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

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June 6, 2026

Abstract

This study investigates how the 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 intensified local competition and deposit outflows. Our evidence underscores the broad impact of service quality disclosure in narrowing racial disparities across savings and lending markets.

Keywords: Disclosure; Racial disparities; Financial services; Artificial intelligence

JEL: D14; G28; J15

*For helpful comments and suggestions, we thank Thomas Chemmanur, Amy Hutton, Phil Strahan, Andreas Fuster (discussant), Harjot Mehmi (discussant), Yaser Faizi (discussant), Nonna Sorokina (discussant), Filipe Correia (discussant), Trang Nguyen (discussant), Navid Neshat (discussant), Marina Gertsberg (discussant), Charlotte Haendler (discussant), Ramona Dagostino (discussant) and various seminar and conference participants at the ASSA-IBEFA Meeting, CEPR European Conference on Household Finance, GSU CEAR Conference, Miami University Finance and Real Estate Conference, NFA Meeting, MFA Meeting, FMA New Ideas Session, LaBS Banking Workshop, Accounting Ethics Symposium, Inter-Finance PhD Seminar, and the Third Durham Conference for Finance JMP. We would also like to sincerely thank Biman Yang, Yifei He, Jinyuan Liu, and Yuqin Lei for their excellent research assistance.

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1 Introduction

The information environment shapes consumer outcomes by enabling market participants to discipline product and service providers (Jin and Leslie (2003); Leonelli et al. (2026)). In financial services, where providers' service quality is difficult to observe, this opacity shields weaker providers from competitive pressure (Chen et al. (2022)) and deepens inequality, particularly racial disparities in financial service terms (Cohen-Cole (2011); Faber and Friedline (2020); Butler et al. (2023)). In 2015, the Consumer Financial Protection Bureau (CFPB) began publicly releasing consumer complaint narratives, making households' firsthand experiences with financial providers publicly available for the first time. We use this disclosure policy as a natural experiment to examine whether publicizing these narratives reduces racial gaps in financial services.

On June 25, 2015, the CFPB began publicly releasing detailed narratives of consumer complaints across multiple financial markets with consumers' permission (CFPB (2015)). This initiative represents a distinct form of disclosure from traditional financial reporting regulation, which centers on risk exposures, capital adequacy, and firm-level performance (Acharya and Ryan (2016); Gopalan (2022)). Rather than disclosing information reported by firms, the CFPB platform disseminates consumer-generated accounts of their daily transactions with financial providers. These qualitative narratives of service failures are more memorable and persuasive than aggregate statistics (Shiller (2017); Graeber et al. (2024)), and narratives involving discriminatory practices attract particularly intense public scrutiny, potentially pressuring firms to improve their practices.[1]

We first assess whether disclosure alters financial institutions' aggregate pricing behavior. Using the CFPB's list of supervised institutions and the timing of the disclosure policy, we construct a difference-in-differences (DID) framework based on institution-level Call Report data. We find that, following the 2015 disclosure, supervised institutions raise deposit

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

rates and lower loan rates relative to non-supervised institutions. These results indicate that public disclosure of service-quality information generates changes in institutions' pricing decisions. We then turn to the distributional question that motivates this study: Does disclosure narrow racial gaps in financial services?

To identify changes in racial gaps, we employ a triple-difference (DDD) design that leverages variation in CFPB supervision and county-level racial composition. We classify counties as majority-minority or white-majority based on their demographic makeup.[2] We match branches of CFPB-supervised institutions to the RateWatch dataset and define them as the treatment group, while branches of non-supervised institutions serve as the control group. Our triple-difference approach compares how racial disparities in service quality between minority and white communities changed across treatment and control groups after the disclosure policy was implemented. This identification strategy offers a key advantage: it identifies changes in racial gaps rather than requiring treated and control institutions to be directly comparable in levels. This is important because CFPB-supervised institutions are typically larger (with assets above the $10 billion regulatory threshold) than non-supervised institutions.

We begin with the savings market, a foundational entry point into the financial system. The risk-free nature of deposit-taking in this market provides a clean setting to identify taste-based discrimination, separate from risk-based considerations.[3] Since consumers may not readily observe or compare branch-level deposit terms and service quality, disclosed complaints serve as a potentially important source of information. Our analysis examines deposit rates and account maintenance fees from 2013 to 2022, capturing both the return on savings and the barriers to financial access. We find significant improvements for minority

[2]We define minorities broadly to include all non-white racial groups. A county is classified as majority-minority if minorities constitute more than 50% of its total population.

[3]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 racial disparities in the savings market.

communities following the disclosure policy. For the main deposit product (i.e., 12-month CDs), treated institutions reduce the racial gap in deposit rates by 9.4 basis points relative to control institutions. This pattern extends to other mainstream deposit products, generating roughly $74 million in annual financial gains for minority consumers. Treated institutions also narrow racial gaps in account maintenance fees by 30.5% for savings accounts (a $62 decrease in minimum balance requirements) and by 34.3% for interest-bearing checking accounts (a $832 decrease), substantially lowering entry barriers to basic banking services.

We next investigate how disclosure affects the lending market. Our study focuses on auto loans and credit cards, two high-volume segments where, unlike mortgage lending, regulatory reporting requirements are minimal and the information environment is comparatively opaque (Butler et al. (2023)). This opacity makes consumer complaint disclosures a potentially important source of new information. We find that treated institutions decrease the racial gaps in loan rates by 9.7 basis points for auto loans and by 37 basis points for credit cards relative to control groups.

Examining both markets jointly is important for two reasons. First, savings and lending products represent both sides of household balance sheets and together determine financial well-being. Second, we find that the disclosure policy induces opposite movements in interest rates: deposit rates rise while loan rates fall for minority communities. These contrasting patterns rule out common confounders, such as monetary policy shocks, that would shift rates in the same direction across markets.

We then examine the mechanism through which disclosure affects financial services. Public disclosure repositories can shape market outcomes by facilitating information acquisition (Drake et al. (2015)), and local information intermediaries can discipline corporate conduct (Jiang and Kong (2024)). We hypothesize that complaint narrative disclosures reduce information frictions in local financial markets, enabling rival institutions to identify underserved communities and enter profitably. Consistent with this prediction, our empiri-

cal analysis shows that counties with a higher volume of disclosed discriminatory complaints attract additional entrants.[4] We further show that institutions implicated in discriminatory practices experience significant deposit outflows as competing providers expand local choice sets. In sum, disclosure reduces information asymmetries about local service quality, triggering competitive entry that disciplines discriminatory practices.

Beyond pricing, unequal access to mainstream financial services represents a major constraint for minority households (Beck et al. (2010); Howell et al. (2024)). We examine whether disclosure produces real effects on household financial outcomes. Using detailed household-level survey data, we document three findings. First, disclosure narrows racial gaps in bank account ownership more in areas with higher exposure to discriminatory complaints. Second, the racial gap in auto ownership also narrows more in these areas. Third, disclosure improves minority households' relative confidence in credit card approval. These results suggest that disclosure-driven institutional responses translate into measurable gains in financial inclusion.

This study makes several key contributions to the literature. First, we advance our understanding of the broad effects of disclosure policies. Existing research on disclosure primarily examines firm-reported financial and governance information designed to inform investors and regulators about firms' financial health (e.g., Acharya and Ryan (2016); Leuz and Wysocki (2016); Chen et al. (2018); Blankespoor et al. (2023); Li et al. (2025)). In banking, such transparency carries real consequences, lowering institutions' funding frictions and expanding their supply of credit (Balakrishnan and Ertan (2019)). However, these disclosures reveal little about how firms treat consumers in daily transactions, particularly whether service quality varies across demographic groups. We introduce consumer-generated complaint narratives as a new form of disclosure that makes these otherwise opaque aspects of firm behavior publicly visible. This mirrors investor-facing settings, where a public platform channels dispersed stakeholder demands into pressure that reshapes how firms act (Wong

[4]We use GPT-4o to identify discrimination-related characteristics from unstructured complaint narratives, enabling us to measure the information content of these disclosures.

et al. (2024)). By studying consumer-generated content, our analysis extends the scope of disclosure research beyond firm-reported information and connects the accounting literature on mandatory disclosure with the marketing literature on consumer reviews (Fennis and Stroebe (2014); Zhang and Li (2021); Varga and Albuquerque (2024)).

Second, we link disclosure regulation to the efforts to reduce racial disparities in financial services. While extensive research documents racial bias in financial markets (Cohen-Cole (2011); Faber and Friedline (2020); Bartlett et al. (2022); Butler et al. (2023); Rupar et al. (2025)), traditional regulations such as the Community Reinvestment Act can create trade-offs between the quantity and quality of financial services provided to minority communities (Begley and Purnanandam (2021)). Beyond formal mandates, race-related public scrutiny can prompt corporate responses, as firms most exposed to such concerns took visible action after the murder of George Floyd (Balakrishnan et al. (2023)). Our study shows that disclosure-based regulation complements these approaches: a standing information regime keeps service quality continuously observable, delivering durable gains rather than the episodic responses that salient events trigger. While such disclosure policies have primarily been studied in the mortgage market (Li (2023)), our paper extends this line of inquiry in two dimensions. Our analysis of deposit markets leverages their largely risk-free nature, which allows us to separate taste-based discrimination from statistical discrimination. In addition, we extend the analysis beyond a single financial market to document the effects of disclosure on both sides of households' balance sheets, covering deposits and lending. This is particularly relevant because most CFPB complaints concern non-mortgage products. Figure 1 shows the growth of disclosed narratives and the distribution of complaints across product categories. To the best of our knowledge, this offers the first systematic evidence that consumer complaint disclosures reduce racial disparities across multiple financial markets.

Finally, we contribute to the literature on the effects of the CFPB's public complaint database (Hayes et al. (2021); Dou et al. (2024); Dou and Roh (2024); Hayes et al. (2025); Jou

et al. (2025)). Prior work links complaint volume to changes in bank behavior, and we build on this literature by studying the information revealed through complaint narratives. Our findings also extend the broader debate on the CFPB's regulatory effectiveness (Neugebauer and Williams (2015); DeFusco et al. (2020); Fuster et al. (2021); Mazur (2022)), which has largely focused on credit supply and financial stability rather than fairness in service delivery. Methodologically, we demonstrate how large language models can extract this content from unstructured text, contributing to the emerging literature on generative AI and disclosure processing (Blankespoor et al. (2026)).

The remainder of the paper proceeds as follows. Section 2 describes the institutional background and data. Section 3 presents our main empirical analysis. Section 4 examines the mechanism through which disclosure disciplines financial institutions. Section 5 documents real effects on household financial inclusion. Section 6 presents additional analyses. Section 7 concludes.

2 Background and Data

2.1 Background of CFPB Complaint Narrative Disclosure

The Consumer Financial Protection Bureau was established under the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. It serves as the chief regulatory agency protecting consumer interests in financial markets and has consistently drawn high public attention. In just one year, between June 2023 and June 2024, the CFPB website recorded 39.6 million visits.[5] Beginning with accepting credit card complaints in July 2011, the CFPB subsequently expanded its scope to include bank accounts, consumer loans, mortgages, and other financial services. As a regulatory agency, it addresses a wide range of consumer issues, from major service failures to serious institutional misconduct. The CFPB maintains detailed product categories within these issues, which facilitates targeted complaint submission

[5]For more details, see: `link`.

by consumers while providing researchers the opportunity to analyze different products by linking complaint data with product market data.

On March 19, 2015, the CFPB finalized a policy permitting public disclosure of consumer complaint narratives about financial products and services.[6] Subsequently, a buffer period of over 90 days was provided to help companies prepare for the new system. On June 25, 2015, complaint narratives became publicly accessible through the consumer complaint database.[7] The CFPB Consumer Complaint Database includes detailed information for each complaint: the type of financial product involved, consumer zip code, submission date, the name of the financial institution involved, and the institution's response.

Since then, the initiative has attracted substantial attention from mainstream media outlets and diverse stakeholders.[8] Using product type information sourced from the public database, we systematically analyze complaint trends across key financial service subsectors. Figure 1 presents complaint volumes from 2013 to 2022. Panel (A) shows that total complaint volume increases steadily over the sample period. Complaints with narratives account for a substantial share of this activity. This pattern indicates that narrative disclosure became an important component of the CFPB complaint system. Panel (B) shows persistent growth in complaints involving savings accounts, auto loans, and credit cards. These three markets account for a growing part of complaint activity relative to other product categories and correspond to the financial services examined in our empirical analysis. This pattern points to rising consumer concerns in these everyday savings and lending markets and growing

[6]We analyze media engagement using the *Factiva* database, focusing on news articles containing the keyword "CFPB complaint narrative" between 2011 and 2022. Out of a total of 930 articles, 148 were published in 2015 alone—the peak year of coverage—highlighting immediate media interest following the policy change. Importantly, such engagement has persisted: during Wells Fargo's 2022 phony accounts scandal, media reports underscored how complaint narratives had served as an early warning signal long before formal investigations. For more details, see: `link`

[7]Most complaints are submitted via the portal. On the website, the complaint submission follows a structured five-step process. Specifically, consumers answer 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?". After receiving a complaint, the CFPB transmits it to the relevant financial institution and works to obtain a response for the consumer within 15 days.

[8]For example, see "Consumers' Financial Complaints to Go Public," *The Wall Street Journal*, March 19, 2015, and "Consumer Finance Complaints Hit the Internet," *MarketWatch*, June 26, 2015.

public reliance on the CFPB's complaint mechanisms.

[Insert Figure 1 about here]

Figure A1 in Appendix A uses Google search interest from 2011 to 2022 to illustrate public attention toward the CFPB's narrative disclosure policy. Search interest in "CFPB complaint" was negligible at the CFPB's establishment in 2011 but increased sharply in June 2015 following the public disclosure of detailed complaint narratives, and remained elevated in subsequent years. By contrast, search interest in CFPB enforcement remained persistently low, which suggests that narrative disclosure rather than enforcement actions drove the rise in public attention. We also search the CFPB official website and find that discrimination-related enforcement actions are rare and show no clear temporal clustering.[9]

Building on this growing engagement with the complaint system, we examine whether financial institutions take complaints seriously, particularly those with publicly disclosed narratives, by analyzing complaint resolution outcomes between March 19 and December 31, 2015. On March 19, 2015, the CFPB began offering consumers the option to make their complaint narratives public when filing complaints, with the actual disclosure of these narratives scheduled to start on June 25, 2015. Table A4 in Appendix B shows that complaints with narratives experience better resolution outcomes after June 25. A complaint is 3.9% less likely to be disputed, 0.5% more likely to receive a timely response, and 2.1% more likely to be resolved with monetary relief. Figure A4 further supports this comparison by showing no abnormal pre-trends. This pattern also mitigates a potential selection-on-severity concern, as narrative and non-narrative complaints would have differed before the policy if consumers had selected public disclosure mainly for more severe complaints. Haendler and Heimer (2025) find that consumers with higher income and education are more likely to receive favorable firm responses, thus benefiting disproportionately from the complaint system. In this study, we focus on a structural determinant of complaint resolution: when complaint narratives are publicly disclosed, firms provide better outcomes. This mechanism may help

[9]Using the keyword "discrimi" on the CFPB official website, we find only 14 records between 2013 and 2022. Seven of these focus on mortgage issues.

mitigate disparities driven by borrower characteristics, allowing disadvantaged consumers to achieve more equitable results through public disclosure.

Between 2015 and 2022, consumers submitted 871,960 complaints with narratives in the savings, auto loan, and credit card markets, accounting for 40.7% of all complaints. We use a tailored prompt to train GPT-4o to detect whether complaint narratives submitted in 2015 include discrimination-related content (see Appendix D for details). Table A1 in Appendix A presents three example complaints, showing key information fields including "Date received," "Product," "Consumer complaint narrative," "Company," and "Company response." While personal information is protected, the racial bias content is evident. For instance, one narrative describes "...It was about me, a hardworking African-American businesswoman coming into the bank with a huge check to deposit for my business that I and my business was awarded and earned and immediately being racially discriminated against...".

The CFPB's disclosure policy creates a sharp regulatory divide: supervised institutions are required to disclose detailed complaint records, while unsupervised peers face no such requirement. This policy-induced discontinuity creates a quasi-experimental setting, enabling the estimation of policy effects through counterfactual comparisons between institutions subject to mandatory disclosure and those exempt from it. Under official regulations, the CFPB maintains supervisory authority over depository financial institutions with assets exceeding $10 billion, including banks, thrifts, credit unions, and their affiliates. We match these supervised institutions to our primary datasets using the Research Statistics Supervision Discount Identifier (RSSD) from the CFPB's supervised institution list.[10] The CFPB's supervision also extends to non-depository institutions of all sizes, including mortgage originators and servicers, payday lenders, and private student lenders, as well as major participants in other consumer financial markets as defined by CFPB rules. These institutions are also considered under the influence of disclosure regulations when they appear in our datasets.

