto lenders. The opaque nature of the auto loan market hinders the ability to effectively oversee lenders' consideration of factors such as race and ethnicity, leading to a dearth of scholarly work in this area. Butler et al. (2023) use credit bureau records to prove the existence of discrimination against minority borrowers in the auto loan market. However, no one has yet focused on whether the CFPB's disclosure policy helps alleviate unfair conditions in auto loans.

Table 4 reports the changes in auto loan rates. The estimated coefficients of the triple interaction indicate that after complaint narratives are disclosed to the public, the loan rates set by treated branches in minority communities, compared to rates in white communities, decrease by 13.5 basis points, equivalent to 3.3% of the sample mean. After incorporating county-institution-year fixed effects, the reduction increases to 24.1 basis points, equivalent to 5.9% of the sample mean. These statistically and economically significant results demonstrate the improvement in lending conditions for consumers in minority communities due to the disclosure policy.

[Insert Table 4 about here]

The event study results in Figure 3 support our triple-difference estimation results. Based on the setting in Column (1) of Table 4, the quarterly estimation results in Figure 3 indicate that before the disclosure occurs, the identified racial gaps in treated branches do not significantly differ from those in control branches. The policy effects persist over the long term. The majority of the post-disclosure estimated coefficients displayed in the figure exhibit negative values.

[Insert Figure 3 about here]

3.5 Results in Credit Card Rates

Credit cards are widely used and play a crucial role in providing households with access to short-term funds and additional financial support. They help consumers manage their

spending on various items and services, as well as deal with unexpected costs and financial challenges that may arise. Prior research demonstrates racial disparities in the credit card market, showing that individuals in black communities receive less consumer credit than those in white communities, even when borrowers have identical personal characteristics (Cohen-Cole (2011)). Consequently, it is important to examine whether the disclosure of complaint narratives is an effective method for mitigating racial gaps in the credit card market.

We present the analysis results in Table 5. Columns (1) and (2) show the results for regular loan rates. The estimated coefficient of $Treat \times Post \times Minority$ indicates that treated branches in minority communities, compared to those in white communities, lower loan rates by 30.2 basis points, which corresponds to 2.5% of the sample mean. When we include county-institution-year fixed effects, this effect increases to 40.1 basis points, remaining statistically significant at the 1% level.

Columns (3) and (4) report the results for introductory loan rates. The coefficient of the triple interaction term in Column (3) suggests that, following the implementation of the disclosure policy, treated branches in minority communities lower introductory loan rates by 14.5 basis points, equivalent to 10.6% of the sample mean. The inclusion of county-institution-year fixed effects in Column (4) does not change the results, which remain negative and statistically significant.

[Insert Table 5 about here]

Our event study results provide some support for our argument. Figure 4 illustrates that following the implementation of the disclosure policy, treated branches gradually reduce loan rates in minority communities. The long-term impact, as indicated by the coefficient in the final period of the figure, is more pronounced compared to the short-term effects.

[Insert Figure 4 about here]

4 Channel Discussion

We observe that after the disclosure of complaint narratives, minority consumers experience improvements in both savings and lending markets compared to white consumers. This effect likely follows a two-stage influence process. First, the public disclosure of complaints may harm the financial institution's reputation, leading to reduced trust among consumers

and other stakeholders. These parties may respond by altering their behavior, such as withdrawing assets from institutions perceived to have discriminatory practices, thereby signaling these institutions. Second, financial institutions, worried about the behavior of stakeholders or the negative impacts they have already suffered, may take steps to enhance consumer welfare and mitigate the negative impacts of complaint disclosures on their operations.

Given that this process is complex and challenging to identify comprehensively, we provide a preliminary analysis in this section. We review existing research on both direct and indirect mechanisms through which complaint disclosures become effective. Furthermore, we empirically examine behavioral changes in response to the disclosure policy for two key groups: consumers (as complaint initiators) and financial institutions (as complaint respondents).

4.1 Consumer Behavior

Various reports and academic studies suggest that such disclosures can indeed affect an institution's goodwill. A notable example is the case of Wells Fargo, the fourth-largest bank in the United States, which faced another phony bank accounts scandal in 2022. This incident potentially exposed the bank to fines and penalties amounting to billions of dollars. During this exposure, the complaint narratives in the CFPB attracted media attention. Some media outlets actively questioned Wells Fargo and contacted banking regulators.[20]

The CFPB's disclosure of complaint narratives helps external parties monitor financial institutions' operational status. Research by Li (2023b) shows that in the mortgage lending market, an increase in complaint narratives leads consumers to reduce loan applications to banks with severe discriminatory complaints. For publicly listed companies, the disclosure of such complaints can also lead to a decrease in cumulative abnormal returns. Moreover, other institutions may recognize the harm caused by discrimination and enter markets where heavily complained-about institutions operate. The analysis by Dou and Roh (2023) of all complaints in the mortgage market, regardless of their nature, shows consistent results. Dou et al. (2024) reveal that institutions can learn from their peers' operational deficiencies through complaints and adjust their expansion strategies accordingly. These findings suggest that consumers and other stakeholders make meaningful behavioral changes in response to

[20]For more details, see: `link`

complaints against financial institutions.

Existing research on the impacts of complaint narratives disclosure has mainly focused on the mortgage lending market. Depositors, another major stakeholder in the savings market affected by the CFPB disclosure policy, also deserve attention for their reactions. In light of this, we analyze deposit amounts across various branches to test for deposit transfers induced by the CFPB disclosure. This analysis examines how depositors react to the CFPB disclosure policy, completing the picture of how complaint narrative disclosure affects financial market stakeholders.

Chen et al. (2022) show that bank information transparency can influence depositors' behavior in transferring deposits. While the CFPB's disclosure policy does not directly reveal financial institutions' performance information, it exposes the public to consumers' (negative) evaluations of these institutions. If treated branches in minority communities exhibit inappropriate practices and are exposed to complaints narratives, depositors in these branches might transfer some of their deposits after disclosure, resulting in branch-level deposit outflows.

We use changes in branch-by-year level deposit amounts from the SOD dataset to identify the impact of the disclosure policy. We modify Equation (1) by changing the time level to yearly and splitting the treatment group branches into two subgroups based on the ratio of complaints to total assets in 2015. The first group consists of branches of institutions with discriminatory complaints as a proportion of total assets exceeding the median (*HighCompl*), while the second group includes branches of institutions below the median(*LowCompl*). This segmentation allows us to observe whether discriminatory complaints influence deposit transfer behavior in minority communities. This setup is equivalent to estimating two triple-difference models simultaneously in one regression. Table 6 presents the results.

[Insert Table 6 about here]

Table 6 confirms the existence of deposit outflows, with varying degrees across branches with different complaint situations. The term $HighDiscCompl \times Post \times Minority$ shows that deposit transfers are significant in treated branches within minority communities with a high ratio of discriminatory complaints, leading to a 5.8% deposit loss, as shown in Column (1). The other segmented treatment group also shows a negative coefficient for the triple interaction term but with smaller magnitudes and no statistical significance. This suggests

that consumers effectively use information from complaint narratives and confirms that the public notices and utilizes the CFPB's narrative disclosure policy. Column (2) adds county-year fixed effects to absorb unobservable disturbances, with results remaining robust.

[Insert Figure 5 about here]

We present the event study trend for branches with high and low discriminatory complaints, respectively, in Figure 5. Pre-trend does not exist in either of the two panels. Panel (a) indicates that branches with a high proportion of discriminatory complaints experience significant deposit outflows in the first year following the shock, after which the outflows gradually subside. This is consistent with our expectations, as the effects of the discriminatory complaints in 2015 are unlikely to persist over the long term. The attenuation may be attributed to adjustments made by the focal institution in response to the complaints or other changes that occurred in the following periods. Panel (b) represents the results for branches with low discriminatory complaints, where the coefficients are also negative, but none of them are statistically significant.

4.2 Complaint Respondents Response

Financial institutions, as respondents to complaints, have a motive to improve their management practices to mitigate potential losses from both the direct and indirect effects of complaint dissemination. Our analysis confirms that after public disclosure, complaints with narratives are resolved faster, receive more monetary relief, and result in fewer subsequent disputes. Li (2023b) analyzes officer career path data in the mortgage market and finds that after public disclosure, officers in institutions with many discriminatory complaints are less likely to be promoted, more likely to change jobs, and often move to smaller institutions. These responses demonstrate that financial institutions pay attention to complaint narratives. This attention may stem from concerns about reputation, potential legal risks associated with discriminatory behavior, or commitment to DEI compliance. These motivations lead institutions to take steps to improve conditions for minority consumers following the public disclosure of complaint narratives.

Although this study cannot identify all the channels through which financial institutions improve minority consumer welfare, we provide evidence based on the varying outcomes that institutions perform when institutions respond to various complaint situations. If stakehold-

ers can detect discriminatory complaints due to public narrative disclosure, and institutions take these seriously, we should observe different effects of disclosure on financial product pricing (i.e., interest rates) across branches with varying complaint situations. Using a setup similar to Table 6, we extend the baseline triple difference model discussed in Sections 3 by dividing the treatment into two groups based on complaint situations.

[Insert Table 7 about here]

Table 7 presents our findings. Column (1) shows differences in deposit interest rates between two groups: institutions with the ratio of discriminatory complaints to total assets above the median and those below the median. The estimated coefficients indicate a gradual decrease in disclosure impact across these groups. T-test results reveal that the coefficient for the triple interaction term $HighDiscCompl \times Post \times Minority$ is significantly larger for the group with a high ratio of discriminatory complaints compared to the group with a low ratio. Although the disclosure policy's effect varies among institutions with different complaint situations, the consistent direction of coefficients implies that even institutions with a low ratio of discriminatory complaints may improve the fairness of their financial services.

Column (2) presents loan interest rates in the lending market, using combined data from auto loan and credit card rates (with market-year fixed effects to account for differences between these loan types). The results demonstrate that branches under CFPB regulation show different policy effects based on their complaint situations. The analysis in Table 7 supports the effectiveness of the disclosure policy and suggests that awareness of complaint narratives can motivate financial institutions to place greater emphasis on fairness and equality in their financial services.

5 Real Effects

Previous analyses primarily focus on the prices of financial products and services, but whether these changes translate into tangible improvements in consumers' lives remains unclear. Additionally, earlier research often relies on county-level population distributions to differentiate between minority and white communities, which may introduce imprecision and

potential confounding effects.[21] To address these concerns, we extend the existing studies by examining the impact of the disclosure policy on different racial households, with a particular focus on low-income and minority households. Specifically, we assess the improvements in bank account ownership, auto ownership, and credit card approval confidence.

For more details, we first explore the racial disparities in bank account ownership, assessing how the policy has affected the likelihood of owning a checking or savings account. Next, we examine the differences in auto ownership, a key factor in economic mobility, to understand how the policy impacts vehicle access across racial groups. Finally, we investigate the effect of the policy on credit card approval confidence, focusing on how it has shaped minority households' perceptions of their ability to secure credit. Together, these results offer a comprehensive view of the policy's role in addressing racial disparities in financial access.

5.1 Results on Racial Gaps in Bank Account Ownership

We utilize data from the CPS, ACS, and SHED to examine the effects of the disclosure of complaint narratives policy on financial inclusion across three key variables: bank account ownership, auto ownership, and credit card approval confidence. Firstly, we focus on bank account ownership. The possession of a checking or savings account is a fundamental aspect of financial inclusion, providing households with essential access to financial resources and services. For low-income and minority households, being *unbanked* can lead to exclusion from critical financial tools, such as savings, credit building, and affordable loans, thereby limiting economic mobility and stability. The model specification is as follows:

$$\begin{aligned} BankAccount_{i,c,t} =& \alpha + \beta_1 DiscCompl_{i,c} \times Post_t \\ &+ \mathbf{X}\theta + \mu_{State} + \mu_{Year} + \mu_{SimilarHousehold} + \epsilon_{i,c,t} \end{aligned} \tag{2}$$

Here, the dependent variable, $BankAccount_{i,c,t}$, represents whether household i in county c owns a savings or checking account in year t. Our primary focus is on account ownership within low-income households in minority samples.[22] We concentrate on these households

[21] For example, areas with higher minority populations might also be poorer or face greater financial risks, which could lead to policy effects addressing economic conditions rather than racial discrimination issues.