[10]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.

2.2 Data Sources

2.2.1 RateWatch

Our empirical analysis uses RateWatch's branch-level data on interest rates and fees for various financial products from 2013 to 2022.[11] RateWatch integrates multiple data sources, including competitor rate filings, audited financial statements, user feedback, and regulatory reports, through cross-validation to provide standardized benchmarks for deposit rates, loan terms, and fee structures at the branch level across the U.S. The reliability of this dataset has also been recognized in academic research. For example, d'Avernas et al. (2023) find that the differences in deposit pricing among banks of varying sizes documented in RateWatch data align closely with evidence from Call Report data collected by the Federal Financial Institutions Examination Council. We focus on deposit rates, loan rates, and fees at the branch-week level and aggregate these weekly observations to the quarterly level.[12] To investigate institutional responses to disclosure policies, we follow Drechsler et al. (2017) and examine pricing behavior in the savings and lending markets by focusing on branches that actively set their rates. Specifically, we select the following products for our analysis:

Within the savings market, we examine interest rates of widely-used deposit products, particularly focusing on 12-month certificates of deposit (CDs) with balances of $10,000 (Drechsler et al. (2017); Lin (2020); Dlugosz et al. (2024)). Our analysis also covers other mainstream CDs and money market accounts (MMs). Additionally, we analyze minimum balance requirements for waiving maintenance fees in both savings and interest-bearing checking accounts.

For the lending market, our analysis covers vehicle loan rates for both short-term and

[11] Our sample begins in 2013 because the CFPB expanded complaint collection across major consumer financial products in 2012, and by 2013 the public complaint database had stabilized in coverage. Aggregate complaint counts are already publicly available throughout our sample. Our pre-post comparison around June 2015 therefore isolates the effect of disclosing complaint narratives, separate from any effect of disclosing complaint counts.

[12] For each product, we use its last recorded interest rate or fee within each quarter as the quarterly observation. We also examine quarterly mean values as a robustness check.

long-term borrowing, represented by 36-month and 72-month terms, respectively (Yi (2022); Wang (2025)). We also examine credit card interest rates, focusing on standard and premium credit card rates (Chava et al. (2023)).

2.2.2 Additional Databases

The Call Reports dataset provides quarterly, institution-level information on the income statements and balance sheets of all U.S. commercial banks. From this dataset, we extract key variables over the period 2013–2022, including total assets, interest expense, total deposits, interest income, total loans, and net income. We construct an institution's deposit rate as the ratio of total interest expense to total deposits, and its loan rate as the ratio of total interest income to total loans (Drechsler et al. (2017); Döttling (2025)).

The Summary of Deposits (SOD) dataset provides branch-level deposit amounts from FDIC-insured institutions, collected annually as of June 30 from 2013 to 2022.

The Current Population Survey (CPS) dataset provides household-level information on bank account ownership and various household characteristics, including income level, highest level of education, household size, and employment category. Although the CPS dataset includes annual data from 2013 to 2022, only odd-numbered years contain information on bank account ownership.

The American Community Survey (ACS) dataset supplies household-level auto ownership and household characteristic variables, covering annual data from 2013 to 2022.

The Survey of Household Economics and Decisionmaking (SHED) dataset provides household-level self-reported confidence in credit card approval, along with household characteristic variables, covering annual data from 2013 to 2022.

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, spanning from 2013 to 2022. The proportion of minority groups in each county is utilized to identify minority communities.

2.3 Summary Statistics

Table 1 presents summary statistics for our key variables from 2013 to 2022. Panel A of Table 1 reports the distribution of branch-level variables. These variables encompass deposit interest rates, auto loan rates, credit card rates, and account maintenance fees from the RateWatch dataset on a year-quarter basis, along with deposit amounts from the SOD dataset on an annual basis. Panel B summarizes key institution-level data from the Call Reports, specifically quarterly deposit and loan rates. Panel C contains household-level indicators from three survey datasets, including bank account ownership, auto ownership, and credit card approval confidence. Panel D reports characteristics at the county-year level.

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. This sample restriction ensures that institutions affected by the disclosure policy and those that are not affected remain comparable without systematic differences (Li (2023)).[13] Additionally, to analyze racial differences in financial services pricing, we define minority communities as counties where the non-white population exceeds 50% of the total population in 2015. These communities represent 7% of the national population but contain 82.5% of the nation's minority residents.

[Insert Table 1 about here]

To examine whether institutions treat minority consumers unfairly, we compare interest rates across communities with different racial compositions in both the savings and lending markets. Specifically, we compare the rates offered by the same institution in majority-minority communities versus white-majority communities. This approach allows us to control for unobserved institution-level heterogeneity that could otherwise confound a direct comparison. Figure A2 in Appendix A illustrates the racial disparities observed in the sav-

[13]Larger banks, in comparison to smaller banks, often have distinct capital structures and benefit from economies of scale. These institutions also face enhanced regulatory oversight following the Dodd-Frank Act. Specifically, bank-holding companies with assets above $100 billion must undergo more stringent supervision and participate in regulatory stress tests under the Comprehensive Capital Analysis and Review (CCAR) framework established in 2011.

ings and lending markets between 2013 and the first quarter of 2015, immediately preceding the public disclosure of complaint narratives. In the savings market, deposit rates are notably lower in minority communities compared to white communities (0.18% versus 0.22%). In the lending markets, borrowing rates are consistently higher in minority communities. For auto loans, the rates are 4.00% in minority communities and 3.99% in white communities. For credit cards, the rates are 9.71% and 9.27%, respectively—reflecting a nearly 45 basis points disadvantage for minority communities. Taken together, the descriptive evidence suggests that, prior to the disclosure policy, financial institutions systematically offered less favorable terms at branches located in minority communities relative to those in white communities.

Furthermore, Table A3 in Appendix A presents the distribution of branches of institutions and their interest rate policies in our main dataset. Column (1) focuses on CFPB-supervised institutions with total assets below 100 billion dollars, while Column (2) examines non-CFPB-supervised institutions. Panel A shows that 127 CFPB-supervised institutions operate 537 branches capable of actively setting interest rates across 310 counties. Each institution maintains 1.1 branches per county, with branches adjusting interest rates 6.61 times during our sample period. For non-CFPB-supervised institutions in Column (2), the average is 1.03 branches per county, with rate adjustments occurring around 9 times, comparable to that of CFPB-supervised institutions. Panels B and C present similar distributions for auto loan and credit card rates. Auto loan rate adjustments occur more frequently, reflecting this market's greater responsiveness to changing conditions. Overall, after excluding large financial institutions, our sample exhibits relatively balanced interest rate variations between CFPB-supervised and non-CFPB-supervised institutions, providing sufficient rate changes to quantify the impact of the disclosure policy.

3 Disclosure Effects on Pricing in Savings and Lending Products

This section begins by evaluating the overall impact of the CFPB complaint narrative disclosure and then investigates its effect on racial disparities in both the savings and lending markets. In the savings market, we analyze branch-level deposit interest rates and account maintenance fees, while in the lending market, we focus on auto loans and credit card products.

3.1 Overall Effects on Interest Rates

The public disclosure of CFPB complaint narratives is designed to address a broad spectrum of financial misconduct. The resulting market discipline can, in turn, enhance the overall quality of financial services. Before evaluating the policy's impact on racial disparities, it is essential to first establish its general, market-wide effects. Accordingly, this section empirically examines whether the disclosure policy influences the deposit and loan rates offered by financial institutions.

We construct a panel dataset from the Call Reports, comprising institution-by-year-quarter level interest rate information spanning from 2013 to 2022. Using this dataset, we examine the impact of the CFPB's complaint narrative disclosure by estimating the following difference-in-differences model:

$$\begin{aligned} Y_{f,t} =& \alpha + \beta_1 Treat_f \times Post_t \\ &+ X\theta + \mu_{Institution} + \mu_{State \times YearQuarter} + \epsilon_{f,t} \end{aligned} \tag{1}$$

Where $Y_{f,t}$ represents the interest rate for deposits or loans at financial institution f in quarter t. Deposit rates are measured as interest expense per unit of deposit funding. Loan rates are measured as interest income per unit of loan issuance. The treatment indicator

$Treat_f$ equals one if institution f was under CFPB supervision in the first quarter of 2015, and zero otherwise. We restrict the treatment group to institutions with total assets below $100 billion to improve comparability with the control group. To capture the timing of the policy change, $Post_t$ equals one for periods from the second quarter of 2015 onward, and zero for earlier periods when complaint narratives were not public. $\boldsymbol{X}$ is a vector of time-varying, institution-level controls. These controls include total assets, domestic deposits, total loans, return on assets (ROA), and net interest margin (NIM), to account for institutional size and financial performance. The specification includes institution fixed effects to absorb time-invariant characteristics of each institution. It also includes state-year-quarter fixed effects to control for regional and temporal variation, such as local economic shocks and regulatory changes. Due to this fixed effects structure, the main effects of treatment status ($Treat_f$) and policy timing ($Post_t$) are absorbed. Standard errors are clustered at the institution level.

[Insert Table 2 about here]

Table 2 presents the results. Columns (1) and (3) show that, relative to control institutions, treated institutions raise deposit rates by 0.45% and lower loan rates by 0.33% following the disclosure. Columns (2) and (4) extend the analysis by splitting treated financial institutions into two groups based on whether the volume of narrative complaints they received in 2015 is above or below the median ($HighNarrComp_f$ versus $LowNarrComp_f$). The estimates indicate that the policy effects are stronger among institutions with high complaint exposure. Figure A5 in Appendix C presents the estimated difference-in-differences effects from the event study approach. The figure indicates that, prior to the disclosure, deposit rates exhibited stable trends with no significant differences across groups, lending support to the parallel trends assumption. Following the disclosure, deposit rates increased progressively, suggesting a positive and sustained effect of public narrative disclosure on pricing. These findings highlight the disclosure policy as a meaningful market shock that influences bank pricing behavior. Beyond average effects, it is important to examine whether

the policy also reduces racial disparities in access to fair financial services. Minority communities have long faced systemic barriers and may be particularly affected by increased transparency. To examine this possibility, we adopt a triple-difference framework. This approach tests whether institutions' responses to disclosure vary with the racial composition of the markets they serve.

3.2 Identification Strategy for the Effects on Racial Gaps

We assess the impact of complaint narratives disclosure on racial gaps in the pricing of the four products through a triple-difference estimation approach:

$$\begin{aligned} Y_{i,c,t} =& \alpha + \beta_1 Treat_i \times Post_t \times Minority_c \\ &+ X\theta + \mu_{Branch} + \mu_{YearQuarter} \\ &+ \mu_{Institution \times Year} + \mu_{Product} + \epsilon_{i,c,t} \end{aligned} \tag{2}$$

Where $Y_{i,c,t}$ represents the pricing of four prevalent financial services: deposit rates, account maintenance fees, auto loan rates, and credit card rates at branch i in county c at time t. For our treatment indicator, $Treat_i$ equals one if branch i belongs to an institution under the oversight of the CFPB in the first quarter of 2015, and zero if the branch is not under CFPB oversight. To capture the timing of the policy change, $Post_t$ indicates the periods before and after the CFPB made complaint narratives public, equaling one from the second quarter of 2015 onward and zero for earlier periods. Our county classification relies on the minority population ratio, with $Minority_c$ taking a value of one for counties where the minority ratio exceeds 50%, and zero otherwise. Finally, $\boldsymbol{X}$ consists of the remaining interaction terms from the triple-difference setting and county-level characteristics, including population and per capita income growth rates.

Our specification includes several fixed effects to address unobserved variations. Branch fixed effects absorb time-invariant branch-level characteristics such as location, customer

base, and baseline service quality. We thus identify the change in service quality induced by disclosure, not service quality itself. Year-quarter fixed effects absorb temporal changes in financial markets, including government transitions and economic policy adjustments. Institution-year fixed effects control for pricing differences across institutions, allowing us to identify pricing differences that arise from the racial composition of served communities within the same institution.

As a stricter robustness check, we additionally report specifications with county-institution-year fixed effects. These fixed effects absorb time-varying heterogeneity at both the county level (such as local economic and demographic shifts) and the county $\times$ institution level (such as a given institution's local business-strategy adjustments and its competitive responses to nonbank and fintech entry in that market). For regressions involving multiple products, we include product fixed effects to address unobservable differences between products. We cluster standard errors at the institution, county, and year levels to handle potential correlation in error terms. The coefficient β_1 identifies how the racial gap in the pricing of the four financial services changes in the treatment group relative to the control group after the complaint narrative disclosure. This effect reflects the market discipline created by the disclosure policy, where detailed misconduct information incentivizes improved institutional behavior. Figure A3 in Appendix A provides an illustration of the triple-difference model for intuitive understanding.

3.3 Effects on Racial Gaps in Deposit Interest Rates

Prior regulatory and academic efforts addressing racial disparities have concentrated on the lending market. However, it is difficult to distinguish whether racial gaps in the lending market stem from discrimination or from the higher risks typically associated with minority borrowers. Individual risk levels depend on multiple factors, making it challenging to conduct empirical analyses that adequately control for all these factors. By contrast, the savings market entails minimal risk for financial institutions, removing the need to assess

individual credit characteristics. This low-risk environment offers a cleaner setting to identify taste-based discrimination, in which racial disparities arise from biased preferences rather than risk-based assessments.

A descriptive analysis of the savings market reveals significant racial disparities, even in this risk-free setting. From 2013 to the first quarter of 2015, just before the public disclosure of complaint narratives, depositors in minority communities received an average deposit rate of 0.18%, compared with 0.22% in white-majority communities (see Figure A2 in Appendix A), confirming systematically lower returns in minority areas.

We next estimate the effect of complaint narratives disclosure on deposit rates by examining the most commonly used products, with a specific focus on 12-month CDs with an account balance of $10,000 (12MCD10K). Column (1) of Table 3 shows that the coefficient for the triple-difference term, $Treat \times Post \times Minority$, is significantly positive. Specifically, the disclosure policy increases deposit rates by 9.4 basis points on average in minority communities, equivalent to 18.1% of the sample mean. This finding suggests that treated banks narrow the racial gaps in deposit rates across communities following the implementation of the disclosure policy. In Column (2), we further control for unobservable confounders by including county-institution-year fixed effects. The results remain robust, with the triple interaction coefficient staying positive and significant at the 1% level. Table A5 in Appendix C reports the remaining interaction terms. The estimates of $Post \times Minority$ are not consistently or robustly significant, indicating that control institutions do not drive the pricing changes.

Columns (3) and (4) extend our analysis by including data from eight types of mainstream CDs and MMs from the savings market, following the specifications of Columns (1) and (2), respectively.[14] To address unobservable product-level heterogeneity, we include product fixed effects in our regressions and find that the results remain positive and significant. This larger sample analysis provides strong evidence that the disclosure policy directly

[14]The eight products refer to four types of CDs: 12MCD10K, 24MCD10K, 36MCD10K, and 12MCD100K, as well as four MMs: MM25K, MM50K, MM100K, and MM250K.

increases deposit rates in minority communities. The coefficient on $Treat \times Post \times Minority$ in Column (3) indicates that treated branches in minority communities raise their deposit rates by 6.3 basis points on average. We estimate that the CFPB disclosure generates economic benefits of approximately $74 million annually for consumers in minority communities through higher deposit interest rates.[15] Although this disclosure policy primarily aims to improve banking service quality rather than specifically address racial disparities, it effectively narrows these disparities by revealing misconduct details. Compared to other policies, it involves lower implementation costs and has fewer negative impacts. For instance, the Community Reinvestment Act (CRA) has been shown to have adverse effects on service quality in minority communities (Begley and Purnanandam (2021)).

[Insert Table 3 about here]

A potential limitation of our analysis is that setting a $100 billion total asset cap for institutions might artificially restrict our sample and bias the results. To address this concern, we vary the cap threshold from $20 to $500 billion, setting a new cap at every $20 billion interval and estimating the model at each threshold. Figure A6 in Appendix C shows that the coefficients remain significant across all thresholds, confirming the robustness of our results. The coefficients exhibit a decreasing pattern as the cap increases, suggesting stronger effects under smaller caps. This may be because smaller caps could alleviate the systematic differences arising from large financial institutions. With a $20 billion cap (shown in the leftmost line), the disclosure policy increases deposit rates in minority communities by 7.5 basis points. Even with a $500 billion cap (shown in the rightmost line), we still observe a 4.8 basis point increase. Considering the balance of observations between treated

[15] We quantify the economic magnitude as follows. The average total deposit amount per treated branch in minority communities is $174.37 million. Based on the coefficient on $Treat \times Post \times Minority$ in Column (3) of Table 3, which indicates a 6.3 basis points increase in deposit rates for treated branches in minority communities, each branch provides an additional $0.11 million in annual interest payments to minority community depositors. The Summary of Deposits reports 928 treated branches operating in minority communities. We exclude noninterest-bearing deposits from our calculation because they are unaffected by changes in the disclosure policy. In the fourth quarter of 2015, FDIC-insured domestic noninterest-bearing deposits made up approximately 27.5% of total deposits. Based on these figures, we estimate the total increase in annual interest payments to minority communities to be at least $74 million.

and control branches, our baseline cap choice (marked by the red line) appears appropriate.