[22] A low-income household is defined as one with an income that is above the Federal Poverty Line (FPL) but below twice the FPL. For more information about FPL, see: the poverty line guidelines.

because low-income families often have lower participation rates in financial services, particularly in bank account ownership, which directly impacts their ability to accumulate wealth and ensure financial security (Célerier and Matray (2019)). The key independent variable of interest, $DiscCompl_c \times Post_t$, is an interaction term that captures the effect of the policy intervention in relation to the level of complaints within the community. $DiscCompl_{i,c}$ is a binary variable indicating whether there were any discriminatory complaints in county c in 2015. $Post_t$ is a post-policy implementation indicator that equals one for years 2015 and beyond, and zero otherwise. $\mathbf{X}$ includes the remaining interaction items from the difference-in-difference framework, along with county-level control variables such as population and the growth rates of per capita income. Year fixed effects μ_{Year} and state fixed effects μ_{State} account for unobserved temporal and spatial heterogeneity. $\mu_{SimilarHousehold}$ represents the interaction of household characteristic variables, including income level, maximum education level, household size, and employment category. This ensures that the effects we identify reflect the impact of the disclosure policy on households with similar conditions. Standard errors are double clustered at the county and year level to address potential correlations.

[Insert Table 8 about here]

Table 8 presents the regression results examining the impact of complaints on account ownership across different racial households. Column (1) reports the results for minority households. The estimated coefficients of the interaction term $DiscCompl \times Post$ indicate that after the implementation of the disclosure policy, the likelihood of account ownership in minority households, particularly those in low-income brackets, increases by 2.7%, corresponding to a statistically significant change of approximately 3% of the sample mean, demonstrating a positive impact of the policy on account ownership within these households.

In contrast, Column (2) reports the results for the samples of white households. The coefficient on the interaction term $DiscCompl \times Post$ is negative and statistically significant at the 5% level, indicating a decrease of 3.5% in the likelihood of account ownership after the disclosure policy implementation. To further assess this disparity, I employ Fisher's permutation test on the between-group difference, revealing that the empirical distribution of the coefficients differs significantly between minorities and whites, with a difference of 0.062 and the p-value is 0.031, confirming that the policy's impact is significantly greater for minorities than for whites. This decrease effectively offsets the pre-existing advantage,

implying that the disclosure policy mitigated the potential advantages previously held by white households in these counties.

5.2 Results on Racial Gaps in Auto Ownership

Auto ownership is a vital factor in facilitating economic mobility and access to essential services. It plays a crucial role in determining an individual's ability to participate in the labor market, access education, and engage in social activities. Moreover, disparities in auto ownership reflect broader socioeconomic inequalities, making it a critical area of study for understanding and addressing racial and economic disparities. In this subsection, we analyze auto ownership at the household level. Compared to county-level classifications of minority communities, a more precise identification of race at the household level provides a clearer assessment of the real effects of the disclosure policy on auto ownership, particularly among disadvantaged households.

Following Equation (2), we change the dependent variable to auto ownership, representing whether household i in county c owns a vehicle in year t. Table 9 presents the regression results examining the impact of complaints on auto ownership across different racial households. Column (1) reports the results for minority households. The estimated coefficients of the interaction term $DiscCompl \times Post$ indicate that after the implementation of the disclosure policy, the likelihood of auto ownership in minority households, particularly those in low-income brackets, increases by 0.4%, corresponding to a statistically significant change of approximately 0.49% of the sample mean, demonstrating the positive impact of the policy on auto ownership within these communities.

[Insert Table 9 about here]

In contrast, Columns (2) report the results for the samples of white households. The coefficients on $DiscCompl \times Post$ are not statistically significant, suggesting that the policy does not have a discernible impact on auto ownership among white households. This difference in effects between minority and white households highlights the policy's role in addressing disparities in auto ownership, particularly in minority communities where access to vehicles may be more constrained.

5.3 Results on Racial Gaps in Credit Card Approval Confidence

Credit card approval confidence serves as a key measure of financial inclusion, as it indicates individuals' perceived ability to access credit—a crucial component for achieving economic stability and advancement. For low-income and minority households, having confidence in their ability to access credit can be instrumental in building a credit history, accessing affordable loans, and achieving long-term financial goals. In line with our previous analysis setting in Equation (2), we now focus on the households' self-reported confidence in credit card approval.[23] This variable is categorized into three levels: not confident, somewhat confident, and very confident. This allows us to assess whether the disclosure policy has effectively enhanced financial confidence among minority households. By focusing on responses from low-income households, we aim to isolate the impact of these policy interventions on a demographic that is frequently marginalized in financial markets.

[Insert Table 10 about here]

Table 10 presents the regression results examining the impact of complaints on credit confidence across different racial households. Column (1) reports the results for minority households. The estimated coefficients of the interaction term $DiscCompl \times Post$ indicate that after the implementation of the disclosure policy, the level of credit confidence in minority households, particularly those in low-income brackets, increases by 42.6%, corresponding to a statistically significant change of approximately 22.18% of the sample mean, demonstrating the positive impact of the policy on credit confidence within these households.

In contrast, Column (2) presents the results for white households. The coefficient on the interaction term $DiscCompl \times Post$ is also statistically significant, but the value is much lower at 0.040, accounting for only 1.89% of the sample mean, providing little reason to believe that the policy has strong economic significance for whites. The result of Fisher's permutation test confirms that the policy's impact on credit confidence is significantly greater for minorities than for whites, with a difference of 0.386 and a p-value of 0.025. The substantial difference between these coefficients underscores the policy's stronger impact on credit confidence among minorities, highlighting the critical role of the policy in addressing racial disparities in financial accessibility.

[23] For the credit card approval confidence analysis, only state-level data is available for discriminatory complaints.

6 Online Ranking of Racial Gaps in Financial Services

Our findings show that disclosure policies play a crucial role in enhancing minority welfare in financial services by promoting transparency and accountability. Building on this, we have developed a ranking system that highlights how financial institutions serve different communities, with a particular focus on disparities between minority and white areas. This platform, which builds on previous studies Li (2023b), already includes a comprehensive ranking of mortgage lenders. Our latest extension provides deeper insights into how branches serve diverse communities, supporting transparency and equity in financial services.[24] We present an example of the online website in Figure A5.

The new functionality ranks financial branches based on four key financial outcomes: deposit rates, maintenance fees, auto loan rates, and credit card rates. By comparing branches in minority areas to those in white areas and controlling for factors like branch, time, and state-level effects, we accurately assess the impact of racial composition on financial products. We present an example of this platform in the appendix. This analysis aids minority consumers in avoiding disparate treatment and promotes financial inclusion by identifying and addressing disparities in the provision of financial products across different demographic regions.

7 Conclusion

This paper comprehensively investigates the impact of the CFPB's disclosure of complaint narratives in 2015 on reducing racial disparities across multiple financial services. Using a triple-difference design, we assess the disclosure policy's effects on the savings and lending markets. The results show that, following the disclosure, minority communities experience general welfare improvements. In the savings market, minority communities benefit from higher interest rates and lower maintenance fees. Similarly, in the auto loan and credit card markets, minority communities see lower interest rates. We then explore the factors driving the effectiveness of the disclosure policy. We find evidence of deposit outflows linked to discriminatory practices. Additionally, among low-income minority households, the disclosure leads to increased bank account ownership, auto ownership, and confidence in credit

[24] For more details, see: `link`

card approval. To enhance the practical relevance of this study, we provide online rankings of racial gaps across different financial institutions and products.

Our findings support the important role of quality-based information disclosure in financial services. As disclosing this negative information about service quality can lead to improvements for disadvantaged consumers, it suggests that consumers should choose to disclose narratives when filing complaints to regulators. By doing so, they can better resolve their issues by leveraging social supervision in addition to regulatory oversight.

The findings of this study have important implications for policymakers and regulators worldwide. Approximately 93% of developed countries have regulatory entities able to acknowledge and resolve customer complaints about financial services (Li (2023b)). However, except for the CFPB in the United States, nearly no other financial regulatory agencies in different countries choose to share consumer complaint information publicly. The results of this study demonstrate that the public disclosure of customer complaints effectively alleviates discriminatory and unfair treatment of clients in the U.S. financial system. Other countries may draw insights from this disclosure policy and develop strategies for managing and disclosing consumer complaints. Implementing such measures can foster global DEI.

This study has some limitations that future research can address. First, while the analysis examines the impact of the CFPB's disclosure policy on racial disparities in financial services, it focuses on specific sub-markets. Important products, such as student loans, have not been tested. Future research could explore the effects of information disclosure across a broader range of financial products. Second, although this study discusses and explains some channels through which information disclosure operates, it does not fully validate the entire process. Investigating the mechanisms of information disclosure is crucial for both the financial industry and academia areas. Future studies could employ more comprehensive data and methods to explore how disclosure functions in the real world.

References

Acharya, Viral V, and Stephen G Ryan, 2016, Banks' financial reporting and financial system stability, *Journal of Accounting Research* 54, 277–340.

Bartlett, Robert, Adair Morse, Richard Stanton, and Nancy Wallace, 2022, Consumer-lending discrimination in the fintech era, *Journal of Financial Economics* 143, 30–56.

Barwick, Panle Jia, Shanjun Li, Liguo Lin, and Eric Yongchen Zou, 2024, From fog to smog: The value of pollution information, *American Economic Review* 114, 1338–1381.

Begenau, Juliane, and Erik Stafford, 2023, Uniform rate setting and the deposit channel, Working paper.

Begley, Taylor A, and Amiyatosh Purnanandam, 2021, Color and credit: Race, regulation, and the quality of financial services, *Journal of Financial Economics* 141, 48–65.

Bennedsen, Morten, Elena Simintzi, Margarita Tsoutsoura, and Daniel Wolfenzon, 2022, Do firms respond to gender pay gap transparency?, *The Journal of Finance* 77, 2051–2091.

Bertomeu, Jeremy, Igor Vaysman, and Wenjie Xue, 2021, Voluntary versus mandatory disclosure, *Review of Accounting Studies* 26, 658–692.

Butler, Alexander W, Erik J Mayer, and James P Weston, 2023, Racial disparities in the auto loan market, *The Review of Financial Studies* 36, 1–41.

Célerier, Claire, and Adrien Matray, 2019, Bank-branch supply, financial inclusion, and wealth accumulation, *The Review of Financial Studies* 32, 4767–4809.

CFPB, 2015, Disclosure of consumer complaint narrative data, *Federal Register* 80, 15572–15583, Docket No. CFPB-2014-0016. Final Policy Statement.

Chava, Sudheer, Rohan Ganduri, Nikhil Paradkar, and Linghang Zeng, 2023, Shocked by bank funding shocks: Evidence from consumer credit cards, *The Review of Financial Studies* 36, 3906–3952.

Chen, Qi, Itay Goldstein, Zeqiong Huang, and Rahul Vashishtha, 2022, Bank transparency and deposit flows, *Journal of Financial Economics* 146, 475–501.

Chen, Yi-Chun, Mingyi Hung, and Yongxiang Wang, 2018, The effect of mandatory csr disclosure on firm profitability and social externalities: Evidence from china, *Journal of Accounting and Economics* 65, 169–190.

Cohen-Cole, Ethan, 2011, Credit card redlining, *Review of Economics and Statistics* 93, 700–713.

DeFusco, Anthony A, Stephanie Johnson, and John Mondragon, 2020, Regulating household leverage, *The Review of Economic Studies* 87, 914–958.

Dlugosz, Jennifer, Yong Kyu Gam, Radhakrishnan Gopalan, and Janis Skrastins, 2024, Decision-making delegation in banks, *Management Science* 70, 3281–3301.

Dou, Yiwei, Mingyi Hung, Guoman She, and Lynn Linghuan Wang, 2024, Learning from peers: Evidence from disclosure of consumer complaints, *Journal of Accounting and Economics* 77, 101620.

Dou, Yiwei, and Yongoh Roh, 2023, Public disclosure and consumer financial protection, *Journal of Financial and Quantitative Analysis, Forthcoming* .

Drechsler, Itamar, Alexi Savov, and Philipp Schnabl, 2017, The deposits channel of monetary policy, *The Quarterly Journal of Economics* 132, 1819–1876.

Egan, Mark, Ali Hortaçsu, and Gregor Matvos, 2017, Deposit competition and financial fragility: Evidence from the us banking sector, *American Economic Review* 107, 169–216.

Faber, Jacob William, and Terri Friedline, 2020, The racialized costs of "traditional" banking in segregated america: Evidence from entry-level checking accounts, *Race and Social Problems* 12, 344–361.

Fennis, Bob M, and Wolfgang Stroebe, 2014, Softening the blow: Company self-disclosure of negative information lessens damaging effects on consumer judgment and decision making, *Journal of Business Ethics* 120, 109–120.

Flannery, Mark J, K Philip Wang, and Cathy Zhang, 2023, Do financial consumers discipline bad lenders? the role of disclosure awareness, Working paper.

Fuster, Andreas, Matthew C Plosser, and James I Vickery, 2021, Does cfpb oversight crimp credit?, Working paper.

Goldstein, Itay, Haresh Sapra, et al., 2014, Should banks' stress test results be disclosed? an analysis of the costs and benefits, *Foundations and Trends® in Finance* 8, 1–54.

Grembi, Veronica, Tommaso Nannicini, and Ugo Troiano, 2016, Do fiscal rules matter?, *American Economic Journal: Applied Economics* 1–30.

Guiso, Luigi, Andrea Pozzi, Anton Tsoy, Leonardo Gambacorta, and Paolo Emilio Mistrulli,

2022, The cost of steering in financial markets: Evidence from the mortgage market, *Journal of Financial Economics* 143, 1209–1226.

Haendler, Charlotte, and Rawley Heimer, 2021, The financial restitution gap in consumer finance: Insights from complaints filed with the cfpb, Working paper.

Hayes, Rachel M, Feng Jiang, and Yihui Pan, 2021, Voice of the customers: Local trust culture and consumer complaints to the cfpb, *Journal of Accounting Research* 59, 1077–1121.

Jin, Ginger Zhe, and Phillip Leslie, 2003, The effect of information on product quality: Evidence from restaurant hygiene grade cards, *The Quarterly Journal of Economics* 118, 409–451.

Leuz, Christian, and Peter D Wysocki, 2016, The economics of disclosure and financial reporting regulation: Evidence and suggestions for future research, *Journal of Accounting Research* 54, 525–622.

Li, Xiang, 2023a, Bank competition and entrepreneurial gaps: Evidence from bank deregulation, Working paper.

Li, Xiang, 2023b, Does the disclosure of consumer complaints reduce racial disparities in the mortgage lending market?, Working paper.

Lin, Leming, 2020, Bank deposits and the stock market, *The Review of Financial Studies* 33, 2622–2658.

Mazur, Laurel Celastine, 2022, *Are the voices of customers louder when they are seen? Evidence from CFPB complaints*, Ph.D. thesis, University of Maryland, College Park.

Migueis, Marco, Michael Suher, and Jessie Xu, 2022, Cost of banking for lmi and minority communities, Working paper.

Neugebauer, R., and R. Williams, 2015, Reform the cfpb to better protect consumers, Mimeo, U.S. Congress.

Scott, Maura L, Sterling A Bone, Glenn L Christensen, Anneliese Lederer, Martin Mende, Brandon G Christensen, and Marina Cozac, 2023, Revealing and mitigating racial bias and discrimination in financial services, *Journal of Marketing Research* 00222437231176470.

Servon, Lisa, 2017, *The unbanking of America: How the new middle class survives* (Houghton Mifflin Harcourt).

Tomar, Sorabh, 2023, Greenhouse gas disclosure and emissions benchmarking, *Journal of Accounting Research* 61, 451–492.

Varga, Marton, and Paulo Albuquerque, 2023, The impact of negative reviews on online search and purchase decisions, *Journal of Marketing Research* 00222437231190874.

Wang, Olivier, 2024, Banks, low interest rates, and monetary policy transmission, *Journal of Finance, Forthcoming* .

Yi, Yu, 2022, Bank capital, bank concentration, and risk taking, Working paper.

Zhang, Jianqiang, and Krista J Li, 2021, Quality disclosure under consumer loss aversion, *Management Science* 67, 5052–5069.

Figures and Tables

Figure 1. Event Study Trend for Impact of CFPB Disclosure on Racial Gaps in Deposit Interest Rates

This figure illustrates the trend of the event study on the impact of CFPB disclosure on racial gaps in deposit interest rates. It includes outcomes from five quarters before the second quarter of 2015—the initiation point of the disclosure policy—through six quarters after its implementation. Samples outside this selected span are grouped into the initial and final periods. During the estimation, we use the quarter when the disclosure occurs as the baseline period. The vertical axis displays the size of the coefficients for the triple-interaction items, and the horizontal axis represents varying periods, with period zero corresponding to the disclosure. The regression specification used to generate this figure aligns with that in Column (1) of Table 2. Black circles indicate the coefficient estimates for different periods, and the black vertical lines signify the confidence intervals (set at a 5% significance level).

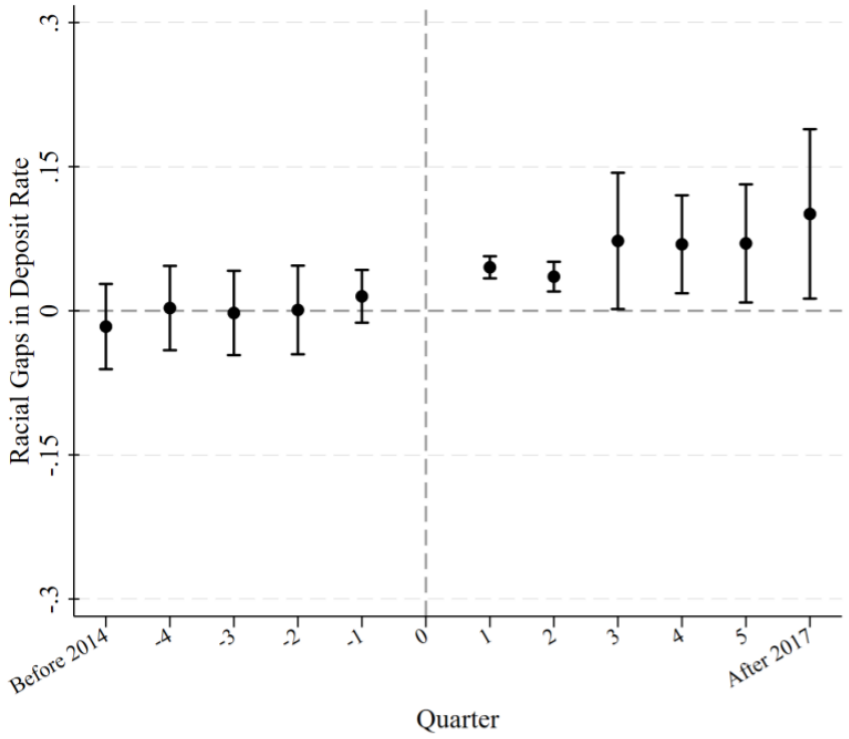


Figure 2. Event Study Trend for Impact of CFPB Disclosure on Racial Gaps in Deposit Fees

This figure illustrates the trend of the event study on the impact of CFPB disclosure on racial gaps in deposit fees. It includes outcomes from five quarters before the second quarter of 2015—the initiation point of the disclosure policy—through six quarters after its implementation. Samples outside this selected span are grouped into the initial and final periods. During the estimation, we use the quarter when the disclosure occurs as the baseline period. The vertical axis displays the size of the coefficients for the triple-interaction items, and the horizontal axis represents varying periods, with period zero corresponding to the disclosure. The regression specification used to generate this figure aligns with that in Column (1) of Table 3. Black circles indicate the coefficient estimates for different periods, and the black vertical lines signify the confidence intervals (set at a 5% significance level).

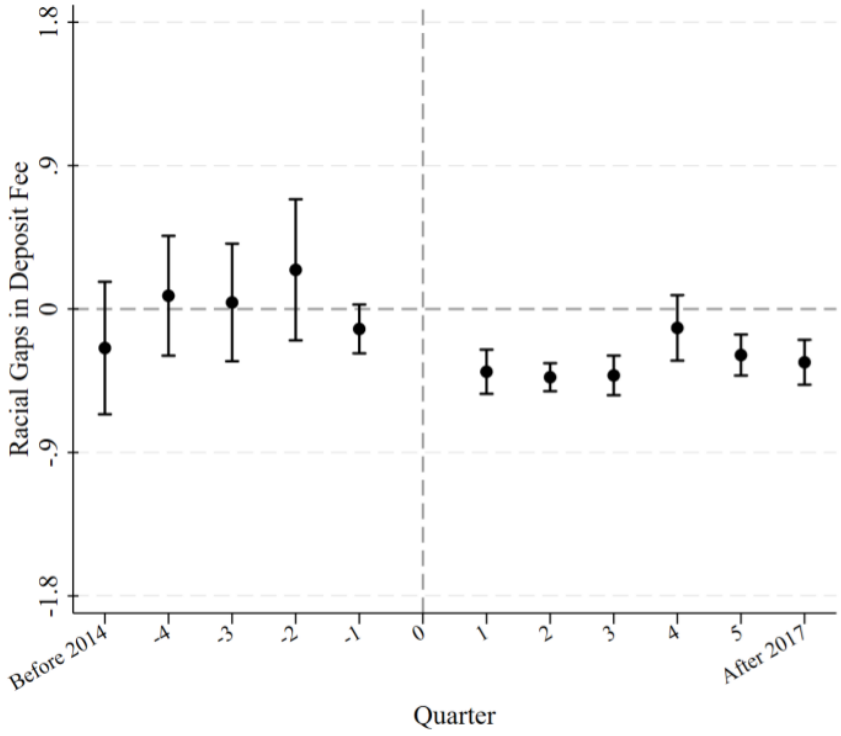


Figure 3. Event Study Trend for Impact of CFPB Disclosure on Racial Gaps in Auto Loan Rates

This figure illustrates the trend of the event study on the impact of CFPB disclosure on racial gaps in auto loan interest rates. It includes outcomes from five quarters before the second quarter of 2015—the initiation point of the disclosure policy—through six quarters after its implementation. Samples outside this selected span are grouped into the initial and final periods. During the estimation, we use the quarter when the disclosure occurs as the baseline period. The vertical axis displays the size of the coefficients for the triple-interaction items, and the horizontal axis represents varying periods, with period zero corresponding to the disclosure. The regression specification used to generate this figure aligns with that in Column (1) of Table 4. Black circles indicate the coefficient estimates for different periods, and the black vertical lines signify the confidence intervals (set at a 5% significance level).

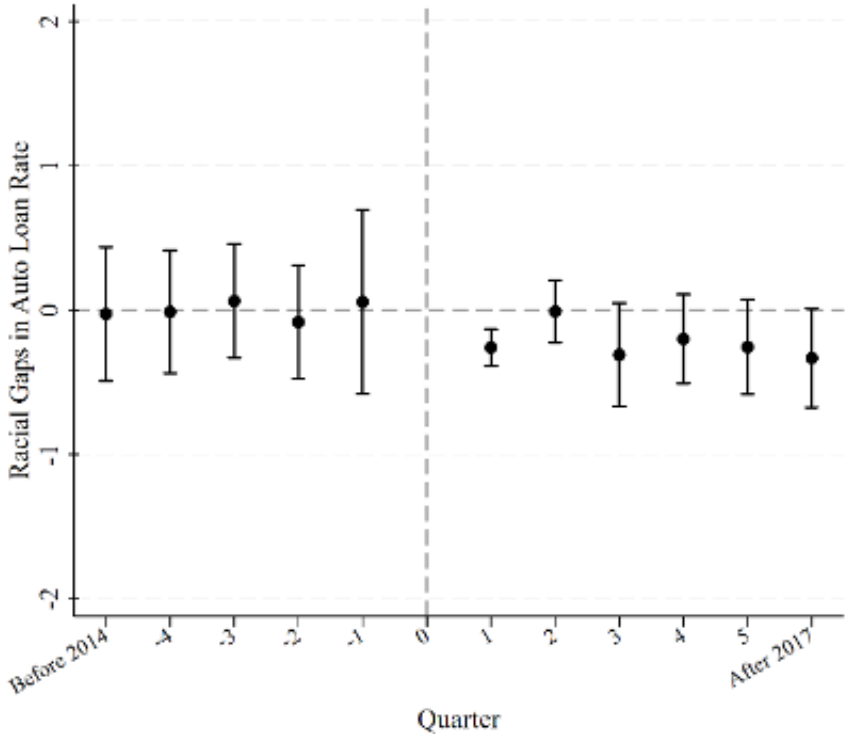


Figure 4. Event Study Trend for Impact of CFPB Disclosure on Racial Gaps in Credit Card Rates

This figure illustrates the trend of the event study on the impact of CFPB disclosure on racial gaps in credit card loan interest rates. It includes outcomes from five quarters before the second quarter of 2015—the initiation point of the disclosure policy—through six quarters after its implementation. Samples outside this selected span are grouped into the initial and final periods. During the estimation, we use the quarter when the disclosure occurs as the baseline period. The vertical axis displays the size of the coefficients for the triple-interaction items, and the horizontal axis represents varying periods, with period zero corresponding to the disclosure. The regression specification used to generate this figure aligns with that in Column (1) of Table 5. Black circles indicate the coefficient estimates for different periods, and the black vertical lines signify the confidence intervals (set at a 5% significance level).