The validity of our triple-difference estimation relies on the assumption of parallel trends. This assumption requires that racial gaps between treated and control branches in both minority and white counties share parallel trends. 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. We test this assumption using event study analysis based on Equation (2), which provides statistical validation and dynamic effect estimation. Figure 2 shows that 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. Following the disclosure, we observe immediate and persistent changes in deposit rates for minority communities. These sustained effects are consistent with expectations, as the disclosure policy is 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.

[Insert Figure 2 about here]

Additionally, we conduct several robustness tests to verify the validity of our findings. We begin by testing the robustness of our variable definitions. Specifically, we examine two alternative forms of the dependent variable. One is the quarterly average interest rate of a branch, computed as the mean of its weekly interest rates within a quarter. The other one is the rate spread, defined as the difference between the rate in the last week of the quarter and the Federal Funds target rate.[16] Table A6 in Appendix C shows that our findings are robust and not sensitive to the form of the outcome variable. We also replace the binary minority community indicator with a continuous minority ratio for each county. As shown in Table A7 in Appendix C, the results remain consistent. Furthermore, we examine the impacts of the disclosure policy by separating minority communities into Black and non-Black minority communities. Table A8 in Appendix C indicates that the disclosure of complaints primarily improves deposit rates for Black communities.

[16]We collect data from the Federal Reserve Economic Data (FRED) on the Fed funds target rate from 2013 to 2022 to calculate the rate spreads for our products of interest.

We extend our robustness checks by evaluating the sensitivity of our model specification. To assess inference under alternative assumptions about standard error correlation, we re-estimate the model using two-way clustering at the institution and county levels. As reported in Table A9 in Appendix C, the results remain robust. In addition, we control for county-level income using a triple-difference framework. Table A10 in Appendix C shows that the coefficient on $Treat \times Post \times LowIncome$ is statistically insignificant, while the coefficient on $Treat \times Post \times Minority$ remains robust. This suggests that our main results are not confounded by county-level income.

We also consider potential concerns related to institutions' strategic behaviors. One concern is that changes in branch ownership during the sample period may compromise identification. For instance, branches in the control group may be acquired by institutions in the treated group, potentially violating the triple-difference assumption. After excluding branches that experienced ownership transitions, our results remain robust, as shown in Table A11 in Appendix C. Another concern is that financial institutions may strategically manage their total assets to stay below the $10 billion regulatory threshold, thereby avoiding additional supervisory requirements (Alvero et al. (2023)). After excluding institutions with total assets between $9 billion and $11 billion in our data sample, the results remain robust, as reported in Table A12 in Appendix C.

To further address identification concerns, we employ a difference-in-discontinuities (diff-in-disc) design (Grembi et al. (2016); Bennedsen et al. (2022)), which compares the pre- and post-disclosure discontinuities at the $10 billion total asset threshold. By focusing on institutions near the threshold, this approach improves comparability between treated and control groups and facilitates a more credible identification of the disclosure policy's effect.[17] Our analysis in Table A13 in Appendix C shows that after the disclosure policy, institutions above the threshold significantly increase deposit rates in minority communities,

[17] According to regulation rules, the CFPB supervises banks, thrifts, and credit unions with assets exceeding $10 billion and their affiliates. To ensure a sharp discontinuity at the threshold, we focus on banks, thrifts, and credit unions while excluding their affiliates.

while remaining stable in white communities.

Finally, we examine the impact of the CFPB database launch in 2013. This policy granted the public access to basic complaint information, such as company names, but excluded detailed complaint narratives. Columns (1) and (2) of Table A14 in Appendix C show that the database launch improves average deposit rates. Columns (3) and (4) use the extended sample from 2011 to 2022. The triple-difference effects for the 2013 database launch are statistically insignificant. In the same sample, the 2015 narrative-disclosure effects remain positive and statistically significant. This pattern supports our interpretation that racial gaps narrow when detailed complaint narratives become public.

3.4 Effects on Racial Gaps in Account Maintenance Fees

Despite limited research attention, account fees significantly impact consumers' financial well-being, affecting both their initial account opening decisions and long-term banking relationships. Prior qualitative studies suggest that high fees may deter consumers from participating in traditional banking (Servon (2017)). Faber and Friedline (2020) empirically show that banks impose significantly higher minimum balance requirements to avoid service fees in non-white majority areas, with this gap exceeding $180 compared to white majority areas. We investigate how the CFPB's disclosure policy addresses the unfair treatment of minority consumers regarding fees, with a focus on maintenance fees for checking and savings accounts, the two most prevalent account types.

We estimate the impact on minimum balance requirements using the same specification in Equation (2), where the dependent variable is the logarithm of the minimum balance required to avoid maintenance fees.

[Insert Table 4 about here]

Table 4 examines how CFPB disclosure affects racial gaps in minimum balance requirements for avoiding fees on savings and checking accounts. Column (1) shows that following the disclosure of complaint narratives, treated branches in minority communities reduce min-

imum balance requirements for savings accounts by 30.5% compared to white communities. Column (2) adds county-institution-year fixed effects to control for potential unobservable factors, and the results remain robust. In Columns (3) and (4), we extend this analysis to checking accounts and find similar outcomes. Specifically, Column (3) shows a 34.3% reduction in checking account minimum balance requirements for treated branches in minority communities compared to white communities.

Based on estimates from Columns (1) and (3), this reduction translates to a $62 decrease in minimum balance requirements for a savings account and an $832 decrease for an interest-bearing checking account in minority communities.[18] These effects are economically significant given the widespread use of such accounts. The reduction in balance requirements may also promote financial inclusion, as the FDIC National Survey reports that among all unbanked households, "not having enough money to meet minimum balance requirements" is the most frequently cited reason for lacking a bank account.[19] Furthermore, our event study analysis in Figure A7 in Appendix C shows no evidence of pre-trend concerns and reveals persistent effects following the policy change.

3.5 Effects on Racial Gaps in Auto Loan Rates

Auto loans are one of the most prevalent consumer credit products in the market, yet they face considerably less regulatory oversight compared to mortgages. While mortgage lenders operate under stringent supervision and must report detailed borrower characteristics, auto lenders are subject to more limited regulatory requirements and disclosure obligations. This regulatory framework creates challenges for both monitoring potential racial disparities and conducting academic research on lending inequalities in this market. Butler et al. (2023) document evidence of racial discrimination in auto lending that crowds out approximately 80,000 minority loans annually and results in an interest rate gap of 70 basis

[18] In this dataset, the average minimum balances to avoid service fees are $204.5 for savings accounts and $2,426.6 for interest-bearing checking accounts.

[19] For more details, see link.

points for minority borrowers. However, research on strategies to reduce these disparities remains limited, especially regarding the potential role of transparency mechanisms. We address this gap by analyzing how the public disclosure of consumer complaints affects racial disparities in auto loan pricing.

Table 5 analyzes the impact on auto loan rates using the setting in Equation (2), with auto loan rates as the dependent variable. The study focuses on two commonly selected auto loan products: 36-month short-term loans and 72-month long-term loans. We specifically examine these loan terms in the used car market, given its substantial market share and higher utilization by minority consumers.[20] To account for systematic differences across loan products with different maturities, we incorporate term fixed effects. The triple interaction coefficient on $Treat \times Post \times Minority$ reveals a 9.7 basis point narrowing of racial pricing gaps between minority and white communities at treated branches relative to the gaps observed at control branches. This treatment effect is equivalent to 2.4% of the baseline sample mean rate, suggesting meaningful improvements in consumer welfare.

[Insert Table 5 about here]

Column (2) introduces county-institution-year fixed effects to absorb any unobserved heterogeneity that varies at the county-institution level over time. This stringent set of fixed effects controls for time-varying institutional characteristics within each county, such as local business strategies, relationships with local borrowers, market-specific lending policies, and the competitive dynamics in local banking markets. This specification yields a 5 basis point decline through the triple interaction term, equivalent to 1.2% of the sample mean. Both statistically and economically significant, these findings confirm that disclosure policies enhance credit access for minority borrowers. The event study in Figure A8 in Appendix C further supports these findings. Prior to the disclosure, racial gaps between treated and control branches are not significantly different, with broadly persistent negative post-disclosure

[20] Butler et al. (2023) document that subprime borrowers (credit scores below 660) accounted for 42% of auto loan originations in 2017, with used vehicles representing roughly three-quarters of those loans. Furthermore, Cox Enterprises' 2020-2021 survey shows minority buyers chose used cars 12.5% more frequently than new cars.

effects.

3.6 Effects on Racial Gaps in Credit Card Rates

Credit cards represent a fundamental financial product that provides households with crucial access to short-term liquidity and financial flexibility. Beyond facilitating everyday transactions, credit cards serve as an essential buffer against unexpected expenses and financial shocks. Despite its importance, the credit card market exhibits persistent racial disparities in minority consumers' access to credit cards and the interest rates they receive (Cohen-Cole (2011); Dwyer (2018)). This evidence underscores the need to improve the treatment of disadvantaged groups.

[Insert Table 6 about here]

To thoroughly examine the impact of the disclosure policy, we estimate interest rates for both standard and premium credit cards, using product fixed effects to control for differences in product characteristics. Table 6 presents the results. The estimated coefficient on $Treat \times Post \times Minority$ in Column (1) indicates that, compared to control branches, treated branches offer lower loan rates for consumers in minority communities, narrowing the racial gaps in pricing relative to those in white communities by 37 basis points, which corresponds to 3.2% of the sample mean. When we include county-institution-year fixed effects in Column (2), the effect is slightly smaller in magnitude (a 36.2 basis point decline) but remains negative and statistically significant. Our event study in Figure A9 in Appendix C provides additional support, showing that treated branches in minority communities gradually reduce their loan rates following the disclosure.

4 How Competition Improves Financial Services Terms

Publicly disclosed complaint narratives can reveal problems in local financial services. Consistent with this view, our analysis shows that disclosure improves complaint resolution,

shifts institutions' pricing behavior, and narrows racial gaps. This section asks how these effects arise. We propose a competition channel: institutions use the revealed problems to identify opportunities to capture market share. For example, in markets dominated by minority consumers, when complaints reveal that incumbent banks offer discriminatory terms, competitors can enter these markets to profitably gain market share (Li (2025)). In this way, disclosure reduces information barriers, allowing competitors to locate underperforming areas and adjust their entry strategies. This intensified competition should consequently pressure local banks to improve service quality. In our analysis, we construct county-year level measures (including the number of branches, the number of institutions, and the Herfindahl-Hirschman Index (HHI)) using data from the SOD database. We first examine whether markets with a higher volume of discriminatory complaints experience intensified competition. The model specification is as follows:

$$\begin{aligned} Y_{c,t} =& \alpha + \beta_1 HighDiscCompl_c \times Post_t \times Minority_c \\ &+ X\theta + \mu_{County} + \mu_{Year} + \epsilon_{c,t} \end{aligned} \tag{3}$$

Where $Y_{c,t}$ represents the local market structure in county c and year t. In our empirical implementation, Columns (1) and (2) use the logarithm of the number of branches and the logarithm of the number of institutions, respectively, while Column (3) uses market concentration, as captured by the HHI. The key independent variable of interest, $HighDiscCompl \times Post \times Minority$, captures the effect of disclosure on the local market structure in minority counties with a high ratio of discriminatory complaints. *HighDiscCompl* equals one for counties with above the median numbers of discriminatory complaints as a proportion of the county's population in 2015, and zero otherwise.[21] $Post_t$ is a post-policy implementation indicator that equals one for years 2015 and beyond, and zero otherwise. Our county classification is based on the minority population ratio, with $Minority_c$ taking a value of

[21] We use 2015 complaint intensity to measure exposure at the onset of narrative disclosure, before subsequent institutional responses could endogenously change complaint patterns.

one for counties where the minority ratio exceeds 50%, and zero otherwise. $\boldsymbol{X}$ consists of the remaining interaction terms from the setting and county-level characteristics, including population and per capita income growth rates. Our specification incorporates county and year fixed effects to control for unobserved variations. Standard errors are clustered at the county level.

To identify whether complaint narratives contain discriminatory content, we employ a GPT-4o-based framework to classify complaints (see Appendix D for methodology). A key challenge is that CFPB complaint narratives are unstructured and heterogeneous, often informal in tone, varied in precision, and diverse in emotional intensity, making them difficult to analyze with conventional keyword-based methods. Recent studies show that LLMs like ChatGPT can outperform traditional textual analysis methods, achieving exceptional accuracy in complex classification tasks (Bai et al. (2023); Lopez-Lira and Tang (2023); De Kok (2025)). This makes it ideal for analyzing our extensive complaint dataset. Using systematically designed prompts, we train GPT-4o to function as a specialized complaint analyzer that evaluates narratives against established discrimination indicators. Our analysis shows that 3.7% of 2015 complaint narratives are classified as containing discrimination. This figure is noteworthy given the underrepresentation of minority individuals in access to financial services. Minority individuals constitute 18% of the U.S. population, with about 17% of minority households unbanked and 30% underbanked.[22] These barriers limit minority consumers' access to formal financial services and reduce the share of minority consumers who file complaints. Against this backdrop, the observed rate of discrimination complaints is particularly striking.

[Insert Table 7 about here]

Table 7 presents the results. Columns (1) and (2) show that the disclosure policy leads to economically meaningful increases in both the number of bank branches and the

[22] According to the 2015 American Community Survey, minority individuals constitute about 18% of the U.S. population, including 12.7% Black Americans and 5.8% non-White Hispanics. See: link. Based on the FDIC National Survey of Unbanked and Underbanked Households (2015), on average 17% of Black and Hispanic households are unbanked and nearly 30% are underbanked. See: link.

number of institutions. These effects are observed in minority counties with a higher ratio of discriminatory complaints. The number of branches increases by 3.5%, which translates to an addition of approximately 6 branches evaluated at the sample mean. Similarly, a 6.7% increase in institutions corresponds to 1.7 additional financial institutions per county. Column (3) shows that these entry responses are accompanied by a decline in local market concentration compared to minority counties with a lower ratio of discriminatory complaints. We also re-estimate the specification using non-discrimination-related complaints and find no significant effect, indicating that discriminatory complaints specifically guide banks' entry decisions in minority counties (see Table A16 in Appendix C).

Our findings demonstrate that markets characterized by a higher volume of discriminatory complaints attract new entrants, thereby broadening the range of providers. This intensified competition can empower market participants to be more selective, creating pressure on banks to improve their practices. To provide more evidence for this competition channel, we further examine branch-level deposit flows. Consistent with the findings of Chen et al. (2022), which suggest that information transparency drives fund reallocation, we propose that the entry of competitors expands depositors' choice sets and intensifies competition in local markets, thereby facilitating the reallocation of deposits across banks. Consequently, in a more competitive environment, if banks engaged in discriminatory practices are relatively less competitive in deposit rates or other product terms, they are more likely to experience deposit outflows as funds shift to alternative providers.

We measure the policy impact by examining changes in deposit amounts at the branch-year level using the SOD dataset. We modify Equation (1) by splitting treated financial institutions into two groups based on their 2015 complaints-to-assets ratio: those above the median (*HighDiscCompl*) and those below (*LowDiscCompl*). This ratio captures the extent of discriminatory complaints faced by institutions while mitigating size-related bias.

[Insert Table 8 about here]

Table 8 confirms the presence of deposit outflows. The triple interaction in Column (1)

indicates a significant 9.1% deposit decline in branches of treated institutions in minority communities with high complaint ratios, consistent with intensified competitive pressure driving fund reallocation. In contrast, institutions with low discriminatory complaints show no significant decline. These findings suggest that complaint-induced entry strengthens competitive discipline in local markets. Column (2) reinforces these conclusions with county-year fixed effects. The event study in Figure A10 in Appendix C shows a significant post-disclosure drop only for the high-complaint group.

In addition, we provide evidence that the degree of competition acts as a key factor influencing product pricing. By splitting the sample into high and low groups based on 2014 county-level branch density and re-estimating Equation (2), we find that the magnitude of the disclosure effect is large in counties with a high density of branch networks (high local competition) and diminishes in counties with low branch density (low local competition), as shown in Table A15 in Appendix C. This suggests that greater local competition strengthens the disciplinary effects of transparency.