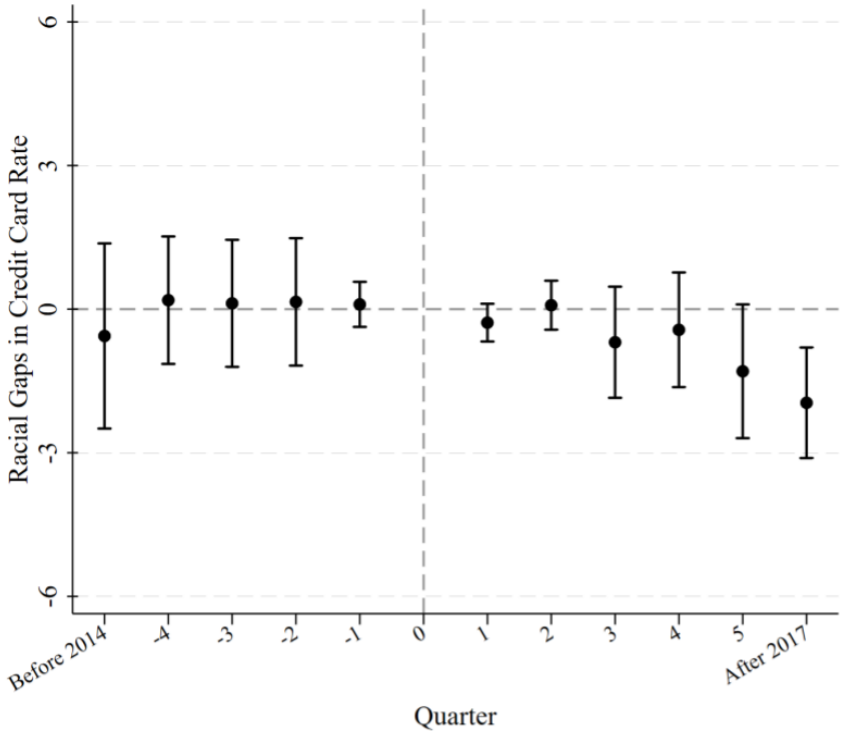
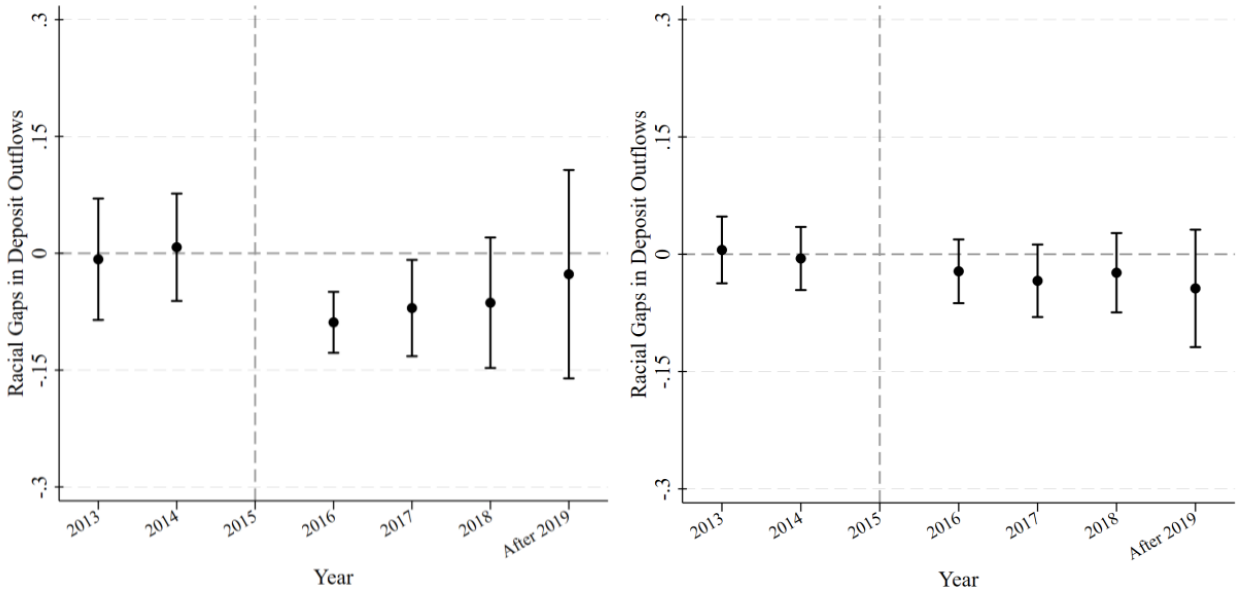


Figure 5. Event Study Trend for Impact of CFPB Disclosure on Deposit Outflows in Minority Communities Across Different Complaint Situations

This figure illustrates the trend of the event study on the impact of CFPB disclosure on deposit outflows under different complaint situations. It includes outcomes from two years before 2015—the initiation point of the disclosure policy—through four years after its implementation. Samples outside this selected span are grouped into the final period. During the estimation, we use the year when the disclosure occurs as the baseline period. The vertical axis displays the size of the coefficients for the triple-interaction items, and the horizontal axis represents varying periods, with period zero corresponding to the disclosure. The regression specification used to generate this figure aligns with that in Column (1) of Table 6. Panel (a) presents the event study trend on the triple-interaction term $HighDiscCompl \times Post \times Minority$, and Panel (b) illustrates the results on $LowDiscCompl \times Post \times Minority$. Black circles indicate the coefficient estimates for different periods, and the black vertical lines signify the confidence intervals (set at a 5% significance level).



(a) High Discriminatory Complaints

(b) Low Discriminatory Complaints

Table 1. Summary Statistics

This table shows the summary statistics for the key variables from our data sample from 2013 to 2022. Panel A highlights branch-level variables, including interest rates for deposits, auto loans, and credit cards, along with the minimum account balances necessary to bypass maintenance fees of bank accounts, sourced from RateWatch, and the deposit amounts for each branch from the Summary of Deposits (SOD) database. Within the savings market, our primary focus is on the interest rate for the product labeled "12MCD10K," which refers to 12-month Certificates of Deposit (CDs). Appendix Table A2 presents all the CDs and Money Market (MM) products analyzed, amounting to 12 types. Regarding minimum account balances to avoid maintenance fees for savings and checking accounts. In the lending market, our discussion centers on the interest rates for auto loans and credit card loans. For auto loan rates, we focus on the rates for the most common terms, 36M and 72M. Similarly, we examine both the introductory and regular rates for credit card loans. For deposit amounts, we use the total deposits for each branch as of June 30 each year from the SOD database as a proxy. Among these five categories of indicators, deposit amounts are measured annually, while the others are quantified quarterly. Panel B highlights household-level variables measured annually, including the proportion of bank-account-owning households sourced from the Current Population Survey (CPS) database, the proportion of car-owning households sourced from the American Community Survey (ACS) database, and self-reported credit card approval confidence sourced from the Survey of Household Economics and Decisionmaking (SHED) database. Panel C summarizes county-level characteristics sourced from the Bureau of Economic Analysis (BEA) and the Census Bureau, with these data points measured annually. The variables at the county level in our analysis include the proportion of non-white populations, the total population of the county, and the growth rate of per capita income.

	(1)	(2)	(3)	(4)	(5)
	Source	N	Mean	Median	Std. Dev
Panel A. Branch-Level Characteristics					
Savings Market - *Deposit Interest Rate (%)*					
12MCD10K	RateWatch	310,883	0.52	0.40	0.45
Savings Market - *Amount to Avoid Fee ($)*					
Savings Account	RateWatch	15,570	235.09	100	4023.67
Checking Account		24,680	2,777.32	1000	7949.14
Loan Market - *Auto Loan Interest Rate (%)*					
36M	RateWatch	234,346	4.12	3.75	1.64
72M		27,826	3.83	3.74	1.01
Loan Market - *Credit Card Loan Interest Rate (%)*					
Regular Rate	RateWatch	25,370	11.98	11.99	2.57
Introductory Rate		17,938	1.38	0	2.08
Savings Market - *Deposit Amount ($M)*					
Amount	SOD	521,851	99.99	42.83	1000.05

Continued on next page

Table 1 - *Continued from previous page*

Panel B. Household-Level Characteristics					
Bank Account Ownership	CPS	12,159	0.92	1	0.28
Auto Ownership	ACS	1,067,572	0.85	1	0.36
Credit Card Approval Confidence	SHED	11,750	2.07	2	0.85
Panel C. County-Level Characteristics					
Minority Ratio *(%)*	BEA;	30,868	18.77	10.65	19.03
Population *(K)*	Census	30,868	104.33	25.71	333.43
Per Capita Income Growth Rate *(%)*	Bureau	30,868	3.82	3.58	5.65

Table 2. Impact of CFPB Disclosure on Racial Gaps in Deposit Interest Rates

This table presents the impact of CFPB disclosure on racial gaps in deposit interest rates, focusing on CDs and MMs. Columns (1) and (2) focus on "12MCD10K," while Columns (3) and (4) include more mainstream products. The dataset for estimating this table consists of branch-level data aggregated by year-quarter. All columns control for branch and year-quarter fixed effects, and use the annual population of each county for weighting (Célerier and Matray (2019)). Columns (1) and (3) control for demographic variables at the county level, including the logarithm of the total population and the growth rate of income per capita. These two columns also control for institution-year fixed effects. Columns (2) and (4) control for county-institution-year fixed effects instead. Through the estimation process, we obtain estimates for the key coefficient, $Treat \times Post \times Minority$, which denotes the effect of disclosure on the deposit rates in minority communities. Standard errors, shown in parentheses, are clustered at the institution, county, and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Deposit Rate			
VARIABLES	12MCD10K		CDs and MMs	
Treat×Post×Minority	0.063**	0.028***	0.032*	0.019***
	(0.025)	(0.001)	(0.014)	(0.000)
County Characteristics	YES	-	YES	-
Branch FE	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES
Institution-Year FE	YES	-	YES	-
County-Institution-Year FE	-	YES	-	YES
Product-Year FE	-	-	YES	YES
Observations	309,372	309,078	3,225,707	3,225,700
R-squared	0.879	0.883	0.621	0.623

Table 3. Impact of CFPB Disclosure on Racial Gaps in Deposit Account Fees

This table presents the impact of CFPB disclosure on racial gaps in deposit account fees, focusing on minimum balances required to avoid fees. The dataset for this analysis comprises branch-level data aggregated by year-quarter. Columns (1) and (2) are based on fees for savings accounts, while Columns (3) and (4) discuss the results for checking accounts. All columns account for county-level demographic variables, including the logarithm of the total population and the income per capita growth rate, and use the annual population of each county for weighting. All columns control for branch and year-quarter fixed effects. Columns (1) and (3) control for institution-year fixed effects, while Columns (2) and (4) control for county-institution-year fixed effects. Through the estimation process, we obtain estimates for the key coefficient, $Treat \times Post \times Minority$, which denotes the effect of disclosure on the fees in minority communities. Standard errors, shown in parentheses, are clustered at the institution, county, and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Amount to Avoid Fee			
VARIABLES	Savings Account		Checking Account	
Treat×Post×Minority	-0.305***	-0.291***	-0.343**	-0.687***
	(0.092)	(0.016)	(0.146)	(0.024)
County Characteristics	YES	-	YES	-
Branch FE	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES
Institution-Year FE	YES	-	YES	-
County-Institution-Year FE	-	YES	-	YES
Observations	9,023	8,821	10,293	10,067
R-squared	0.987	0.987	0.963	0.970