5 Household-Level Effects on Minority Financial Inclusion

Prior analyses primarily focus on pricing of financial products and services. While pricing is an important dimension, access to mainstream financial services and credit is equally important for minority households. Examining household-level outcomes therefore allows us to assess whether disclosure-driven changes in financial service terms translate into broader financial inclusion and participation in the formal financial system. We quantify these household-level effects through three core metrics: bank account ownership from the CPS, auto ownership from the ACS, and confidence in credit card approval from the SHED. Unlike the pricing analyses, which classify race at the county level, these data measure race directly for each household.

5.1 Effects on Racial Gaps in Bank Account Ownership

We begin with bank account ownership, a key element of financial inclusion that provides households access to basic banking services. For low-income minority households, the absence of bank accounts restricts opportunities to build savings, establish credit histories, and secure fair loans, thereby limiting financial stability (Célerier and Matray (2019)). To evaluate whether complaint narrative disclosure affects these household-level gaps, we estimate the following triple-difference model:

$$\begin{aligned} Y_{i,c,y} =& \alpha + \beta_1 HighDiscCompl_c \times Post_y \times Minority_i \\ &+ X\theta + \mu_{State} + \mu_{Year \times SimilarHousehold} + \epsilon_{i,c,y} \end{aligned} \tag{4}$$

The dependent variable $Y_{i,c,y}$ is an indicator equal to one if household i in county c owns a bank account in year y. In later analyses, we apply the same framework to auto ownership and credit card approval confidence. The estimation sample includes low-income households.[23] $Minority_i$ equals one for minority households and zero for white households. $HighDiscCompl_c$ equals one if the ratio of discriminatory complaints to population in county c exceeds the median in 2015, and zero otherwise. $Post_y$ equals one for 2015 and later years, and zero otherwise. The vector $\boldsymbol{X}$ consists of the remaining interaction terms from the triple-difference setting and county-level characteristics, including population and per capita income growth. We control for unobserved regional differences by including state fixed effects, μ_{State}. We also include $\mu_{Year \times SimilarHousehold}$, a fixed effect formed by interacting year with the demographic indicator defined below. We define *SimilarHousehold* as the interaction of four discretized household attributes: income level, education level, household size, and employment status (employed versus unemployed). Crossing this grid with year produces a fixed effect that absorbs annual shocks common to demographically similar households. Standard errors are clustered at both the county and year levels to correct for within-group

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

correlation.

[Insert Table 9 about here]

Table 9 reports the results. Column (1) shows that complaint narrative disclosure narrows racial gaps in bank account ownership more in counties with high discriminatory complaint exposure than in counties with lower exposure. The estimate of $HighDiscCompl \times Post \times Minority$ implies a 3.3% increase in bank account ownership for low-income minority households. Among the remaining interaction terms, the estimate of $HighDiscCompl \times Post$ is not statistically different from zero, suggesting little evidence of a comparable change among white households. The result suggests that disclosure improves access to basic banking services among minority households in communities where discriminatory complaints reveal greater local service problems.

5.2 Effects on Racial Gaps in Auto Ownership

Auto ownership plays a central role in economic mobility by reducing geographic barriers to opportunity. It enables individuals to access employment, pursue education, and engage in social and economic activities. Gaps in auto ownership are therefore a direct dimension of racial inequality in economic opportunity, making vehicle access a natural outcome through which to assess the reach of disclosure.

In line with Equation (4), we replace the dependent variable with auto ownership, defined as an indicator for whether household i in county c owns a vehicle in year y. Column (2) of Table 9 reports the result. The triple-difference estimate indicates that the post-disclosure racial gap in auto ownership narrows by 0.7% more in high complaint-exposure counties than in lower-exposure counties, with the remaining interaction terms pointing to little comparable change among white households. This effect is equivalent to 1.9% of one standard deviation of auto ownership. The result suggests that the effects of disclosure extend beyond product pricing and are associated with broader access to economic opportunity for minority households.

5.3 Effects on Racial Gaps in Credit Card Approval Confidence

Access to credit cards is a key indicator of financial inclusion, as it enables individuals to establish credit history, obtain affordable loans, and work toward long-term financial goals. Confidence in obtaining credit, however, shapes whether minority households pursue these benefits. Those who anticipate rejection often refrain from applying even when creditworthy, so low confidence becomes a self-reinforcing barrier to credit (Fairlie et al. (2022)). Such reluctance reflects a deeper distrust of financial institutions that, in national survey data, ranks among the leading reasons Black households remain unbanked (FDIC (2023)).

To measure this confidence directly, we examine households' self-reported confidence in credit card approval. It reflects a combined assessment of their own financial profile and the perceived accessibility of the credit market they face.[24] This variable is recorded on a three-point scale: not confident, somewhat confident, and very confident, with values ranging from 1 to 3. This analysis allows us to evaluate whether disclosure improves financial confidence among low-income minority households, a group often underserved in credit markets.

Column (3) of Table 9 shows that complaint narrative disclosure narrows racial gaps in credit card approval confidence in high complaint-exposure states. The estimate of $HighDiscCompl \times Post \times Minority$ implies a 0.511-point reduction in the gap on the three-point confidence scale. This effect is economically meaningful, equivalent to 24.7% of the sample mean. The estimate points to a sizable improvement in perceived credit access for minority households relative to white households after discriminatory complaint narratives become public.

Taken together, the household-level evidence shows that complaint narrative disclosure has real effects beyond pricing. The results indicate improvements in bank account ownership and auto ownership among low-income minority households, as well as a narrowing racial gap in credit card approval confidence. These gains suggest that disclosure-driven changes in

[24] In the survey, location information for households reporting credit card approval confidence is available only at the state level.

financial services translate into broader improvements in financial inclusion, consistent with disclosure disciplining institutions and improving access in markets where discriminatory complaints reveal greater service problems.

6 Additional Analyses

This section provides additional analyses of the role of CFPB complaint narrative disclosures. First, we examine the changes in complaint trends following the policy. Second, we explore the heterogeneous effects of the policy based on complaint volume and public attention. Third, we introduce an online ranking system that enhances transparency by showing the extent of racial disparities across financial institutions.

6.1 Changes in Complaint Trends

Narrative disclosure incentivizes financial institutions to manage reputational risk by proactively addressing consumer dissatisfaction, thereby reducing future complaint volumes. To capture how institutions respond to their overall complaint volume, we examine whether the autocorrelation of complaint volumes decreases following the policy, using institution-month-level data for savings, auto, and credit card complaints from March 19 to December 31, 2015.

Table A17 in Appendix E confirms that complaint autocorrelation weakens during the disclosure period, consistent with enhanced complaint management. Specifically, the autocorrelation declines by 21.3% for total complaints, 25.3% for narrative complaints, and 29.9% for discriminatory complaints. These findings suggest that institutions actively mitigate reputational risk by reducing exposure to negative publicity.

6.2 Heterogeneous Effects

6.2.1 Volume of Discriminatory Complaints

In this subsection, we examine whether the volume of discriminatory complaints influences how institutions adjust product pricing. Institutions facing more salient complaint disclosures, particularly those involving discriminatory treatment, may have stronger incentives to adjust their conduct in response to reputational risk. As shown in Table A18 in Appendix F, the high-complaint group shows stronger policy responsiveness in both deposit and lending markets, while the low-complaint group exhibits weaker effects, consistent with disclosure effects primarily targeting institutions engaged in severe discriminatory practices.

6.2.2 Public Attention

We also examine whether public attention moderates the effect of the complaint narratives policy by using changes in Google search interest related to the CFPB from 2014 to 2015 as a proxy. Greater public attention to the CFPB amplifies the visibility of complaint narrative disclosures and may therefore strengthen the policy's effect. As reported in Table A19 in Appendix F, we find that the high-attention group shows stronger effects in narrowing racial gaps in deposit and loan pricing, while the low-attention group exhibits limited effects.

6.3 Online Rank

Our findings show that disclosure policies play an important role in improving the financial services received by minority consumers by promoting transparency and accountability. We develop a ranking system to evaluate how financial institutions treat communities with different racial compositions, focusing on disparities between minority and white areas. This platform builds on prior work and already provides a comprehensive ranking of mortgage lenders (Li (2023)). Our recent extension offers a detailed analysis of how local branches

engage with racially diverse neighborhoods, helping to promote transparency and equity in financial services.[25] Figure A11 in Appendix G shows an example of the online platform interface. It displays a snapshot of financial institutions ranked by the size of racial disparities in deposit interest rates (see Appendix G for details).

Our ranking system evaluates financial branches based on four key financial indicators: deposit rates, maintenance fees, auto loan rates, and credit card rates. We compare branches in minority and white areas while controlling for branch characteristics, time effects, and state-level factors to assess how racial composition affects the pricing of financial products. By identifying differences in financial offerings across demographic areas, the system aims to lower information barriers for disadvantaged groups (Blankespoor et al. (2020)), thereby helping minority consumers avoid discriminatory treatment and improve access to fair financial services.

7 Conclusion

This paper investigates the impact of the CFPB's 2015 disclosure of complaint narratives on racial disparities in financial services. We begin by evaluating the market-wide impact of the policy using a difference-in-differences framework and find that, for treated institutions, it raises deposit rates and lowers loan rates, indicating a general shift toward more consumer-friendly pricing. To assess its effects on racial disparities, we then employ a triple-difference design that captures the policy's impact across both the savings and lending markets. After the disclosure, minority communities benefit in several ways. In the savings market, they receive higher interest rates and pay lower maintenance fees. In the auto loan and credit card markets, they are offered lower interest rates. We further examine the channels that drive the policy's effectiveness. Our analysis shows that the intensity of discriminatory practices disclosed in a region is positively related to competition in local financial markets, especially the entry of institutions not subject to CFPB supervision. We

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

also find that deposit outflows are related to institutions' discriminatory practices, indicating that minority consumers respond to perceived unfair treatment. Motivated by concerns over financial and reputational losses, institutions that received complaints experience a decline in complaints after the narratives became public, which reflects a reduction in future discriminatory behavior. In addition, we examine whether the policy translates into household-level gains in financial inclusion. Disclosure increases bank account ownership and auto ownership among low-income minority households and improves their relative confidence in credit card approval. To improve the practical relevance of the policy, we provide online rankings of racial gaps across financial institutions and products.

Our findings highlight the important role of quality-based information disclosure in financial services. Disclosing negative information about service quality can lead to better outcomes for disadvantaged consumers. This suggests that consumers may benefit from allowing narratives to be disclosed when filing complaints with regulators. Doing so enables them to resolve issues more effectively 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 that handle customer complaints in financial services (Li (2023)). However, outside of the United States, few financial regulators publicly share consumer complaint information. The results show that public disclosure of complaints can reduce discriminatory and unfair treatment in the U.S. financial system. Other countries may take guidance from this policy and design approaches to manage and disclose complaints. Adopting such practices may support global efforts to promote equity and inclusion.

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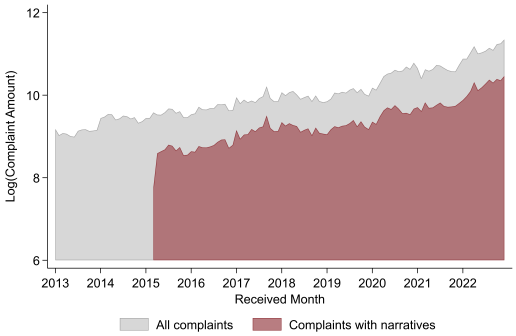
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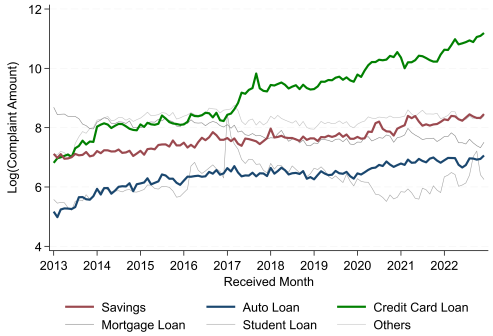
Figures and Tables

Figure 1. Complaint Trends in the CFPB Consumer Complaint Database

This figure presents complaint trends in the CFPB Consumer Complaint Database from 2013 to 2022. Panel (A) reports the monthly volume of all complaints and complaints with narratives in the database. The gray area represents all complaints, and the red area represents complaints with narratives. Complaints with narratives first appear in March 2015. The period from March 2015 to June 2015 is the buffer period. After June 2015, narrative disclosure became publicly available to market participants. Panel (B) reports monthly complaint volume across product categories. Savings-related complaints include deposit accounts and related retail banking services, such as check-cashing services and money transfers. Auto-related complaints include vehicle debt collection, vehicle loans, vehicle leases, and vehicle-title loans. Credit-related complaints include credit reporting, credit repair, credit-card debt collection, general-purpose credit cards, store credit cards, and related credit-management services. Mortgage and student-loan complaints are reported separately. Complaints outside these categories are grouped as "other". The three product categories examined in this study are highlighted using bold lines.



(A) All Complaints and Complaints with Narratives



(B) Complaints by Product Category

Figure 2. Event Study Estimates of the Effects of CFPB Disclosure on Racial Gaps in Deposit Interest Rates

This figure illustrates the estimates of the event study examining the effects of CFPB disclosure on racial gaps in deposit interest rates. For estimation purposes, the last pre-disclosure quarter ($t = -1$) is treated as the baseline. The vertical axis shows the coefficient estimates for the triple-interaction terms, while the horizontal axis represents relative quarters. The regression specification used to generate this figure is consistent with that in Column (1) of Table 3. Black points represent the coefficient estimates for each relative quarter, and the black vertical lines denote the 95% confidence intervals.

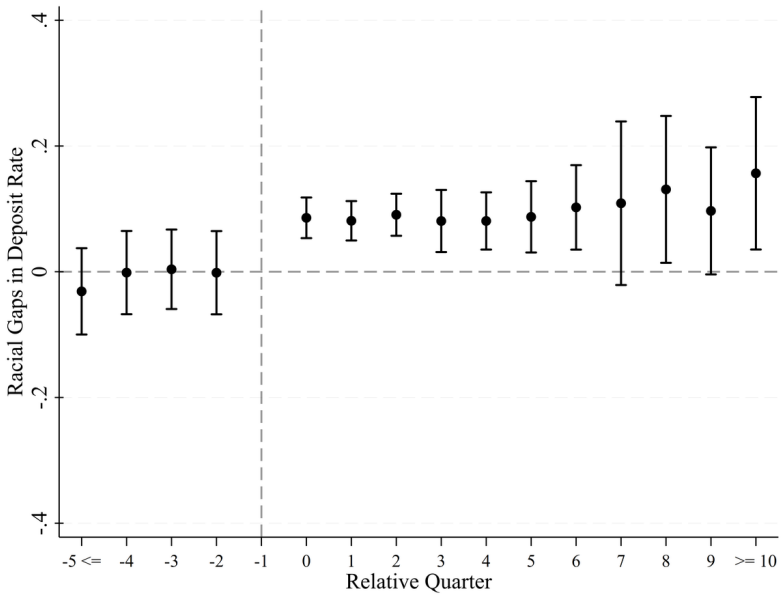


Table 1. Summary Statistics

This table reports summary statistics for the key variables in our sample from 2013 to 2022. Panel A presents branch-level variables. These include deposit, auto loan, and credit card interest rates. They also include minimum account balances required to avoid maintenance fees and deposit amounts at each branch. We obtain interest rates and fee information from RateWatch, and deposit amounts from the Summary of Deposits (SOD) database. In the savings market, our main variable is the interest rate for the "12MCD10K" product. This product refers to 12-month Certificates of Deposit (CDs) with a $10,000 minimum. Table A2 in Appendix A reports the mean, median, and standard deviation of all eight CD and money market (MM) products for treated and control branches in minority and white communities. We also report the minimum account balances required to avoid maintenance fees on savings and checking accounts. In the lending market, we focus on interest rates for auto loans and credit cards. For auto loans, we use the rates for short-term (36 months) and long-term (72 months) loans. For credit cards, we use the interest rates for standard and premium cards. For deposit amounts, we use total branch-level deposits as of June 30 each year, based on the SOD database. Among these five categories of indicators, deposit amounts are measured annually. The remaining variables are measured quarterly. Panel B summarizes quarterly institution-level data from the Call Reports. The key variables are deposit and loan rates. These rates are defined as interest expense per unit of deposit funding and interest income per unit of loan issuance, respectively. Panel C reports household-level variables, which are measured annually. These include the share of households with bank accounts from the Current Population Survey (CPS). They also include the share of households with cars from the American Community Survey (ACS). Panel C also reports self-reported confidence in credit card approval from the Survey of Household Economics and Decisionmaking (SHED). Panel D presents county-level characteristics, all measured annually. These variables are sourced from the Bureau of Economic Analysis (BEA) and the Census Bureau. They include the share of the non-white population, the total county population, 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	310,264	0.52	0.40	0.45
Savings Market - *Amount to Avoid Fee ($)*					
Savings Account	RateWatch	15,570	235.09	100	4023.67
Checking Account		24,680	2,777.32	1000	7949.14
Loan Market - *Auto Loan Interest Rate (%)*					
36M	RateWatch	234,346	4.12	3.75	1.64
72M		27,826	3.83	3.74	1.01
Loan Market - *Credit Card Loan Interest Rate (%)*					
Standard Credit Card Rate	RateWatch	25,370	11.98	11.99	2.57
Premium Credit Card Rate		6,518	10.57	10.25	2.08
Savings Market - *Deposit Amount ($M)*					
Amount	SOD	521,851	99.99	42.83	1000.05