Table 4. Impact of CFPB Disclosure on Racial Gaps in Auto Loan Rates

This table presents the impact of CFPB disclosure on racial gaps in auto loan rates, focusing on auto products with terms of 36 months and 72 months. The dataset for this analysis comprises branch-level data aggregated by year-quarter. All columns include fixed effects for branch, term, and year-quarter, with the annual population of each county for weighting. Column (1) controls for county-level demographic variables, including the logarithm of total population and the growth rate of income per capita, and incorporates institution-year fixed effects. Column (2) controls for county-institution-year fixed effects instead. Through the estimation process, we obtain estimates for the key coefficient, $Treat \times Post \times Minority$, which denotes the effect of disclosure on the auto loan rates in minority communities. Standard errors, shown in parentheses, are clustered at the institution, county, and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Auto Loan Rate	
Treat×Post×Minority	-0.135***	-0.241***
	(0.024)	(0.015)
County Characteristics	YES	-
Branch FE	YES	YES
Term FE	YES	YES
Year-Quarter FE	YES	YES
Institution-Year FE	YES	-
County-Institution-Year FE	-	YES
Observations	261,902	261,878
R-squared	0.909	0.911

Table 5. Impact of CFPB Disclosure on Racial Gaps in Credit Card Rates

This table presents the impact of CFPB disclosure on racial gaps in credit card loan rates, focusing on regular and introductory rates. The dataset for this analysis comprises branch-level data aggregated by year-quarter. Columns (1) and (2) discuss the situation for regular rates, while Columns (3) and (4) discuss the results for introductory rates. All columns control for branch and year-quarter fixed effects, and use the annual population of each county for weighting. Columns (1) and (3) control for county-level demographic variables, including the logarithm of the total population and the growth rate of income per capita. These two columns also control for institution-year fixed effects. Columns (2) and (4) control for county-institution-year fixed effects instead. Through the estimation process, we obtain estimates for the key coefficient, $Treat \times Post \times Minority$, which denotes the effect of disclosure on the auto loan rates in minority communities. Standard errors, shown in parentheses, are clustered at the institution, county, and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Credit Card Rate			
VARIABLES	Regular Rate		Introductory Rate	
Treat×Post×Minority	-0.302***	-0.401***	-0.145***	-0.115***
	(0.087)	(0.000)	(0.023)	(0.000)
County Characteristics	YES	-	YES	-
Branch FE	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES
Institution-Year FE	YES	-	YES	-
County-Institution-Year FE	-	YES	-	YES
Observations	24,876	24,858	17,356	17,323
R-squared	0.954	0.956	0.969	0.971

Table 6. Impact of CFPB Disclosure on Deposit Outflows in Minority Communities Across Different Complaint Situations

This table presents the impact of CFPB disclosure on deposit outflows in minority communities under different complaint situations. The dataset for this analysis comprises data on branch-level deposit amounts by year. In the estimation, the dependent variable is the logarithm of deposit amounts. Through the estimation process, we divided treated branches into two groups based on the complaints they received relative to their total assets in 2015. The first group includes branches of institutions with above the median numbers of discriminatory complaints as a proportion of the institution's total assets. The second group consists of branches of institutions below the median. In other words, we estimate two triple-difference models simultaneously in one regression. Columns (1) and (2) control for branch and institution-year fixed effects. Column (1) controls for demographic variables at the county level, including the logarithm of the total population and the income per capita growth rate, while Column (2) incorporates county-year fixed effects. We include all interaction terms in the triple-difference settings but only show the two core interaction terms of interest here. Additionally, we perform two two-sided t-tests to examine the difference between the triple-interaction term coefficients, reporting their p-values. Standard errors, shown in parentheses, are clustered at the institution, county, and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Deposit Amount	
HighDiscCompl×Post×Minority	-0.058*	-0.066**
	(0.032)	(0.025)
LowDiscCompl×Post×Minority	-0.042	-0.029
	(0.045)	(0.032)
High vs. *Low* (p-value)	0.768	0.186
County Characteristics	YES	-
Branch FE	YES	YES
Institution-Year FE	YES	YES
County-Year FE	-	YES
Observations	500,952	505,460
R-squared	0.947	0.951

Table 7. Impact of CFPB Disclosure on Racial Gaps in Interest Rates Across Different Complaint Situations

This table presents the impact of CFPB disclosure on racial gaps in deposit and loan interest rates under different complaint situations. The dataset for estimating this table consists of branch-level data aggregated by year-quarter. Through the estimation process, we divided treated branches into two groups based on the complaints they received relative to their total assets in 2015. The first group includes branches of institutions with above the median numbers of discriminatory complaints as a proportion of the institution's total assets. The second group consists of branches of institutions below the median. In other words, we estimate two triple-difference models simultaneously in one regression. Column (1) is based on the baseline results from Table 2. Column (2) uses combined data from auto loan rates and credit card rates, that is, the baseline results from Table 4 and Table 5. Both columns control for demographic variables at the county level, including the logarithm of the total population and the income per capita growth rate, along with branch, year-quarter, and institution-year fixed effects. Column (2) includes market-year fixed effects to account for differences between the two types of loans. We include all interaction terms in the triple-difference settings but only show the two core interaction terms of interest here. Additionally, we perform two two-sided t-tests to examine the difference between the triple-interaction term coefficients, reporting their p-values. Standard errors, shown in parentheses, are clustered at the institution, county, and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Deposit Rate	Loan Rate
HighDiscCompl×Post×Minority	0.142**	-0.398***
	(0.051)	(0.096)
LowDiscCompl×Post×Minority	0.058*	-0.047
	(0.028)	(0.099)
High vs. *Low* (p-value)	0.083	0.003
County Characteristics	YES	YES
Branch FE	YES	YES
Year-Quarter FE	YES	YES
Institution-Year FE	YES	YES
Market-Year FE	-	YES
Observations	309,372	291,782
R-squared	0.879	0.976

Table 8. Impact of CFPB Disclosure on Bank Account Ownership Across Different Racial Households

This table presents the results of the impact of discriminatory complaints on bank account ownership across different racial households, focusing on low-income households, which are defined as a household with an income above the federal poverty line but below twice the federal poverty line. The dependent variable is a binary indicator of whether a household owns a savings or checking account. Column (1) reports results for minority households and Column (2) reports results for white households. *DiscCompl* is a binary variable that equals one if a county's discriminatory complaints exceed the median and zero otherwise. The interaction term, $DiscCompl \times Post$, captures the differential effect of the policy based on the level of complaints within the community. All models control for per capita income and the logarithm of the total population at the county level. Fixed effects are included for year, state, and similar household characteristics (the interaction term of income level, education level, household size, and employment category) are included. We employed Fisher's permutation test on the between-group difference, conducting 1,000 fits related to minority and white households to compare the coefficients obtained in Columns (1) and (2). The p-value is reported in the table. Standard errors, shown in parentheses, are double clustered at the county and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
	Account Ownership	
VARIABLES	Minority Households	White Households
DiscCompl × *Post*	0.027***	-0.035***
	(0.007)	(0.008)
Minority vs. White (p-value)	0.031	
County Characteristics	YES	YES
Year FE	YES	YES
State FE	YES	YES
Similar Household FE	YES	YES
Observations	2,112	5,213
R-squared	0.187	0.197

Table 9. Impact of CFPB Disclosure on Auto Ownership Across Different Racial Households

This table presents the results of the impact of discriminatory complaints on auto ownership across different racial households, focusing on low-income households. A low-income household has an income above the federal poverty line but below twice the federal poverty line. The dependent variable is a binary indicator of whether a household owns a vehicle. Column (1) reports results for minority households and Column (2) reports results for white households. *DiscCompl* is a binary variable that equals one if a county's discriminatory complaints exceed the median and zero otherwise. The interaction term, $DiscCompl \times Post$, captures the differential effect of the policy based on the level of complaints within the community. All models control for per capita income and the logarithm of the total population at the county level. Fixed effects are included for year, state, and similar household characteristics (the interaction term of income level, education level, household size, and employment category) are included. We employed Fisher's permutation test on the between-group difference, conducting 1,000 fits related to minority and white households to compare the coefficients obtained in Columns (1) and (2). The p-value is reported in the table. Standard errors, shown in parentheses, are double clustered at the county and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
	Auto Ownership	
VARIABLES	Minority Households	White Households
$DiscCompl \times Post$	0.004**	0.000
	(0.002)	(0.002)
Minority vs. White (p-value)	0.209	
County Characteristics	YES	YES
Year FE	YES	YES
State FE	YES	YES
Similar Household FE	YES	YES
Observations	257,167	316,645
R-squared	0.246	0.156

Table 10. Impact of CFPB Disclosure on Credit Card Approval Confidence Across Different Racial Households

This table presents the results of the impact of discriminatory complaints on credit card approval confidence across different racial households, focusing on low-income households. A low-income household has an income above the federal poverty line but below twice the federal poverty line. The dependent variable is a three-level categorical indicator representing confidence in credit card approval. Column (1) reports results for minority households and Column (2) reports results for white households. *DiscCompl* is a binary variable that equals one if a state's discriminatory complaints exceed the median and zero otherwise. The interaction term, $DiscCompl \times Post$, captures the differential effect of the policy based on the level of complaints within the state. All models control for per capita income and the logarithm of total population at the state level. Fixed effects are included for year, state and similar household characteristics (the interaction term of income level, education level, household size, and employment category) are included. We employed Fisher's permutation test on the between-group difference, conducting 1,000 fits related to minority and white households to compare the coefficients obtained in Columns (1) and (2). The p-value is reported in the table. Standard errors, shown in parentheses, are double clustered at the state and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
	Credit Card Approval Confidence	
VARIABLES	Minority Household	White Household
DiscCompl×Post	0.426***	0.040***
	(0.079)	(0.011)
Minority vs. White (p-value)	0.025	
State Characteristics	YES	YES
Year FE	YES	YES
State FE	YES	YES
Similar Household FE	YES	YES
Observations	2,546	9,159
R-squared	0.098	0.068

Internet Appendix for Shedding Light on Bias: Consumer Complaint Disclosure and Racial Equity in Financial Services

Appendix A Dataset Details

Figure A1. Option to Disclose Complaint Narratives When Filing a Complaint on the CFPB Website

This figure shows the step where consumers need to describe the complaint content ("What happened") when filing a complaint on the CFPB website. On the website, consumers need to complete five steps, answering the following questions: "What is this complaint about?", "What type of problem are you having?", "What happened?", "What company is this complaint about?" and "Who are the people involved?" The choice to disclose narratives occurs in the third step, which is illustrated in this figure.

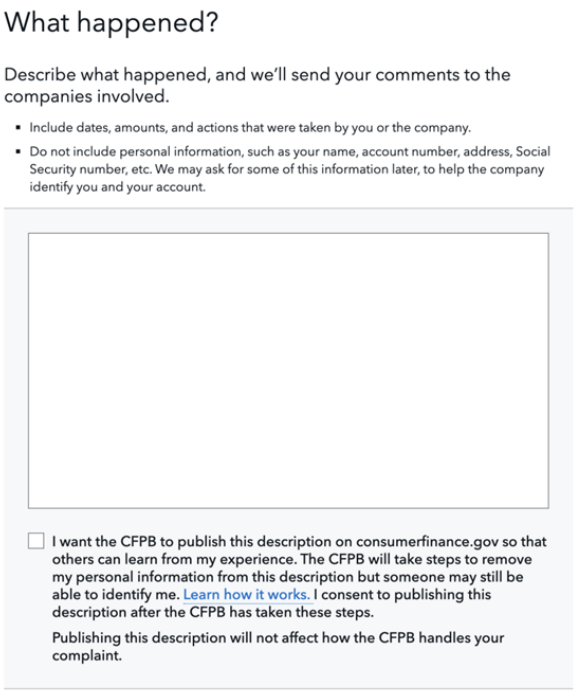


Figure A2. Trend in the Number of Complaints Across Different Product Categories

This figure presents the trends in the number of complaints across different product categories from 2013 to 2022. We consider the situations for five common product types related to savings, auto loans, credit card loans, mortgage loans, and student loans (which account for the vast majority of complaints received by the CFPB). The remaining small number of complaints are classified as others. Specifically, we categorize complaints that include savings-related components from the following product classifications in the CFPB complaints database: Checking or savings account, Bank account or service, Money transfer, virtual currency or money service, Money transfers, and Virtual currency. Complaints related to auto loans are categorized under auto loans from the following classifications: Debt collection, Vehicle loan or lease, Consumer Loan, Payday loan, title loan, or personal loan, and Payday loan, title loan, personal loan, or advance loan. Complaints related to credit card services are categorized under credit card loan from the following classifications: *Credit reporting, credit repair services, or other personal consumer reports, Debt collection, Credit reporting or other personal consumer reports, Credit card or prepaid card, Credit reporting, Credit card, Other financial service, and Debt or credit management.* The y-axis in the graph represents the logarithmically transformed complaint amounts, while the x-axis is in months, with corresponding year labels shown. The three categories of complaints that are the focus of this study are highlighted using bold lines.

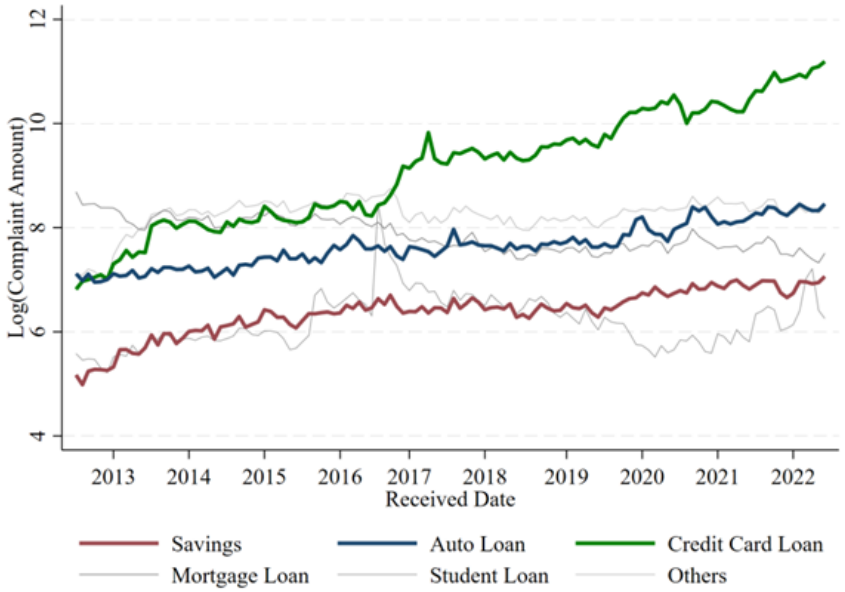


Table A1. Discriminatory Complaints Examples in Savings and Lending Markets

This table presents three examples of complaints with racially discriminatory implications from the CFPB complaints database related to the savings and lending markets. The "Consumer complaint narrative" column in the table highlights in bold the parts of the complaint narratives that indicate racial discrimination.

Date received	Details
Panel A. Savings Market	
Date received	1/25/18
Product	Checking or savings account
Subproduct	Checking account
Issue	Managing an account
Consumer complaint narrative	Having enough in my account from my retirement XXXX every since I open up this account constantly been accessed fees that were inappropriate due to **abuse of power by the president at the bank also based on stigmatized and stereotyped being of another race.** And taking me like I am stupid and constantly every month being charged excessive fees that were deemed to be access to my account; Suntrust bank on XXXX XXXX in XXXX pk XXXX XXXX XXXX XXXX. facing biases.
Company	SUNTRUST BANKS, INC.
State	DC
Submitted via	Web
Company response to consumer	Closed with explanation
Panel B. Lending Market - Auto Loan	
Date received	10/31/21
Product	Vehicle loan or lease
Subproduct	Loan
Issue	Managing the loan or lease
Company	Santander Consumer USA Holdings Inc.
State	TN
Submitted via	Web
Company response to consumer	Closed with explanation

Continued on next page

Table A1 – *Continued from previous page*

Consumer complaint narrative	I recently purchased an SUV, the asking price was almost XXXX. But after adding interest, I will be paying XXXX for a 2014 car. my credit is the the greatest, but I have been improving it. I have a car now that is almost paid for, And out of four years I have not been late, other then one time. And that due to Covid-19. I was out of work for two months. I also have two credit cards that I have never been late on. I really feel like I should have received a better interest rate. My opinion! **I feel like my race may have played a role in the very high interest rate I got.** The date of the transaction was XXXX loan company Santander Consumer USA XXXX XXXX XXXX XXXX, TX XXXX XXXX Sincerely XXXX XXXX
Panel C. Lending Market - Credit Card Loan	
Date received	6/6/22
Product	Credit card or prepaid card
Subproduct	General-purpose credit card or charge card
Issue	Fees or interest
Company	CAPITAL ONE FINANCIAL CORPORATION
State	NY
Submitted via	Web
Company response to consumer	Closed with explanation
Consumer complaint narrative	On XX/XX/2022 I received an increase by Capital One without requesting it. The problem I have is I have an excellent credit score and Capital One raise my APR to a high 27.24%. **I believe this is a discriminatory practice based on my race.** My increase was based on my credit score and this high apr doesn't make since. Thank you

Table A2. Summary Statistics: Deposit Interest Rates of All Mainstream Deposit Products

This table presents the summary statistics for the interest rates of mainstream deposit products on a quarterly basis from 2013 to 2022. These products include six types of CDs: 03MCD10K, 06MCD10K, 12MCD10K, 24MCD10K, 36MCD10K, and 12MCD100K, as well as six MM accounts: MM2.5K, MM10K, MM25K, MM50K, MM100K, and MM250K.

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Mean	Q1	Median	Q3	Std. Dev
Savings Market - Deposit Interest Rate (%)						
03MCD10K	235,938	0.21	0.10	0.15	0.25	0.23
06MCD10K	303,834	0.34	0.15	0.25	0.40	0.33
12MCD10K	310,883	0.52	0.25	0.40	0.60	0.45
24MCD10K	299,002	0.72	0.40	0.60	0.90	0.51
36MCD10K	282,335	0.89	0.50	0.75	1.10	0.53
12MCD100K	293,060	0.54	0.25	0.40	0.65	0.46
MM2.5K	269,329	0.15	0.05	0.10	0.20	0.17
MM10K	281,012	0.18	0.09	0.15	0.22	0.18
MM25K	282,103	0.22	0.10	0.15	0.25	0.20
MM50K	233,038	0.24	0.10	0.20	0.30	0.22
MM100K	223,580	0.28	0.13	0.20	0.35	0.25
MM250K	211,647	0.29	0.15	0.20	0.35	0.26

Table A3. Sample Composition in Interest Rates

This table shows the summary statistics for rate-setting branches belonging to CFPB-oversight or non-oversight branches in our data sample spanning from 2013 to 2022. We consider the last record of each selected product in a single quarter as the observed value for that product's interest rate for the quarter. Panel A, B, and C highlight branch, county, and institution-level composition for deposits, auto loans, and credit cards sourced from RateWatch. Within the savings market, our primary focus is on the interest rate for the product labeled "12MCD10K." In the lending market, our discussion centers on the interest rates for auto and credit card loans. For auto loan rates, we focus on the rates for the most common terms, 36M and 72M. We examine the regular rates for credit card loans. Column (1) illustrates the sample composition in CFPB-oversight institutions(without large institutions), while Column (2) illustrates the composition in non-CFPB oversight institutions. The variables in our analysis include the number of institutions, the number of counties, the number of rate-setting branches, the branch-per-institution ratio, and the unique rate-per-branch ratio. The branch-per-institution ratio is the average number of branches an institution sets within a county. The unique-rates-per-branch ratio represents each branch's average number of unique deposits and loan rates.

	(1)	(2)
	Oversight Institutions	Non-Oversight Institutions
Panel A. Deposits		
Num Institutions	127	9,176
Num Counties	310	2,498
Num Rate-Setting Branches	537	11,287
Within-County Branches Per Institution	1.1	1.03
Unique Rates Per Branch	5.82	7.85
Panel B. Auto Loans		
Num Institutions	62	5,190
Num Counties	156	1,808
Num Rate-Setting Branches	197	5,753
Within-County Branches Per Institution	1.05	1.02
Unique Rates Per Branch	8.74	7.39
Panel C. Credit Cards		
Num Institutions	49	2,229
Num Counties	81	948
Num Rate-Setting Branches	93	2,386
Within-County Branches Per Institution	1.01	1.01
Unique Rates Per Branch	4.86	2.85

Appendix B The Impact on Resolution Outcomes

In this section, we explore the impact of the CFPB's disclosure policy on the distribution of resolution outcomes within consumer complaints. The CFPB plays a significant role in shaping financial regulation and enhancing consumer welfare, and the existence of the complaints dataset under its purview has also played a certain role in regulating the financial industry (Dou and Roh (2023); Dou et al. (2024)). Under this premise, our focus in the section is to investigate whether the CFPB's disclosure of complaint narratives further changes the service quality of financial institutions under CFPB supervision.

Financial institutions do take the CFPB-disclosed complaint narratives seriously, which serves as the basis for our main analysis. Once the CFPB releases these narratives, their contents are likely to be noticed by various social entities, including consumers, media, investors, and possibly competing financial institutions. Concerned about potential negative reactions from these groups, the financial institutions receiving complaints are motivated to enhance their service quality more actively than before the complaint narratives were made public.

By analyzing the changes in resolution outcomes of consumer complaints, we provide a key link supporting the above path hypothesis, that is, financial institutions place more emphasis on handling complaints with narratives because the complaints narratives are made public. The existence of this phenomenon provides foundational evidence for our identification of the impact of the disclosure policy on racial gaps in financial products.

Using data from the CFPB complaints dataset, we use a difference-in-difference model to examine how complaints' resolution outcomes change after disclosing complaint narratives to the public. We select the period from March 19, 2015, to December 31, 2015, as the analysis period. Starting on March 19, 2015, consumers could choose to make their complaint narratives public when submitting complaints to the CFPB. However, from March 19 to June 25, 2015, the CFPB did not disclose these narratives to the public to provide regulated financial institutions with some buffer time. On June 25, 2015, the CFPB began publicly sharing the complaint narratives, marking the effective initiation of the CFPB disclosure policy. This means that our pre-disclosure period is only from March 19 to June 25, 2015. During this period, consumers who submitted complaints to the CFPB faced the same situation as those who submitted complaints after June 25, 2015. This setting helps mitigate self-selection

bias from the consumers' side, as we believe that consumers' behavior in choosing whether to disclose complaints with narratives does not exhibit systematic differences between the pre-disclosure and after-disclosure periods.

The sample period concludes on December 31, 2015, for two main reasons. First, to avoid the potential impact of the 2016 U.S. election (Fuster et al. (2021)). Second, to balance the data structure before and after disclosure, especially given that the pre-disclosure period spans only three months. Ultimately, we retain 27,993 samples from the savings and lending markets during the study period. The regression model is as follows:

$$\begin{aligned} Y_{i,t} =& \alpha + \beta_1 Treat_i \times Post_t \\ &+ \mathbf{X}\theta + \mu_{Institution \times YearMonth} \\ &+ \mu_{Zip \times YearMonth} + \mu_{Market \times YearMonth} + \epsilon_{i,t} \end{aligned}$$

Here, we divide the complaints into treatment and control groups based on whether this complaint's narratives are disclosed to the public. $Treat_i$ equals 1 if a complaint has publicly available narratives and 0 otherwise. $Post_t$ marks the time when the CFPB provides free access to the narratives of complaints to the public, and its value equals one if the date is June 25, 2015, or later.