Continued on next page

Table 1 - *Continued from previous page*

Panel B. Institution-Level Characteristics					
Deposit Rate *(%)*	Call	227,230	0.75	0.50	0.75
Loan Rate *(%)*	Report	225,639	12.73	12.17	6.28
Panel C. 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 D. 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. Effects of CFPB Disclosure on Interest Rates

This table presents the effects of CFPB disclosure on interest rates. The estimation sample is constructed at the institution-year-quarter level. Columns (1) and (2) report results using deposit rates, while Columns (3) and (4) use loan rates as the outcome. All columns control for institution-level characteristics, including total assets, domestic deposits, total loans, return on assets (ROA), and net interest margin (NIM). Institution and state-year-quarter fixed effects are also included. In Columns (1) and (3), the main coefficient of interest is $Treat \times Post$, which captures the effect of disclosure on interest rates in treated institutions compared to control institutions. In Columns (2) and (4), we divide treated institutions into two groups based on the volume of narrative complaints they received in 2015: one with above-median volumes ($HighNarrComp$) and the other with below-median volumes ($LowNarrComp$). Standard errors are clustered at the institution level and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
VARIABLES	Deposit Rate		Loan Rate	
Treat×*Post*	0.452***		-0.331**	
	(0.048)		(0.169)	
HighNarrComp×*Post*		0.498***		-0.651**
		(0.078)		(0.310)
LowNarrComp×*Post*		0.416***		-0.077
		(0.060)		(0.203)
Institution Characteristics	YES	YES	YES	YES
Institution FE	YES	YES	YES	YES
State-Year-Quarter FE	YES	YES	YES	YES
Observations	225,480	225,480	225,480	225,480
R-squared	0.747	0.747	0.958	0.958

Table 3. Effects of CFPB Disclosure on Racial Gaps in Deposit Interest Rates

This table presents the effects of CFPB disclosure on racial gaps in deposit interest rates, focusing on mainstream products. Columns (1) and (2) examine the "12MCD10K" product. Columns (3) and (4) include eight types of CDs and MMs. The estimation sample is based on branch-level data aggregated by year-quarter. All columns include branch and year-quarter fixed effects. Each observation is weighted by the annual county population. Columns (1) and (3) control for county-level demographic variables, including the logarithm of total population and the growth rate of per capita income. These two columns also include institution-year fixed effects. Columns (2) and (4) instead include county-institution-year fixed effects. The main coefficient of interest is $Treat \times Post \times Minority$, which captures the effect of disclosure on racial gaps in deposit rates in treated institutions compared to those in control institutions. Standard errors are clustered at the institution, county, and year levels and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Deposit Rate			
VARIABLES	12MCD10K		CDs and MMs	
Treat×Post×Minority	0.094**	0.048***	0.063**	0.102***
	(0.032)	(0.001)	(0.020)	(0.017)
County Characteristics	YES	-	YES	-
Branch FE	YES	YES	YES	YES
Product FE	-	-	YES	YES
Year-Quarter FE	YES	YES	YES	YES
Institution-Year FE	YES	-	YES	-
County-Institution-Year FE	-	YES	-	YES
Observations	308,746	308,422	2,134,855	2,134,848
R-squared	0.881	0.885	0.736	0.738

Table 4. Effects of CFPB Disclosure on Racial Gaps in Deposit Account Fees

This table presents the effects of CFPB disclosure on racial gaps in minimum balance requirements for avoiding deposit account fees. The dependent variable is the logarithm of the minimum balance required to avoid maintenance fees. The estimation sample is based on branch-level data aggregated by year-quarter. Columns (1) and (2) examine savings accounts, while Columns (3) and (4) report results for checking accounts. All columns include branch and year-quarter fixed effects. Each observation is weighted by the annual county population. Columns (1) and (3) control for county-level demographic variables, including the logarithm of total population and the growth rate of per capita income. These two columns also include institution-year fixed effects. Columns (2) and (4) instead include county-institution-year fixed effects. The main coefficient of interest is $Treat \times Post \times Minority$, which captures the effect of disclosure on racial gaps in minimum balance requirements in treated institutions compared to those in control institutions. Standard errors are clustered at the institution, county, and year levels and are shown in parentheses. The symbols *, **, and *** indicate statistical 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	8,976	8,777	10,251	10,027
R-squared	0.987	0.987	0.963	0.970

Table 5. Effects of CFPB Disclosure on Racial Gaps in Auto Loan Rates

This table presents the effects of CFPB disclosure on racial gaps in auto loan interest rates, focusing on products with terms of 36 months and 72 months. The estimation sample is based on branch-level data aggregated by year-quarter. All columns include fixed effects for branch, term, and year-quarter. Each observation is weighted by the annual county population. Column (1) controls for county-level demographic variables, including the logarithm of total population and the growth rate of per capita income. It also includes institution-year fixed effects. Column (2) includes county-institution-year fixed effects instead. The main coefficient of interest is $Treat \times Post \times Minority$, which captures the effect of disclosure on racial gaps in auto loan interest rates in treated institutions compared to those in control institutions. Standard errors are clustered at the institution, county, and year levels and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Auto Loan Rate	
Treat×*Post*×*Minority*	-0.097**	-0.050***
	(0.036)	(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	0.920	0.922

Table 6. Effects of CFPB Disclosure on Racial Gaps in Credit Card Rates

This table presents the effects of CFPB disclosure on racial gaps in credit card interest rates, focusing on standard and premium card products. The estimation sample is based on branch-level data aggregated by year-quarter. All columns include fixed effects for branch, product, and year-quarter. Each observation is weighted by the annual county population. Column (1) controls for county-level demographic variables, including the logarithm of total population and the growth rate of per capita income. It also includes institution-year fixed effects. Column (2) includes county-institution-year fixed effects instead. The main coefficient of interest is $Treat \times Post \times Minority$, which captures the effect of disclosure on racial gaps in credit card interest rates in treated institutions compared to those in control institutions. Standard errors are clustered at the institution, county, and year levels and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Credit Card Rate	
Treat×*Post*×*Minority*	-0.370***	-0.362***
	(0.098)	(0.004)
County Characteristics	YES	-
Branch FE	YES	YES
Product FE	YES	YES
Year-Quarter FE	YES	YES
Institution-Year FE	YES	-
County-Institution-Year FE	-	YES
Observations	30,428	30,408
R-squared	0.916	0.918

Table 7. Effects of CFPB Disclosure on Local Competition

This table presents the effects of CFPB disclosure on competitor entry in minority communities. The analysis is conducted at the county-year level. Columns (1) and (2) use the logarithm of the number of branches and the logarithm of the number of institutions in a county-year, respectively, while Column (3) uses market concentration measured by the HHI. Columns (1) to (3) report results for all institutions in each county. The variable *HighDiscCompl* equals one for counties with above-median levels of discriminatory complaints as a share of the county population in 2015, and zero otherwise. All columns control for county-level demographic variables, including the logarithm of total population and the growth rate of per capita income. County and year fixed effects are also included. The main coefficient of interest, $HighDiscCompl \times Post \times Minority$, captures the effect of disclosure on local market structure in minority counties with high levels of discriminatory complaints, relative to counties with low levels of discriminatory complaints. Standard errors are clustered at the county level and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
VARIABLES	Branch Num	Institution Num	HHI
$HighDiscCompl \times Post \times Minority$	0.035*	0.067**	-0.019**
	(0.020)	(0.028)	(0.007)
County Characteristics	YES	YES	YES
County FE	YES	YES	YES
Year FE	YES	YES	YES
Observations	29,713	29,713	29,713
R-squared	0.995	0.989	0.970

Table 8. Effects of CFPB Complaint Disclosure on Deposit Outflows

This table presents the effects of CFPB disclosure on deposit outflows in minority communities under different complaint conditions. The estimation sample is based on deposit amounts at the branch-year level. The dependent variable is the logarithm of deposit amounts. In the estimation, we divide treated institutions into two groups based on the volume of complaints they received relative to their total assets in 2015. The first group includes branches of institutions with above-median levels of discriminatory complaints as a share of total assets. The second group consists of branches of institutions with below-median levels. Columns (1) and (2) include branch and institution-year fixed effects. Column (1) also controls for county-level demographic variables, including the logarithm of total population and the growth rate of per capita income. Column (2) includes county-year fixed effects. $HighDiscCompl \times Post \times Minority$ identifies whether disclosure disproportionately increases deposit outflows in minority communities, relative to white communities, among institutions with a strong pattern of discriminatory behavior. $LowDiscCompl \times Post \times Minority$ captures the effect for institutions with relatively fewer discriminatory practices. Standard errors are clustered at the institution, county, and year levels and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Deposit Amount	
HighDiscCompl×Post×Minority	-0.091***	-0.093**
	(0.027)	(0.031)
LowDiscCompl×Post×Minority	-0.035	-0.004
	(0.034)	(0.034)
County Characteristics	YES	-
Branch FE	YES	YES
Institution-Year FE	YES	YES
County-Year FE	-	YES
Observations	500,952	498,800
R-squared	0.947	0.951

Table 9. Effects of CFPB Disclosure on Household Financial Inclusion

This table presents the effects of CFPB disclosure on household financial inclusion among low-income households, defined as those with income above the federal poverty line but below twice the federal poverty line. Columns (1), (2), and (3) examine bank account ownership from the CPS, auto ownership from the ACS, and credit card approval confidence from the SHED as outcome variables, respectively. $HighDiscCompl$ is an indicator that equals one if the ratio of discriminatory complaints to population exceeds the median in 2015, and zero otherwise. This measure is constructed at the county level in Columns (1) and (2) and at the state level in Column (3), reflecting the geographic level at which the outcome data are available. The main coefficient of interest is $HighDiscCompl \times Post \times Minority$, which captures the effect of disclosure on racial gaps in household financial inclusion in locations with above-median discriminatory complaint intensity relative to locations with below-median intensity. All columns control for location characteristics, including per capita income and the logarithm of total population, measured at the county level in Columns (1) and (2) and at the state level in Column (3). State fixed effects are included, along with the joint fixed effects of year and similar household characteristics. The *SimilarHousehold* fixed effects encompass the interaction of income level, education level, household size, and employment category. Standard errors in Columns (1) and (2) are clustered at the county and year levels. Standard errors in Column (3) are clustered at the state and year levels. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
VARIABLES	Bank Account Ownership	Auto Ownership	Credit Card Approval Confidence
HighDiscCompl × *Post* × *Minority*	0.033*	0.007***	0.511***
	(0.015)	(0.001)	(0.042)
Location Characteristics	YES	YES	YES
State FE	YES	YES	YES
Year-SimilarHousehold FE	YES	YES	YES
Observations	7,774	651,357	11,750
R-squared	0.360	0.419	0.126

Internet Appendix

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Table A2. Summary Statistics for Deposit Rates by Treatment and Minority Status

Table A3. Sample Composition in Interest Rates

Appendix B. The Effects on Resolution Outcomes

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

Figure A4. Event Study Estimates of the Effects of CFPB Disclosure on Complaints' Resolution Outcomes

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Figure A5. Event Study Estimates of the Effects of CFPB Disclosure on Interest Rates

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Figure A8. Event Study Estimates of the Effects of CFPB Disclosure on Racial Gaps in Auto Loan Rates

Figure A9. Event Study Estimates of the Effects of CFPB Disclosure on Racial Gaps in Credit Card Rates

Figure A10. Event Study Estimates of the Effects of CFPB Disclosure on Deposit Outflows in Minority Communities

Table A5. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Remaining Interaction Terms

Table A6. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Alternative Quarterly Aggregation

Table A7. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Minority Ratio

Table A8. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Different Races

Table A9. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Alternative Cluster Level

Table A10. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Low Income Communities

Table A11. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Branch Ownership Change

Table A12. Effects of CFPB Disclosure on Racial Gaps in the Savings Market: Excluding Institutions Around $10 Billion in Total Assets

Table A13. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Difference-in-Discontinuities Model

Table A14. Effects of the 2013 CFPB Database Launch on Racial Gaps in Deposit Interest Rates

Table A15. Effects of CFPB Disclosure on Racial Gaps: The Role of Local Competition

Table A16. Effects of CFPB Disclosure on Local Competition: Non-Discriminatory Complaints

Appendix D. AI-Powered Identification of Discrimination in Complaint Narratives

Appendix E. Changes in Complaint Trends

Table A17. Effects of CFPB Disclosure on Complaint Trends

Appendix F. Heterogeneous Effects

Table A18. Heterogeneous Effects of CFPB Disclosure on Racial Gaps in Interest Rates: High versus Low Discriminatory Complaints-to-Assets Ratios

Table A19. Heterogeneous Effects of CFPB Disclosure on Racial Gaps in Interest Rates: High versus Low Public Attention

Appendix G. Details for Online Ranking of Racial Gaps in Financial Services

Figure A11. Example of Online Ranking of Racial Gaps in Financial Services

Appendix A Dataset Details

Figure A1. Trend in Google Search Interest for CFPB Complaint

This figure presents the trends in Google search interest for "CFPB complaint" (red line) and "CFPB enforcement" (gray line) from 2011 to 2022. To enhance clarity, we smooth the search indices at the monthly level. The vertical axis represents relative search interest, where a value of 100 corresponds to peak popularity, and a value of 0 indicates insufficient attention. For instance, a value of 60 suggests 60% of peak popularity. The horizontal axis represents time in monthly intervals. The vertical gray line indicates June 2015, when the disclosure of complaint narratives was implemented.

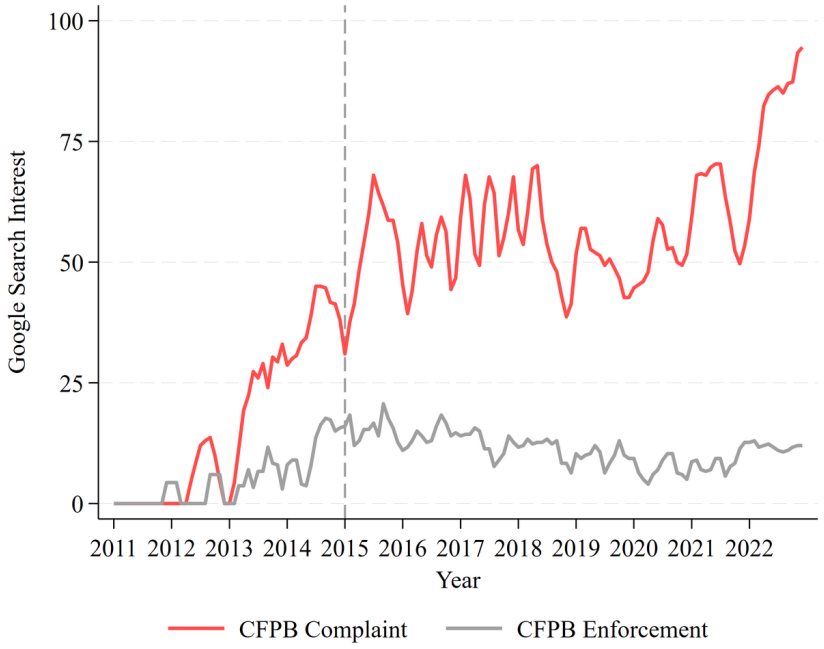
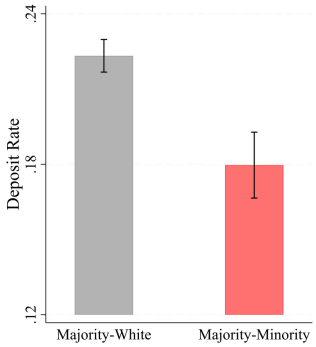
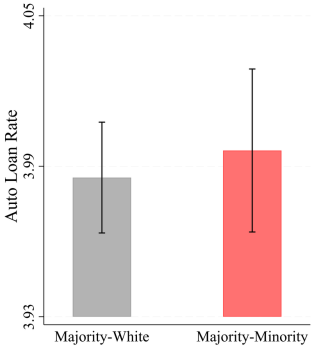


Figure A2. Racial Differences in Interest Rates Before Disclosure

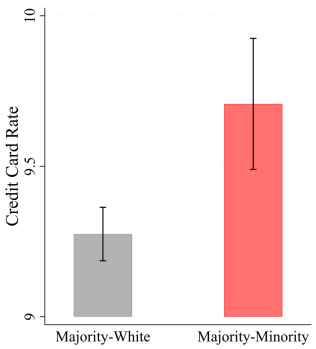
This figure illustrates the differences in interest rates across communities during the pre-disclosure period in both the savings and lending markets. Panels (A), (B), and (C) display the racial gap in deposit rates, auto loan rates, and credit card rates, respectively. For each market segment, we include rates from institutions that operate branches in both minority and white communities. To account for the volume of financial transactions, we apply weights: deposit amounts for deposit rates, auto loan balances for auto loan rates, and credit card loan balances for credit card rates. The red bar represents the average interest rates observed in majority-minority areas, while the gray bar corresponds to those in white-majority areas. The black lines indicate the 90% confidence intervals.



(A) Deposit Rate



(B) Auto Loan Rate



(C) Credit Card Rate

Figure A3. An Illustration of the Triple-difference Model

This figure illustrates our triple-difference identification strategy using a straightforward example derived from real sample observations. It shows how the unit of analysis, branches, is classified along two relevant dimensions for the analysis. First, branches are classified by the regulatory status of their institutions: CFPB-supervised institutions (treatment group) versus non-supervised institutions (control group). Second, branches are categorized by their geographic locations: those operating in minority communities versus those in predominantly white communities. Our triple-difference model captures how racial gaps in financial services pricing (e.g., interest rates) evolve differently for treated versus control institutions following the implementation of the CFPB disclosure policy. To provide an intuitive understanding, we present an example using two counties in Pennsylvania. We consider two institutions, KeyBank (a CFPB-supervised institution) and WSFS Bank (a non-supervised institution), both of which operate branches in Philadelphia and Montgomery counties. Based on the minority population ratio, Philadelphia is classified as a minority community, while Montgomery is classified as a white-majority community. One key intuition behind our triple-difference estimation is to examine how the difference in pricing between KeyBank branches in Philadelphia and Montgomery changes after the disclosure policy, compared to how the difference in pricing between WSFS branches in Philadelphia and Montgomery changes over the same period. The triple-difference coefficient captures the difference between these two changes.

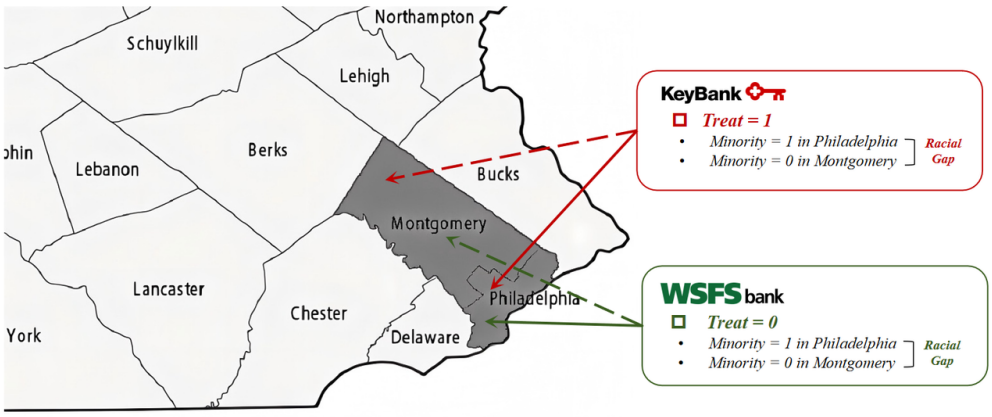


Table A1. Discriminatory Complaints Examples in Savings and Lending Markets

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" row in the table highlights in bold the parts of the complaint narratives that suggest racial discrimination.

Date received	Details
Panel A. Savings Market	
Date received	12/22/22
Product	Checking or savings account
Subproduct	Checking account
Issue	Opening an account
Consumer complaint narrative	On XX/XX/2022 I, XXXX XXXX, went into Amegy Bank located at XXXX XXXX XXXX XXXX, XXXXXXXX XXXX XXXX to open a business account. I was assisted by XXXX XXXX who took my documents and a grant check that was awarded to my company XXXX XXXX XXXX for the work it does for the XXXX community through the Human Rights Campaign and Showtime. XXXX took all my documents and stated that she needed approval to open an account. So I said okay. XXXX walked to the back and returned shortly stating that the account could not be opened because the Certificate of Formation documents were new and it would be three months before I could open the account which I found odd. So I left and called Amegy Bank and a representative searched and found the banking rules that said no such thing and called over to the bank while keeping me on hold. After several minutes the representative returns and explains how sorry she is for the inconvenience and hangs up.

Continued on next page

Table A1 – *Continued from previous page*

	About twenty to thirty minutes I get a phone call from XXXX who states: I'm oversharing this but there has been a lot of business banking fraud and I was told to say that insinuating that I was there to commit fraud then tells me if I can produce documentation of where the large sum grant check came from she would gladly open the account which makes no sense because she just told me my documents were new and the reason. So at this point, I knew it had nothing to do with my documents. **It was about me, a hardworking African-American business-woman coming into the bank with a huge check to deposit for my business that I and my business was awarded and earned and immediately being racially discriminated against.** I broke down crying, disappointed and disgusted at her behavior, and reached out to XXXX, an XXXX associate who took my complaint. Currently waiting for a follow-up call.
Company	ZIONS BANCORPORATION
State	TX
Submitted via	Web
Company response to consumer	Closed with explanation
Panel B. Lending Market - Auto Loan	
Date received	07/15/15
Product	Consumer Loan
Subproduct	Vehicle loan
Issue	Shopping for a loan or lease

Continued on next page

Table A1 – *Continued from previous page*

Consumer complaint narrative	I purchased a Honda Accord in 2012 at the Honda of XXXX in Ohio. I was sent an advertisement for a XXXX percent interest rate and thought I'd take advantage of the opportunity. Once I arrived at the dealership and consulted with XXXX XXXX, she informed me that not only did I not qualify for the XXXX percent interest rate but I also had the option of only XXXX car at a higher interest rate, around five percent. I thought this was odd because my credit score was XXXX at the time but with her pushy tactics, I felt forced into the deal. She told me that I did not qualify for the XXXX percent rate but there was another program I qualified for that included higher rates. Last year, I went to another dealership, Honda of XXXX in Ohio, to trade my car in and I was told about restrictions against a trade-in deal. I found out that the Honda of XXXX dealership overcharged me for the car and I was responsible for the excess charges. The salesman at the Honda of XXXX also informed me that Honda of XXXX was known for schemes such as the one I am now entangled in. **With the recent lawsuit filed against Honda concerning discrimination, my situation aligns with the** **trouble I have been and still am experiencing. It was as if Honda drew me in just to take advantage of me. I am a middle-aged black man.**
Company	AMERICAN HONDA FINANCE CORP
State	OH
Submitted via	Web
Company response to consumer	Closed with explanation
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

Continued on next page

Table A1 – *Continued from previous page*

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
Company	CAPITAL ONE FINANCIAL CORPORATION
State	NY
Submitted via	Web
Company response to consumer	Closed with explanation

Table A2. Summary Statistics for Deposit Rates by Treatment and Minority Status

This table reports summary statistics for deposit interest rates by treatment status and minority status. The sample covers branch-level rate observations for four certificate of deposit (CD) products and four money market (MM) products from 2013 to 2022. The CD products are 12MCD10K, 24MCD10K, 36MCD10K, and 12MCD100K, where the leading number denotes the maturity in months and the trailing number denotes the account size (10K for $10,000 and 100K for $100,000). The MM products are MM25K, MM50K, MM100K, and MM250K, where the number denotes the account size in thousands of dollars. We classify each observation by whether the branch belongs to a CFPB-supervised institution and whether the branch is located in a minority community. This classification yields four groups: treated minority, treated white, control minority, and control white. For each product and group, the table reports the mean, median, and standard deviation.

	Treat-Minority			Treat-White			Control-Minority			Control-White		
Product	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
12MCD10K	0.19	0.15	0.18	0.27	0.15	0.39	0.59	0.48	0.49	0.53	0.40	0.45
24MCD10K	0.34	0.30	0.27	0.40	0.30	0.45	0.78	0.65	0.54	0.73	0.60	0.50
36MCD10K	0.44	0.40	0.31	0.48	0.35	0.45	0.93	0.80	0.57	0.90	0.80	0.53
12MCD100K	0.21	0.15	0.19	0.32	0.20	0.42	0.61	0.50	0.49	0.55	0.40	0.45
MM25K	0.10	0.05	0.17	0.12	0.05	0.21	0.26	0.20	0.22	0.22	0.15	0.20
MM50K	0.13	0.10	0.20	0.14	0.08	0.23	0.29	0.25	0.24	0.25	0.20	0.22
MM100K	0.15	0.10	0.22	0.17	0.10	0.25	0.31	0.25	0.25	0.28	0.20	0.25
MM250K	0.16	0.10	0.24	0.17	0.10	0.27	0.32	0.25	0.26	0.29	0.22	0.26

Table A3. Sample Composition in Interest Rates

This table presents the summary statistics for rate-setting branches belonging to CFPB-supervised and non-supervised institutions in our data sample from 2013 to 2022. Panels A, B, and C highlight the 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, we focus on interest rates for auto loans and credit cards. For auto loans, we use the rates for short-term (36 months) and long-term (72 months) loans. For credit cards, we examine the standard credit card rates. Column (1) illustrates the sample composition in CFPB-supervised institutions (excluding large institutions), while Column (2) illustrates the composition in non-CFPB-supervised 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 rate variation per branch. The branch-per-institution ratio represents the average number of branches an institution operates within a county. The rate variation per branch measures the frequency of interest rate adjustments for a specific product during the sample period.

	(1)	(2)
	Supervised Institutions	Non-Supervised 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
Rates Variation Per Branch	6.61	8.65
Panel B. Auto Loans		
Num Institutions	67	5,185
Num Counties	159	1,808
Num Rate-Setting Branches	202	5,748
Within-County Branches Per Institution	1.05	1.02
Rates Variation Per Branch	12.88	12.01
Panel C. Credit Cards		
Num Institutions	51	2,227
Num Counties	83	948
Num Rate-Setting Branches	96	2,383
Within-County Branches Per Institution	1.01	1.01
Rates Variation Per Branch	4.53	2.24

Appendix B The Effects on Resolution Outcomes

This section examines how the CFPB disclosure policy affects the distribution of resolution outcomes in consumer complaints. Financial institutions do take the CFPB-disclosed complaint narratives seriously, which serves as the basis for our main analysis. After the CFPB releases these narratives, their contents are likely to attract attention from various social entities, including consumers, media, investors, and competing financial institutions. The possibility of negative reactions from these groups motivates financial institutions to improve their service quality more proactively compared to the period before narrative disclosure.

We employ a difference-in-difference model using the CFPB complaints database to examine changes in resolution outcomes after the public disclosure of complaint narratives. We select 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, the CFPB did not disclose these narratives to the public until June 25, 2015, providing supervised financial institutions some buffer time.

Based on this timeline, our pre-disclosure period spans from March 19 to June 25, 2015, during which consumers could opt to make their complaint narratives public when submitting complaints, and these narratives were not yet disclosed to the public. This setting helps mitigate self-selection bias, as we believe that consumers' behavior in choosing whether to disclose complaint narratives does not exhibit systematic differences after the CFPB introduced the narrative disclosure option. Our sample period ends on December 31, 2015, to balance the data structure before and after disclosure, particularly given that the pre-disclosure period spans only three months. The final dataset comprises 27,993 observations from the savings and lending markets. We specify our regression model as follows:

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

Here, we classify complaints into treatment and control groups based on whether the complaint's narratives are disclosed to the public. $Treat_i$ equals one for complaints with publicly available narratives and zero otherwise. $Post_t$ indicates the period after the CFPB began providing public access to complaint narratives, taking the value of one for dates on or after June 25, 2015, and zero otherwise.

For the dependent variable $Y_{i,t}$, we use three distinct measures of complaint resolution outcomes. First, we examine whether consumers dispute the resolution provided by the financial institution. Second, we examine whether the institution's response is timely.[26] Third, we focus on whether complaints are resolved with monetary relief.[27] These three outcome variables are all binary indicators. The coefficient of interest in our regression model, β_1, captures the change in resolution outcomes for complaints with narratives relative to those without narratives after the disclosure policy implementation. $\boldsymbol{X}$ incorporates the baseline terms from the difference-in-difference setting and county characteristics, including the total population and per capita income growth rates.

Additionally, we incorporate multiple fixed effects to control for unobservable factors. We use institution-year-month fixed effects to account for institutional characteristics and their temporal variations. The zip-year-month fixed effects control for changes in local economic and political environments. The market-year-month fixed effects capture time-

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

[27]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 (2025)).

varying heterogeneity across savings and lending markets. We cluster standard errors at both the institution and year-month levels to address potential correlations within institutions and across time periods.

Table A4 presents our main results. The positive coefficient of $Treat \times Post$ in Column (1) indicates that the disclosure policy reduces the likelihood of consumers disputing complaint resolutions by 3.9%, equivalent to 21.3% of the sample mean. For complaint response efficiency in Column (2), the positive and significant coefficient for $Treat \times Post$ demonstrates that financial institutions handle complaints with narratives more efficiently following the policy implementation. Column (3) reveals that the disclosure policy increases the probability of complaints being resolved with monetary relief by 2.1%, corresponding to 47.1% of the sample mean. These findings confirm that public disclosure of complaint narratives significantly improves resolution outcomes by attracting institutional attention and motivating financial institutions to respond more favorably to consumer demands to protect their reputation.

To verify the reliability of our results, we conduct an event study based on our regression framework. Figure A4 presents our analysis of dynamic treatment effects, with June 25, 2015, as the policy implementation date, examining treatment effects from three months before to five months after implementation. Panels (A), (B), and (C) of Figure A4 display the dynamic results for the three outcome variables. The pre-disclosure coefficients do not differ significantly from zero and remain stable over time, confirming that no abnormal pre-trends exist. The improvement in resolution outcomes appears following the disclosure. Despite some fluctuations across different outcomes, the effects persist throughout the observation period, with coefficients for the fifth month after implementation maintaining the same direction as those in the initial period.

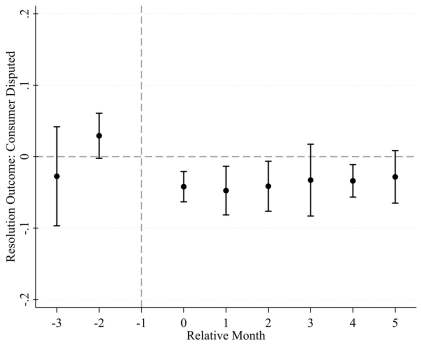
Table A4. Effects of CFPB Disclosure on Complaints' Resolution Outcomes

This table presents the effects of CFPB disclosure on complaint resolution outcomes. The estimation sample is based on complaint-level data from March 19, 2015, to December 31, 2015. This table focuses on three resolution outcomes: *Consumer Disputed*, a binary variable that equals one if the consumer disputes the resolution results; *Timely Response*, a binary variable that equals one if the institution's response is timely (within 15 days); and *Monetary Relief*, a binary variable that equals one if the complaint is resolved with monetary relief for the consumer. For the independent variables, we focus on the difference-in-difference interaction term, $Treat \times Post$, which captures the effect of disclosure on the resolution outcomes of complaints with disclosed narratives compared to those without disclosed narratives. All columns control for institution-year-month, zip-year-month, and market-year-month fixed effects. Standard errors are double clustered at the institution and year-month levels and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

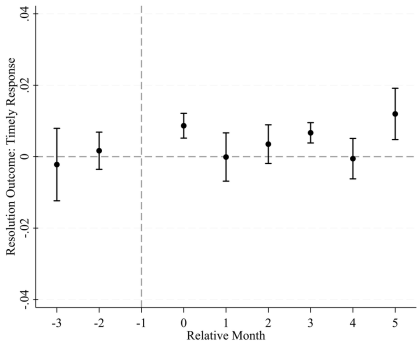
	(1)	(2)	(3)
VARIABLES	Consumer Disputed	Timely Response	Monetary Relief
Treat × *Post*	-0.039**	0.005*	0.021***
	(0.012)	(0.002)	(0.006)
Institution-Year-Month FE	YES	YES	YES
Zip-Year-Month FE	YES	YES	YES
Market-Year-Month FE	YES	YES	YES
Observations	27,993	27,993	27,993
R-squared	0.542	0.601	0.559

Figure A4. Event Study Estimates of the Effects of CFPB Disclosure on Complaints' Resolution Outcomes

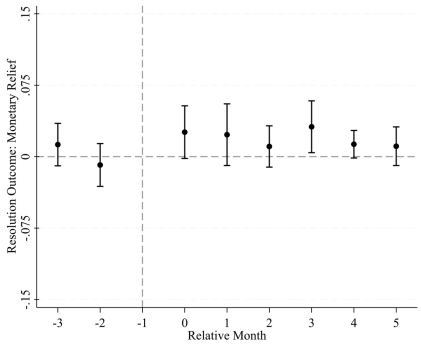
This figure illustrates the estimates of the event study examining the effects of the CFPB disclosure policy on complaint resolution outcomes. Three resolution outcomes are reported. In Panel (A), *Consumer Disputed* measures whether the consumer chooses to dispute the resolution outcomes provided by the respective financial institution. In Panel (B), *Timely Response* measures whether the institution's response occurs in a timely manner. In Panel (C), *Monetary Relief* measures whether complaints filed with the CFPB result in monetary relief for the complainant. For estimation purposes, the last pre-disclosure month ($t = -1$) is treated as the baseline. The vertical axis shows the magnitude of the coefficients for the double-interaction terms, while the horizontal axis represents relative time periods. Black points represent the coefficient estimates for each period, and the black vertical lines denote the 95% confidence intervals.