For the outcome variables, $Y_{i,t}$, we employ three different indicators to measure the complaints' resolution outcomes. First, we consider the consumers' responses after the institution responds, which is reflected by whether the consumer chooses to dispute the resolution results provided by the corresponding financial institution. Second, we examine whether the institution's response is timely.[25] Third, we focus on whether complaints filed to the CFPB are resolved with monetary relief.[26] These three outcome variables are all in dummy form. In the regression model, β_1 is the coefficient of interest, which captures the change in resolution outcomes for complaints with narratives relative to those without narratives after the disclosure policy takes effect. $\mathbf{X}$ incorporates the baseline terms from the difference-in-

[25]Timely response refers to "Whether the company provided a timely response." According to CFPB regulations, a company must provide a response within 15 calendar days. In special circumstances, a company can request up to 60 calendar days to provide a final response.

[26]Complaints filed to the CFPB can be resolved in the following ways: closed, closed with explanation, closed with monetary relief, closed with non-monetary relief, and untimely response. Monetary relief is a resolution outcome desired by consumers, and this type of resolution has been shown to exhibit significant racial bias (Haendler and Heimer (2021)).

difference setting and county characteristics including the total population and per capita income growth rates.

Additionally, we control for a series of fixed effects to absorb the influence of unobservable factors. Institution-year-month fixed effects control for differences in institution and temporal variations, zip-year-month fixed effects capture potential influences stemming from changes in local political and economic conditions, and market-year-month fixed effects absorb heterogeneous impacts that vary over time across savings and lending markets. Standard errors are two-way clustered by institution and year-month to control for correlation within institutions and over time.

As shown in Table A4, the coefficient of $Treat \times Post$ in Column (1) is significantly positive. This indicates that, after implementing the disclosure policy, the likelihood of complaints being resolved with consumer disputed decreases by 3.9%, corresponding to 21.3% of the sample mean. Next, we estimate the impact of the disclosure policy on the efficiency of complaint responses. The coefficient for $Treat \times Post$ in Column (2) is positive and statistically significant, while the coefficient of $Treat$ is significantly negative. Narrative-containing complaints are processed less promptly than those without narratives before public disclosure but are handled more efficiently by institutions post-disclosure. In Column (3), this indicates that, after implementing the disclosure policy, the likelihood of complaints being resolved with monetary relief increases by 2.1%, corresponding to 47.1% of the sample mean. Meanwhile, $Post$ in Column (1) is also significantly positive, indicating that after narratives are disclosed to the public, all complaints are more likely to receive monetary relief.

These findings support that complaint resolution outcomes improve significantly after disclosing the complaint narratives to the public. Meanwhile, the estimation results of the single terms (like $Treat$) hint that merely setting an option to disclose narratives might not improve the situation for consumers who agree to make their complaint narratives public. What plays a role is actually disclosing these narratives to the public. The disclosure to the public effectively captures institutions' attention and may prompt them to be more inclined to offer favorable treatment to consumers' demands to maintain their reputation.

The premise for the difference-in-difference model to provide accurate estimates is that the parallel trend assumption can be satisfied. We conduct an event study based on the setting in the regression model to ensure the reliability of our estimation. As shown in Figure A3, we designate June 25, 2015, as the policy event date and analyze the dynamic

treatment effects three months before and five months after this date.

Figure A3 (a), (b), and (c) represent the dynamic results for the three outcomes, respectively. The effects are not significantly different from zero in the months before the disclosure, and the estimated coefficients for the pre-trend generally remain stable over time, indicating no abnormal trends. Importantly, the improvement in response outcomes occurs almost immediately at the time of disclosure. Although the improvement effects fluctuate across different outcomes, they all have long-lasting impacts, with the estimated coefficient for the fifth month showing a consistent direction to the coefficients in the initial period.

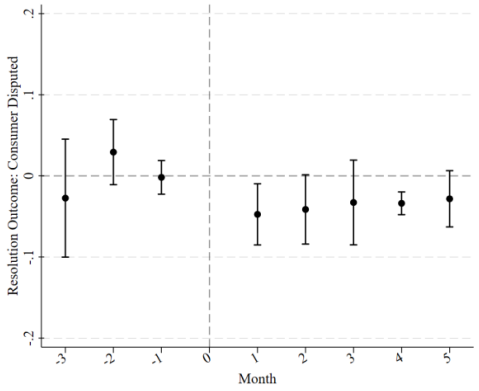
Table A4. Impact of CFPB Disclosure on Complaints' Resolution Outcomes

This table presents the impact of CFPB disclosure on complaints' resolution outcomes. The dataset for estimating this table consists of complaint-level data from March 19, 2015, to December 31, 2015. This table focuses on three resolution outcomes: Consumer Disputed is a dummy variable that takes the value of one if the consumer chooses to dispute the resolution results; Timely Response is a dummy variable that takes the value of one if the institution's response is timely; Monetary Relief is a dummy variable that takes the value of one if the complaint is resolved with monetary relief for the consumer. For the independent variables, we include three essential items in the difference-in-difference model: Treat, Post, and $Treat \times Post$. The key estimated coefficient, $Treat \times Post$, denotes the effect of disclosure on the complaints' resolution outcomes. All columns control for institution-year-month, zip-year-month, and market-year-month fixed effects. Standard errors, shown in parentheses, are double clustered at the institution and year-month levels. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

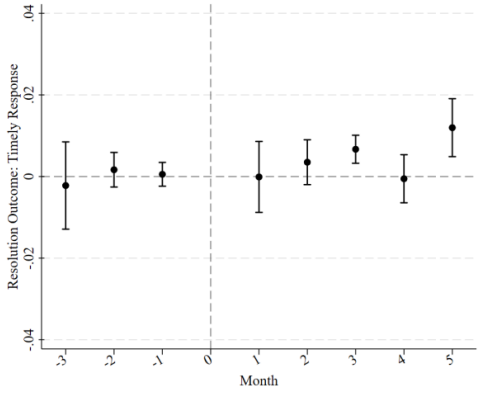
	(1)	(2)	(3)
VARIABLES	Consumer Disputed	Timely Response	Monetary Relief
Treat×*Post*	-0.039**	0.005*	0.021***
	(0.012)	(0.002)	(0.006)
Treat	0.079***	-0.004**	0.011
	(0.011)	(0.001)	(0.008)
Post	0.005	0.001	0.019***
	(0.006)	(0.001)	(0.003)
Institution-Year-Month FE	YES	YES	YES
Zip-Year-Month FE	YES	YES	YES
Market-Year-Month FE	YES	YES	YES
Observations	27,993	27,993	27,993
R-squared	0.542	0.601	0.559

Figure A3. Event Study Trend for Impact of CFPB Disclosure on Complaints' Resolution Outcomes

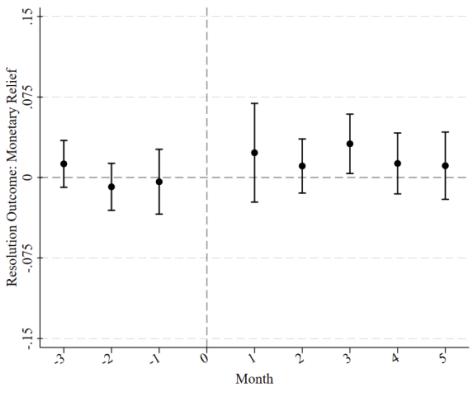
This figure illustrates the trend of an event study assessing the impact of the CFPB disclosure policy on the complaints' resolution outcomes. It addresses three resolution outcomes: In panel (a), Consumer Disputed evaluates whether the consumer opts to dispute the resolution outcomes provided by the respective financial institution. In panel (b), Timely Response assesses whether the institution's response occurs in a timely manner. In panel (c), Monetary Relief measures whether complaints filed to the CFPB result in monetary relief for the complainant. This figure covers the results from three months before the initiation of the disclosure policy on June 25, 2015, to five months after its implementation. For the fifth month after disclosure, the last few days of 2015 (i.e., December 25 to 31, 2015) are also included. During the estimation, we use the month when the disclosure occurs as the baseline period. The vertical axis displays the magnitude of the coefficients for the double-interaction terms, $Treat \times Post$ and the horizontal axis represents various periods, with period zero corresponding to the time of disclosure. The regression specification used to generate this figure is consistent with Column (1) of Table A4. Black circles indicate the coefficient estimates for different periods, and the black vertical lines signify the confidence intervals (set at a 5% significance level).



(a) Consumer Disputed



(b) Timely Response



(c) Monetary Relief

Appendix C Robustness Checks for the Impact on Financial Services

Figure A4. Impact of CFPB Disclosure on Racial Gaps in Deposit Interest Rate Across Asset Size Caps

This figure illustrates the impact of CFPB disclosure on racial gaps in deposit interest rates across different asset size caps. The horizontal axis in this figure represents the caps used for sample selection. We perform an estimation every $20 billion from $20 to $500 billion. The vertical axis in this figure represents the size of the coefficients for the triple-interaction items in the triple-difference model estimated at different cap thresholds. These coefficients are estimated based on the setting in Column (1) of Table 2. The dots represent the coefficient values, and the lines extending above and below each dot represent their confidence intervals (set at a 5% significance level). The red line in this figure shows the estimated results for this paper's baseline cap, which includes institutions with total assets under $100 billion.

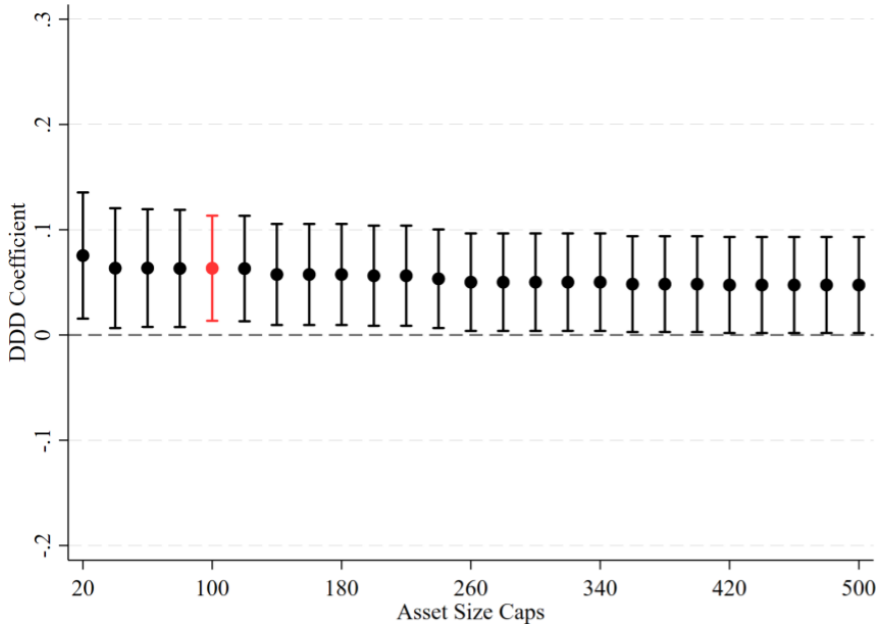


Table A5. Impact of CFPB Disclosure on Racial Gaps in Savings Market: Sensitivity with Quarterly Rate Methods

This table presents the impact of CFPB disclosure on racial gaps in rate sensitivity with quarterly rate methods. Columns (1) and (2) use the average rate of a branch within a quarter, while Columns (3) and (4) use the rate spread, calculated as the last-week rate minus the Fed funds target rate, as outcome variables. All columns control for branch and year-quarter fixed effects. Columns (1) and (3) control for demographic variables at the county level and institution-year fixed effects. Columns (2) and (4) control for county-institution-year fixed effects. Through the estimation process, we obtain estimates of the key coefficient, $Treat \times Post \times Minority$, which denotes the effect of disclosure on the deposit rates in minority communities. Standard errors, shown in parentheses, are clustered at the institution, county, and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Deposit Rate			
VARIABLES	Mean Rate		Rate Spread	
Treat×Post×Minority	0.051*	0.025***	0.063**	0.028***
	(0.023)	(0.000)	(0.025)	(0.001)
County Characteristics	YES	-	YES	-
Branch FE	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES
Institution-Year FE	YES	-	YES	-
County-Institution-Year FE	-	YES	-	YES
Observations	309,372	309,078	309,372	309,078
R-squared	0.886	0.890	0.941	0.943