(A) Consumer Disputed



(B) Timely Response



(C) Monetary Relief

Appendix C Robustness Checks for the Effects on Financial Services

Figure A5. Event Study Estimates of the Effects of CFPB Disclosure on Interest Rates

This figure illustrates the estimates of the event study examining the effects of CFPB disclosure on interest rates. For estimation purposes, the last pre-disclosure year ($t = -1$) is treated as the baseline. The vertical axis shows the size of the coefficients for the interaction terms, while the horizontal axis represents relative years. The figure presents the event study estimates for the difference-in-difference term $Treat \times Post$ based on the specification in Column (1) of Table 2. Black points represent the coefficient estimates for each period, and the black vertical lines denote the 95% confidence intervals.

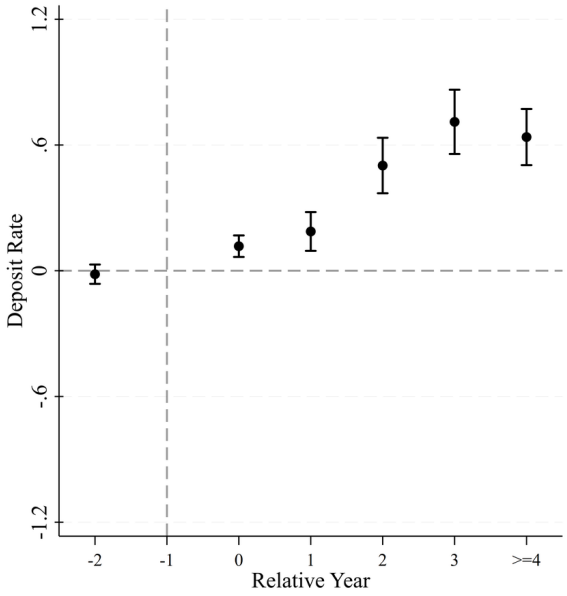


Figure A6. Effects of CFPB Disclosure on Racial Gaps in Deposit Interest Rates Across Asset Size Caps

This figure illustrates the effects of CFPB disclosure on racial gaps in deposit interest rates across different asset size caps. The horizontal axis represents the caps used for sample selection, with estimations performed every $20 billion from $20 billion to $500 billion. The vertical axis represents the size of the coefficients for the triple-interaction terms in the triple-difference model estimated at different cap thresholds. These coefficients are estimated based on the setting in Column (1) of Table 3. The points represent the coefficient values, and the vertical lines denote the 95% confidence intervals. The red line shows the estimated results for this paper's baseline cap, which includes institutions with total assets under $100 billion.

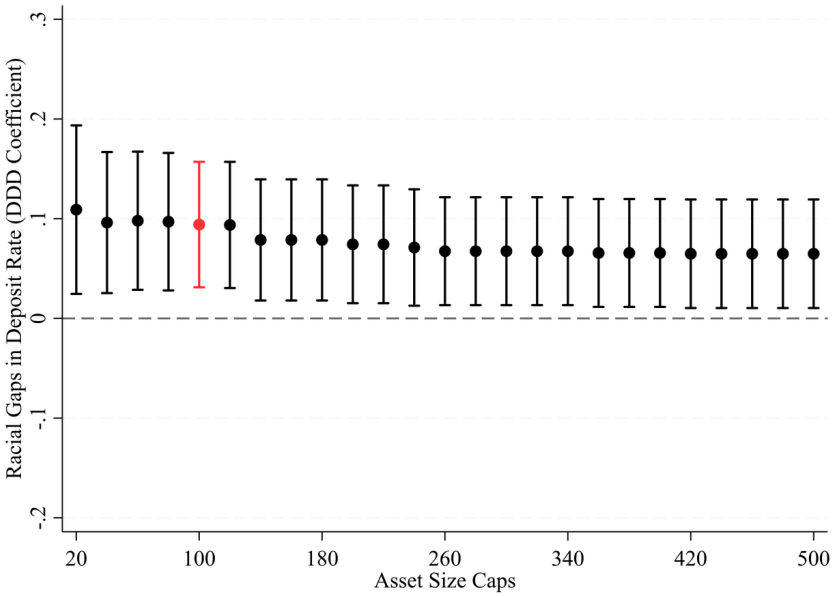


Figure A7. Event Study Estimates of the Effects of CFPB Disclosure on Racial Gaps in Deposit Fees

This figure illustrates the estimates of the event study examining the effects of CFPB disclosure on racial gaps in deposit fees. For estimation purposes, the last pre-disclosure quarter ($t = -1$) is treated as the baseline. The vertical axis shows the coefficient estimates for the triple-interaction terms, while the horizontal axis represents relative quarters. The regression specification used to generate this figure is consistent with that in Column (1) of Table 4. Black points represent the coefficient estimates for each relative quarter, and the black vertical lines denote the 95% confidence intervals.

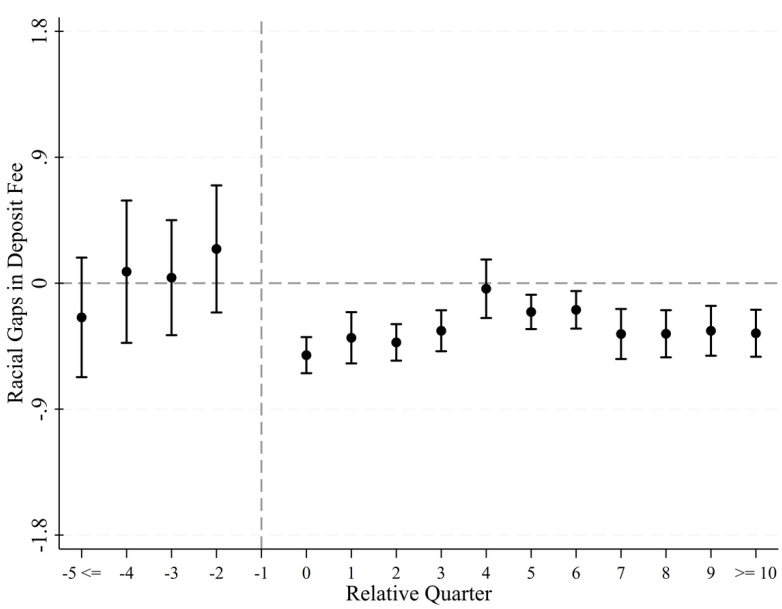


Figure A8. Event Study Estimates of the Effects of CFPB Disclosure on Racial Gaps in Auto Loan Rates

This figure illustrates the estimates of the event study examining the effects of CFPB disclosure on racial gaps in auto loan interest rates. For estimation purposes, the last pre-disclosure quarter ($t = -1$) is treated as the baseline. The vertical axis shows the coefficient estimates for the triple-interaction terms, while the horizontal axis represents relative quarters. The regression specification used to generate this figure is consistent with that in Column (1) of Table 5. Black points represent the coefficient estimates for each relative quarter, and the black vertical lines denote the 95% confidence intervals.

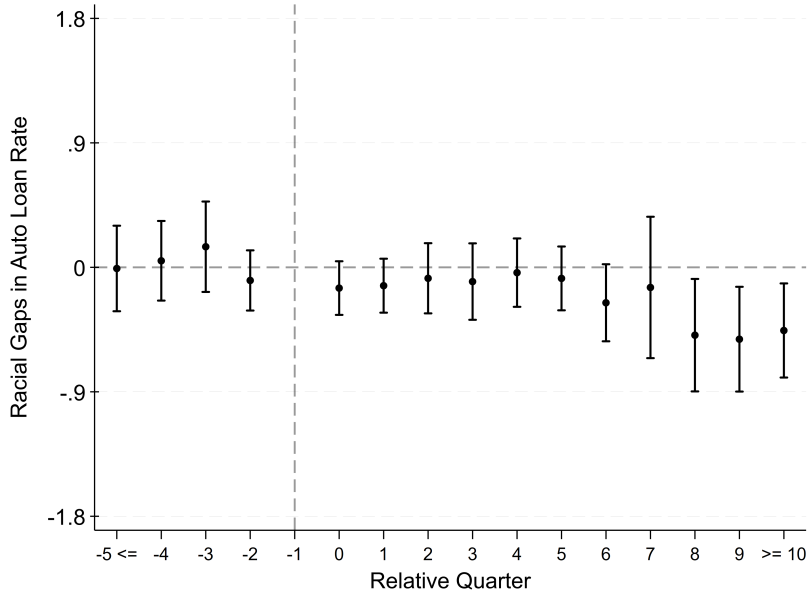


Figure A9. Event Study Estimates of the Effects of CFPB Disclosure on Racial Gaps in Credit Card Rates

This figure illustrates the estimates of the event study examining the effects of CFPB disclosure on racial gaps in credit card interest rates. For estimation purposes, the last pre-disclosure quarter ($t = -1$) is treated as the baseline. The vertical axis shows the coefficient estimates for the triple-interaction terms, while the horizontal axis represents relative quarters. The regression specification used to generate this figure is consistent with that in Column (1) of Table 6. Black points represent the coefficient estimates for each relative quarter, and the black vertical lines denote the 95% confidence intervals.

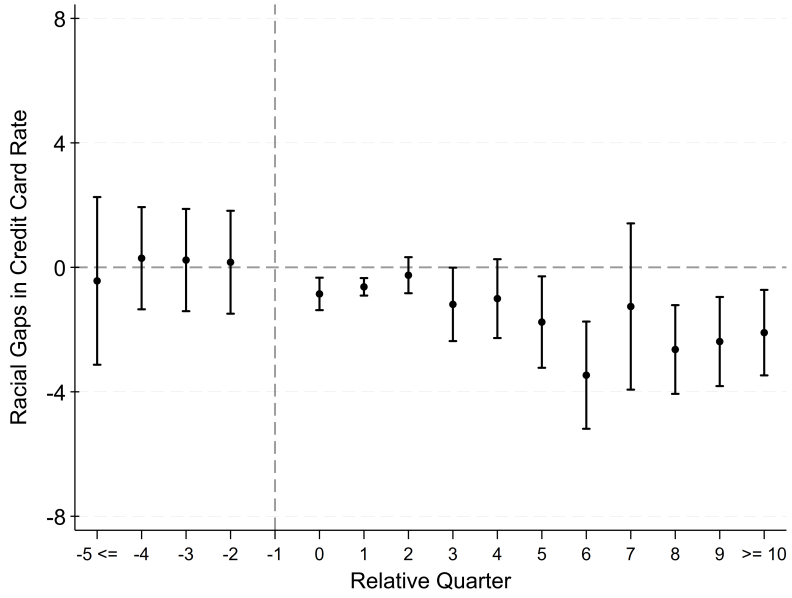
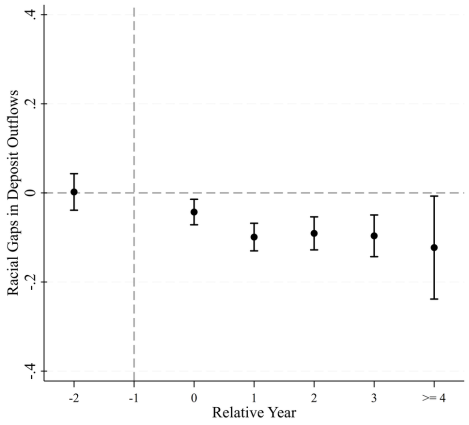
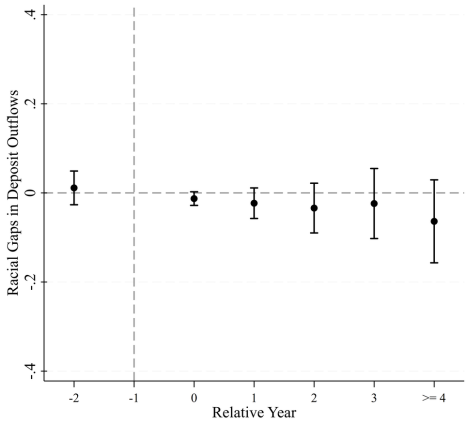


Figure A10. Event Study Estimates of the Effects of CFPB Disclosure on Deposit Outflows in Minority Communities

This figure illustrates the estimates of the event study examining the effects of CFPB disclosure on deposit outflows. For estimation purposes, the last pre-disclosure year ($t = -1$) is treated as the baseline. The vertical axis shows the size of the coefficients for the triple-interaction terms, while the horizontal axis represents relative years. The regression specification used to generate this figure is consistent with that in Column (1) of Table 8. Panel (A) presents the event study estimates for the triple-interaction term $HighDiscCompl \times Post \times Minority$, and Panel (B) illustrates the results for $LowDiscCompl \times Post \times Minority$. Black points represent the coefficient estimates for each period, and the black vertical lines denote the 95% confidence intervals.



(A) High Discriminatory Complaints



(B) Low Discriminatory Complaints

Table A5. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Remaining Interaction Terms

This table reports the remaining interaction terms from the triple-difference specifications for deposit interest rates. Columns (1) and (2) examine the "12MCD10K" product. Columns (3) and (4) include CDs and MMs. The estimation sample is based on branch-level data aggregated by year-quarter. All columns include branch and year-quarter fixed effects. Each observation is weighted by the annual county population. Columns (1) and (3) control for county-level demographic variables, including the logarithm of total population and the growth rate of per capita income. These columns also include institution-year fixed effects. Columns (2) and (4) instead include county-institution-year fixed effects. Columns (3) and (4) additionally include product fixed effects. The fixed effects absorb $Treat$, $Post$, $Minority$, and $Treat \times Minority$, which are therefore not reported. Standard errors are clustered at the institution, county, and year levels and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Deposit Rate			
VARIABLES	12MCD10K		CDs and MMs	
Treat×*Post*×*Minority*	0.094**	0.048***	0.063**	0.102***
	(0.032)	(0.001)	(0.020)	(0.017)
Treat×*Post*	-0.046***	-0.042***	-0.048***	-0.049***
	(0.003)	(0.001)	(0.004)	(0.004)
Post×*Minority*	-0.052	-0.019***	-0.025	-0.009***
	(0.029)	(0.001)	(0.018)	(0.002)
County Characteristics	YES	-	YES	-
Branch FE	YES	YES	YES	YES
Product FE	-	-	YES	YES
Year-Quarter FE	YES	YES	YES	YES
Institution-Year FE	YES	-	YES	-
County-Institution-Year FE	-	YES	-	YES
Observations	308,746	308,422	2,134,855	2,134,848
R-squared	0.881	0.885	0.736	0.738

Table A6. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Alternative Quarterly Aggregation

This table presents a robustness check for the effects of CFPB disclosure on racial gaps in the savings market by varying the quarterly rate aggregation 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 the outcome variables. All columns control for branch and year-quarter fixed effects. Columns (1) and (3) control for county-level demographic variables and institution-year fixed effects. Columns (2) and (4) control for county-institution-year fixed effects. The main coefficient of interest is $Treat \times Post \times Minority$, which captures the effect of disclosure on racial gaps in deposit rates in minority communities compared to those in white communities. Standard errors are clustered at the institution, county, and year levels and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Deposit Rate			
VARIABLES	Mean Rate		Rate Spread	
Treat×*Post*×*Minority*	0.084**	0.044***	0.094**	0.048***
	(0.029)	(0.001)	(0.032)	(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	308,746	308,422	308,746	308,422
R-squared	0.888	0.891	0.942	0.944