Table A6. Impact of CFPB Disclosure on Racial Gaps in Savings Market: Minority Ratio

This table presents the impact of CFPB disclosure on racial gaps in deposit interest rates. We replace the dummy variable *Minority* with the continuous variable *MinorityRatio*, which comes from the 2015 county-level demographic data. All columns control for branch and year-quarter fixed effects. Column (1) controls for demographic variables at the county level and institution-year fixed effects, while Column (2) controls for county-institution-year fixed effects. Through the estimation process, we obtain estimates of the key coefficient, $Treat \times Post \times MinorityRatio$, which denotes the effect of disclosure on the deposit rates in communities with different minority ratios. Standard errors, shown in parentheses, are clustered at the institution, county, and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Deposit Rate	
Treat×Post×MinorityRatio	0.096**	0.137***
	(0.036)	(0.000)
County Characteristics	YES	-
Branch FE	YES	YES
Year-Quarter FE	YES	YES
Institution-Year FE	YES	-
County-Institution-Year FE	-	YES
Observations	309,317	309,023
R-squared	0.879	0.883

Table A7. Impact of CFPB Disclosure on Racial Gaps in Savings Market: Different Races

This table presents the results on the impact of CFPB disclosure on racial gaps in deposit interest rates across different racial groups. We modify the definition of the Minority dummy variable, creating county-level Minority variables based on the distribution (tertile value) of the proportion of Black individuals ("Black") and the combined proportion of Hispanic and Asian individuals ("NonBlack") in different counties. Columns (1) and (2) display the estimated effects of disclosure for each of these racial groups on "12MCD10K". All columns control for demographic variables at the county level. We also control for branch, year-quarter, and institution-year fixed effects. Throughout the estimation process, we include all interaction terms and present the main triple interaction terms in this table. The key estimated coefficients denote the changes in deposit rates following disclosure in communities with minority ratios in the upper and middle tertiles. Standard errors, shown in parentheses, are clustered at the institution, county, and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
	Deposit Rate	
VARIABLES	Black	Non-Black
Treat×Post×UpperTertile	0.027***	-0.019
	(0.006)	(0.016)
Treat×Post×MiddleTertile	0.004	-0.017
	(0.013)	(0.018)
County Characteristics	YES	YES
Branch FE	YES	YES
Year-Quarter FE	YES	YES
Institution-Year FE	YES	YES
Observations	311,100	311,100
R-squared	0.879	0.879

Table A8. Impact of CFPB Disclosure on Racial Gaps in Savings Market: Difference-in-Discontinuities Model

This table presents the results on the impact of CFPB disclosure on racial gaps in deposit rates based on a difference-in-discontinuities model. We focus our analysis on banks, thrifts, and credit unions, and we have excluded data from institutions with total assets of less than $10 billion that were subject to treatment (i.e., CFPB-regulated affiliates). This approach captures the difference in the discontinuity before and after the disclosure at the $10 billion total assets threshold. Specifically, we estimate the following specification separately for minority and white communities:

$$\begin{aligned} DepositRate_{i,c,t} = {} & \alpha_i + \alpha_1(Asset_{i,t} - 10billion) + Over10_{i,t}(\beta_0 + \beta_1(Asset_{i,t} - 10billion)) \\ & + Post_t[\gamma_0 + \gamma_1(Asset_{i,t} - 10billion) + Over10_{i,t}(\delta_0 + \delta_1(Asset_{i,t} - 10billion))] \\ & + \mu_{Branch} + \epsilon_{i,c,t} \end{aligned}$$

Where $DepositRate_{i,c,t}$ represents the deposit interest rates of branch i in county c at time t across 12MCD10K. $Over10_{i,t}$ indicates whether the total assets of a financial institution exceed the $10 billion threshold, based on the first quarter of 2015 data. $Post_t$ takes a value of one when the time t corresponds to the period after the second quarter of 2015 and zero otherwise. We include individual (branch) fixed effects α_i. The coefficient δ_0 is the diff-in-disc estimator and identifies the treatment effect of the CFPB disclosure. Columns (1) and (2) present the results for minority communities, while Columns (2) and (4) focus on white communities. Columns (1) and (3) use the full sample, while Columns (2) and (4) focus on institutions with total assets ranging from $1 billion to $20 billion. Standard errors, shown in parentheses, are clustered at the institution level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Deposit Rate			
	Minority		White	
VARIABLES	All	[1,20]	All	[1,20]
Diff-in-Disc	0.037***	0.090***	0.008	-0.009
	(0.011)	(0.032)	(0.005)	(0.015)
Branch FE	YES	YES	YES	YES
Observations	4,943	1,047	116,401	23,804
R-squared	0.418	0.468	0.401	0.414

Table A9. Impact of CFPB Disclosure on Racial Gaps in Savings Market: Branch Ownership Change

This table presents the results on the impact of CFPB disclosure on racial gaps in deposit interest rates considering the branch ownership changes. We excluded branch observations where ownership changed during the sample period. These exclusions are limited to branches whose institutions were altered and do not include newly established branches. All columns control for branch and year-quarter fixed effects. Column (1) controls for county-level demographic variables and institution-year fixed effects, while Column (2) controls for county-institution-year fixed effects. Through the estimation process, we obtain estimates for the key coefficient, $Treat \times Post \times Minority$, which denotes the effect of disclosure on the deposit rates in minority communities. Standard errors, shown in parentheses, are clustered at the institution, county, and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Deposit Rate	
Treat×Post×Minority	0.055**	0.031***
	(0.021)	(0.001)
County Characteristics	YES	-
Branch FE	YES	YES
Year-Quarter FE	YES	YES
Institution-Year FE	YES	-
County-Institution-Year FE	-	YES
Observations	292,962	292,695
R-squared	0.879	0.884

Appendix D Details for Online Ranking of Racial Gaps in Financial Services

Our research demonstrates that disclosure policies play a vital role in enhancing minority welfare in financial services by fostering transparency and accountability. In alignment with Li (2023b), we have expanded the platform with a ranking system that highlights how financial institutions serve different communities, particularly emphasizing the disparities between minority and white areas. This platform, building on a series of prior studies, already includes a comprehensive ranking of mortgage lenders. Our latest extension significantly broadens its scope, offering deeper insights into how branches cater to diverse communities while advancing transparency and equity in financial services.

Specifically, we have introduced new functionalities that rank financial branches based on disparities in four key financial outcomes: deposit rates, maintenance fees, auto loan rates, and credit card rates. These rankings are generated by comparing branches located in minority areas to those in white areas, controlling for branch, year-quarter, state, and other fixed effects to accurately capture the impact of racial composition in each location. The core of our analysis lies in identifying whether financial institutions treat consumers differently based on the racial composition of the communities they serve. By analyzing disparities in these four financial outcomes, we assess if branches located in minority communities offer systematically different financial products compared to those in white communities. Each regression model includes data at the branch level and applies fixed effects to control for time-specific economic conditions, product variations, and location-level regulatory differences, ensuring robust estimation of β.

$$\begin{aligned} Outcome_{i,l,t} =& \alpha + \beta Minority_l \times InstitutionID_i + \mathbf{X}\theta \\ &+ \mu_{Branch} + \mu_{YearQuarter} \\ &+ \mu_{State \times Year} + \mu_{Product \times Year} + \epsilon_{i,l,t} \end{aligned} \tag{3}$$

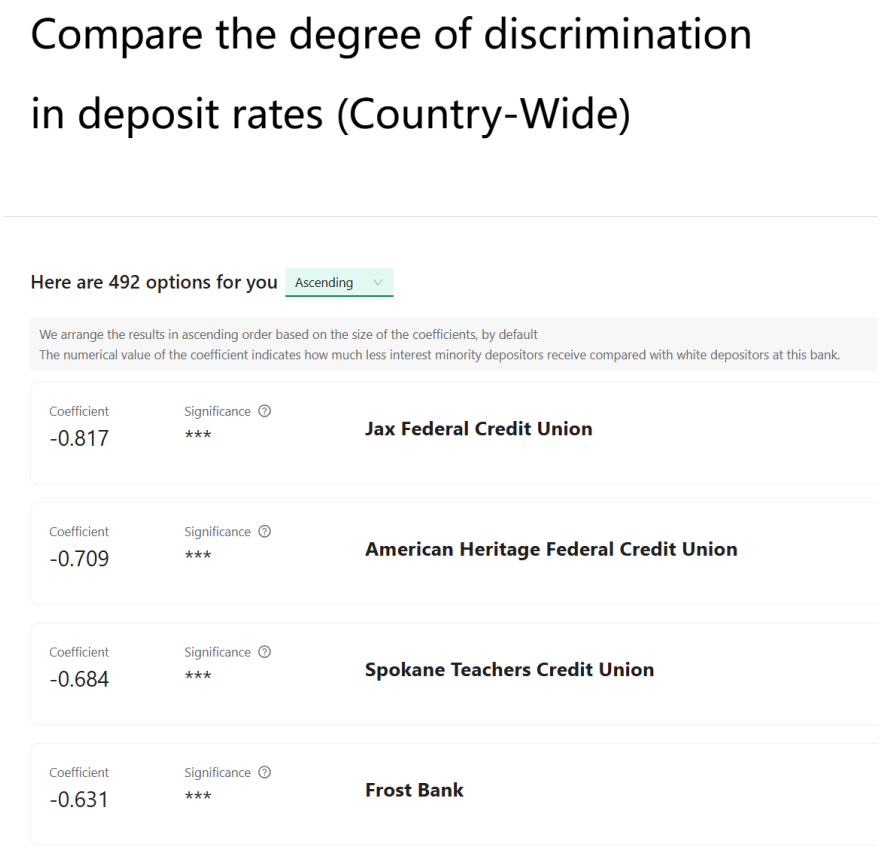
In this equation, i, l, and t represent the branch, location (ZIP code), and year-quarter, respectively. The *Outcome* variable captures one of four financial indicators: deposit rate, maintenance fee, auto loan rate, or credit card loan rate, offered by branch i in location l during year-quarter t. The key independent variable, $Minority$, equals one if the branch op-

erates in an area where the minority population exceeds the median value based on the 2010 census. $InstitutionID$ represents the financial institution to which branch i belongs. The interaction term, $Minority \times InstitutionID$, enables us to analyze branch-level variations across different communities within the same financial institution. The coefficient β reflects the racial disparity in outcomes between branches serving minority and white communities. A positive β suggests that branches in minority areas may charge higher auto loan and credit card loan rates, as well as higher maintenance fees, while a negative β would indicate lower deposit rates in these areas, suggesting potentially less favorable savings options.

Figure A5 illustrates a country-wide ranking of branches based on deposit rates. These rankings aim to provide greater transparency into how branches price their deposit and loan products in different communities. By offering an accessible interface for the public, we hope that this initiative will contribute to increasing awareness of financial disparities and, in the long run, support efforts to create a more equitable financial environment.

Figure A5. Example of Online Ranking of Racial Gaps in Financial Services

This figure presents a screenshot extracted from the website, ranking 492 financial institutions across the country based on racial disparities in deposit interest rates. The table consists of three columns. Column (1) shows the Coefficient, which represents the difference in interest rates received by depositors in minority communities compared to those in white communities at each institution, with more negative values indicating greater disparities. Column (2) displays the Significance, which indicates the statistical significance of the coefficients(The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively). Column (3) identifies the financial institutions.



References

Dou, Yiwei, Mingyi Hung, Guoman She, and Lynn Linghuan Wang, 2024, Learning from peers: Evidence from disclosure of consumer complaints, *Journal of Accounting and Economics* 77, 101620.

Dou, Yiwei, and Yongoh Roh, 2023, Public disclosure and consumer financial protection, *Journal of Financial and Quantitative Analysis, Forthcoming* .

Fuster, Andreas, Matthew C Plosser, and James I Vickery, 2021, Does cfpb oversight crimp credit?, Working paper.

Haendler, Charlotte, and Rawley Heimer, 2021, The financial restitution gap in consumer finance: Insights from complaints filed with the cfpb, Working paper.

Li, Xiang, 2023, Does the disclosure of consumer complaints reduce racial disparities in the mortgage lending market?, Working paper.