Table A7. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Minority Ratio

This table presents a robustness check for the effects of CFPB disclosure on racial gaps in the savings market by varying the definition of minority communities. We replace the dummy variable $Minority$ with the continuous variable $MinorityRatio$, derived from the 2015 county-level demographic data. 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. The main coefficient of interest is $Treat \times Post \times MinorityRatio$, which captures how the effect of disclosure on racial gaps in deposit rates varies with the minority ratio. Standard errors are clustered at the institution, county, and year levels and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Deposit Rate	
Treat×*Post*×*MinorityRatio*	0.078*	0.080***
	(0.037)	(0.001)
County Characteristics	YES	-
Branch FE	YES	YES
Year-Quarter FE	YES	YES
Institution-Year FE	YES	-
County-Institution-Year FE	-	YES
Observations	308,691	308,367
R-squared	0.881	0.885

Table A8. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Different Races

This table presents a robustness check for the effects of CFPB disclosure on racial gaps in the savings market by analyzing differential impacts across racial groups at the county level. Column (1) reports results using the "12MCD10K" product, while Column (2) includes eight types of CDs and MMs. All columns control for county-level demographic variables, along with branch, year-quarter, and institution-year fixed effects. Column (2) additionally controls for product-year fixed effects. The variables *BlackRatio* and *NonBlackRatio* represent the proportion of the respective populations in each county in 2015. The coefficient on $Treat \times Post \times BlackRatio$ captures how disclosure changes Black-White deposit-rate gaps, while the coefficient on $Treat \times Post \times NonBlackRatio$ captures how disclosure changes non-Black-White deposit-rate gaps. Standard errors, shown in parentheses, are clustered at the institution, county, and year levels. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
	Deposit Rate	
VARIABLES	12MCD10K	CDs and MMs
Treat×Post×BlackRatio	0.084**	0.096*
	(0.036)	(0.049)
Treat×Post×NonBlackRatio	-0.002	-0.034
	(0.080)	(0.055)
County Characteristics	YES	YES
Branch FE	YES	YES
Product FE	-	YES
Year-Quarter FE	YES	YES
Institution-Year FE	YES	YES
Observations	308,746	2,134,855
R-squared	0.881	0.535

Table A9. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Alternative Cluster Level

This table presents a robustness check for the effects of CFPB disclosure on racial gaps in the savings market by changing the clustering level of standard errors. Columns (1) and (2) examine the "12MCD10K" product, while Columns (3) and (4) include eight types of CDs and MMs. All columns include branch and year-quarter fixed effects. Columns (1) and (3) control for county-level demographic variables and institution-year fixed effects, whereas Columns (2) and (4) include county-institution-year fixed effects. The main coefficient of interest is $Treat \times Post \times Minority$, which captures the effect of disclosure on racial gaps in deposit rates in treated institutions compared to those in control institutions. Standard errors are clustered at the institution and county levels and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Deposit Rate			
VARIABLES	12MCD10K		CDs and MMs	
Treat×Post×Minority	0.094***	0.048***	0.063***	0.102***
	(0.026)	(0.018)	(0.020)	(0.021)
County Characteristics	YES	-	YES	-
Branch FE	YES	YES	YES	YES
Product FE	-	-	YES	YES
Year-Quarter FE	YES	YES	YES	YES
Institution-Year FE	YES	-	YES	-
County-Institution-Year FE	-	YES	-	YES
Observations	308,746	308,422	2,134,855	2,134,848
R-squared	0.881	0.885	0.736	0.738

Table A10. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Low Income Communities

This table presents a robustness check for the effects of CFPB disclosure on racial gaps in the savings market, controlling for income. Column (1) examines the "12MCD10K" product, while Column (2) includes eight types of CDs and MMs. The variable *LowIncome* equals one for counties with below-median income in 2015, and zero otherwise. Both columns include branch, year-quarter, and institution-year fixed effects, as well as county-level demographic controls. Column (2) further controls for product fixed effects. The coefficient on $Treat \times Post \times Minority$ captures the effect of disclosure on racial gaps in deposit rates in minority communities compared to those in white communities. The coefficient on $Treat \times Post \times LowIncome$ identifies changes in interest rate gaps across communities with different income levels. Standard errors are clustered at the institution, county, and year levels and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
	Deposit Rate	
VARIABLES	12MCD10K	CDs and MMs
Treat×Post×Minority	0.094**	0.063**
	(0.032)	(0.020)
Treat×Post×LowIncome	0.009	-0.011
	(0.015)	(0.012)
County Characteristics	YES	YES
Branch FE	YES	YES
Product FE	-	YES
Year-Quarter FE	YES	YES
Institution-Year FE	YES	YES
Observations	308,691	2,134,561
R-squared	0.881	0.736

Table A11. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Branch Ownership Change

This table presents a robustness check for the effects of CFPB disclosure on racial gaps, focusing on changes in branch ownership. We exclude branch observations where ownership changed during the sample period. This exclusion applies only to branches whose parent institutions were altered, and does 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. The main coefficient of interest is $Treat \times Post \times Minority$, which captures the effect of disclosure on racial gaps in deposit rates in minority communities compared to those in white communities. Standard errors are clustered at the institution, county, and year levels and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Deposit Rate	
Treat×*Post*×*Minority*	0.081**	0.048***
	(0.025)	(0.001)
County Characteristics	YES	-
Branch FE	YES	YES
Year-Quarter FE	YES	YES
Institution-Year FE	YES	-
County-Institution-Year FE	-	YES
Observations	292,374	292,080
R-squared	0.882	0.885

Table A12. Effects of CFPB Disclosure on Racial Gaps in the Savings Market: Excluding Institutions Around $10 Billion in Total Assets

This table presents a robustness check for the effects of CFPB disclosure on racial gaps, focusing on concerns related to institutional asset management strategies. Financial institutions approaching the $10 billion asset threshold may strategically manage their asset sizes to avoid additional regulatory scrutiny (Alvero et al. (2023)). To address this concern, we exclude institutions with total assets between $9 billion and $11 billion in our sample. 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. The main coefficient of interest is $Treat \times Post \times Minority$, which captures the effect of disclosure on racial gaps in deposit rates in minority communities compared to those in white communities. Standard errors are clustered at the institution, county, and year levels and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Deposit Rate	
Treat×*Post*×*Minority*	0.094**	0.048***
	(0.032)	(0.001)
County Characteristics	YES	-
Branch FE	YES	YES
Year-Quarter FE	YES	YES
Institution-Year FE	YES	-
County-Institution-Year FE	-	YES
Observations	308,360	308,039
R-squared	0.881	0.885

Table A13. Effects of CFPB Disclosure on Racial Gaps in Savings Market: Difference-in-Discontinuities Model

This table presents a robustness check for the effects of CFPB disclosure on racial gaps in deposit rates, based on a difference-in-discontinuities model. The sample comprises depository institutions supervised by the CFPB based on the $10 billion asset threshold. Affiliates of the treated institutions are excluded from the sample if their total assets fall below $10 billion, as they remain subject to CFPB supervision despite being below the asset threshold. Including these affiliates would violate the core assumptions of the regression discontinuity design. This approach captures the difference between the pre-disclosure and post-disclosure discontinuities at the $10 billion total assets threshold. Specifically, we estimate the following specification separately for minority and white communities:

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

$DepositRate_{i,t}$ represents the deposit interest rates of branch i at time t for 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 t corresponds to the period after the second quarter of 2015 and zero otherwise. We include branch fixed effects α_i. The coefficient δ_0 is the diff-in-disc estimator and identifies the treatment effect of CFPB disclosure. Column (1) presents the results for minority communities, while Column (2) focuses on white communities. Both columns focus on institutions with total assets ranging from $1 billion to $50 billion. Standard errors are clustered at the institution level and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Minority	White
Diff-in-disc	0.257**	-0.030
	(0.123)	(0.075)
Branch FE	YES	YES
Observations	1,193	27,345
R-squared	0.516	0.417

Table A14. Effects of the 2013 CFPB Database Launch on Racial Gaps in Deposit Interest Rates

This table presents the effects of the 2013 CFPB database launch on racial gaps in deposit interest rates. Columns (1) and (3) focus on the "12MCD10K" product, while Columns (2) and (4) include eight types of CDs and MMs. Columns (1) and (2) span from the second quarter of 2011 to the first quarter of 2015. Columns (3) and (4) use the extended sample from 2011 to 2022. *Post2013* equals one for periods after the first quarter of 2013 and zero otherwise. *Post2015* equals one from the second quarter of 2015 onward and zero otherwise. All columns control for county-level demographic variables, along with branch and year-quarter fixed effects. Columns (2) and (4) additionally include product-year fixed effects. Columns (3) and (4) additionally include institution-year fixed effects. Columns (1) and (2) present results from the difference-in-differences model and report the key coefficient $Treat \times Post2013$, which measures the impact of the database launch on deposit rates. Columns (3) and (4) use the triple-difference model and report $Treat \times Post2013 \times Minority$ and $Treat \times Post2015 \times Minority$, which capture the effects of the 2013 database launch and the 2015 narrative disclosure on racial gaps in deposit rates. Standard errors for Columns (1) and (2) are clustered at the institution level, while standard errors for Columns (3) and (4) are clustered at the institution, county, and year levels. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	DID		DDD	
VARIABLES	12MCD10K	CDs and MMs	12MCD10K	CDs and MMs
$Treat \times Post2013$	0.045***	0.039***		
	(0.012)	(0.011)		
$Treat \times Post2013 \times Minority$			-0.012	-0.021
			(0.021)	(0.024)
$Treat \times Post2015 \times Minority$			0.092**	0.062***
			(0.030)	(0.017)
County Characteristics	YES	YES	YES	YES
Branch FE	YES	YES	YES	YES
Product-year FE	-	YES	-	YES
Year-Quarter FE	YES	YES	YES	YES
Institution-Year FE	-	-	YES	YES
Observations	147,325	996,302	375,371	2,587,869
R-squared	0.847	0.811	0.883	0.780

Table A15. Effects of CFPB Disclosure on Racial Gaps: The Role of Local Competition

This table presents the effects of CFPB disclosure on racial gaps in deposit interest rates across samples with different levels of branch density. The sample used in the main analysis is divided into two groups based on the total number of bank branches in 2014: the top 25% of counties are classified as high-branch areas and the remaining 75% as low-branch areas, reported in Columns (1) and (2), respectively. All columns include branch and year-quarter fixed effects. The key coefficient, $Treat \times Post \times Minority$, captures the effect of disclosure on racial gaps in deposit rates between treated and control institutions. Standard errors are clustered at the institution, county, and year levels and are reported in parentheses. The symbols *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
	Deposit Rate	
VARIABLES	High Branch Density	Low Branch Density
Treat×*Post*×*Minority*	0.097**	0.021***
	(0.033)	(0.001)
Branch FE	YES	YES
Year-Quarter FE	YES	YES
Institution-Year FE	YES	YES
Observations	175,339	133,375
R-squared	0.881	0.890

Table A16. Effects of CFPB Disclosure on Local Competition: Non-Discriminatory Complaints

This table presents a robustness check for the effects of CFPB disclosure on local competition, using the number of non-discriminatory complaints instead of discriminatory complaints as the key variable. The analysis is conducted at the county-year level, with local market structure measured by the number of branches, the number of institutions, and market concentration (HHI). Columns (1) to (3) report results for all institutions in each county. The variable *HighNonDiscCompl* equals one for counties with above-median levels of non-discriminatory complaints as a share of the county population in 2015, and zero otherwise. All columns control for county-level demographic variables, including the logarithm of total population and the growth rate of per capita income. County and year fixed effects are also included. The main coefficient of interest, $HighNonDiscCompl \times Post \times Minority$, captures the effect of disclosure on local market structure in minority counties with high levels of non-discriminatory complaints, relative to counties with low levels of such complaints. Standard errors are clustered at the county level and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
VARIABLES	Branch Num	Institution Num	HHI
HighNonDiscCompl×*Post*×*Minority*	0.022	0.028	-0.006
	(0.020)	(0.020)	(0.008)
County Characteristics	YES	YES	YES
County FE	YES	YES	YES
Year FE	YES	YES	YES
Observations	29,713	29,713	29,713
R-squared	0.995	0.989	0.970

Appendix D AI-Powered Identification of Discrimination in Complaint Narratives

Identifying discrimination patterns in consumer complaints is essential for understanding disparities in financial services, yet this issue remains underexplored. The CFPB complaint database, with its rich narrative content, offers a valuable resource for uncovering these patterns and evaluating the implications of such disparate treatment.

Prior research has made initial attempts to extract relevant text from the CFPB database. For example, Bian et al. (2024) construct a zero-shot learning model using a word list to identify fraud-related complaints in the CFPB database. Li (2025) analyzes discrimination-related topics using a word list approach. Building on these efforts, we introduce a novel analytical framework that leverages large language models (LLMs), specifically OpenAI's advanced GPT-4o model, to detect discrimination patterns in complaint narratives. Compared to conventional methods, LLMs excel at contextual reasoning and implicit bias detection (De Kok (2025)), making them particularly suited for this task.

Our implementation follows De Kok (2025)'s best practices for LLM applications. We configure GPT-4o to analyze CFPB complaints through hierarchical prompt engineering. This methodology organizes discrimination identification into five structured components: (1) general instructions for comprehensive task understanding; (2) definition of discrimination with two key factors: consumers' feelings and their treatment comparisons with others; (3) classification standards for various forms of discrimination; (4) reasoning process guidance for systematic analysis; and (5) output format specifications for consistent results.

We employ the widely used few-shot learning approach by including two contrasting examples in the prompt. The first example presents a negative case about a bank's penny acceptance policy that involves no discrimination. The second example shows a positive case where a minority consumer reports being denied a mortgage loan despite meeting all qualification requirements, while similar non-minority applicants receive approval. We present the

negative case first to establish a baseline understanding of non-discriminatory complaints. This strategy helps the model better distinguish actual discrimination from general service issues through learning from contrasting examples. It reduces the misclassification of routine service issues as discriminatory incidents, recognizing that the majority of consumer grievances stem from operational and service quality concerns rather than discriminatory practices.

Here is the implemented prompt:

You are an AI assistant specialized in analyzing consumer complaints for the Consumer Financial Protection Bureau (CFPB). Your task is to identify discrimination-related content in complaint narratives and determine if the complainant experienced discrimination or unfair treatment.

1. General Instructions

(1) Carefully read and analyze the above narrative.

(2) Determine if this complaint contains content related to discrimination or unfair treatment.

(3) Consider a broad definition of discrimination, including any indication of unfair or unequal treatment that the complainant perceives.

2. Key Elements of Discrimination

When analyzing the complaint, pay special attention to:

(1) The complainant's feelings of discrimination or unfair treatment

(2) Any comparisons the complainant makes between their treatment and that of others

3. Forms of Discrimination

When analyzing the complaint, consider the following forms of discrimination or unfair treatment:

(1) Explicit or implicit discrimination based on protected characteristics (race and ethnicity)

(2) Consider the following forms of discrimination or unfair treatment:

- Approval discrimination: Higher likelihood of application rejections

- Interest rate discrimination: Being charged higher interest rates

- Service quality discrimination: Poorer service experience or staff attitudes

- Fee discrimination: Being charged higher or additional fees

- Any other form of unfair or unequal treatment perceived by the complainant

4. Reasoning Process

Use your reasoning skills to analyze the narrative. Consider the following questions:

(1) Does the complaint explicitly mention discrimination or unfair treatment?

(2) Are there implicit indications of discriminatory practices or unfair treatment?

(3) Does the complaint describe treatment that aligns with any of the discrimination types mentioned above?

(4) Does the complainant express feeling unfairly treated, even if not using the word "discrimination"?

(5) Is there a comparison made between the complainant's treatment and that of others, suggesting potential disparity?

5. Output Format

After your analysis, provide your output in the following JSON format:

{

"is_discrimination": "<Binary classification (zero or one) of the complaint>",

"confidence_score": "<Confidence score (0.0-1.0)>",

"reason": "<Reason for your classification>"

}

[COMPLAINT INPUT HERE]

Here are some examples:

<examples>

<example>

<COMPLAINT_NARRATIVE>

"US Bank branch refused to accept pennies in a jar, about $10.00 dollars worth. Bank employees said no US Bank in my area accepts large amounts of pennies. I called national customer service who said each branch can have its own policy, but couldn't tell me a location that actually would accept pennies.

Apparently, the Federal Reserve doesn't have a regulation requiring banks to accept pennies. If that's the case, what value do pennies have if nobody is willing to accept them? If banks refuse pennies, and the Fed doesn't mandate banks to accept them, then obviously neither one of them wants the pennies. This makes pennies worthless, so why would I, or any consumer, want them? What if consumers refused pennies as a form of change from merchants because they have no value?

Finally, if the policy of banks and the Fed have rendered pennies worthless, why can't consumers melt them for the copper value? Pennies can't be melted because they are US currency, but shouldn't anything defined as US currency have a value of more than xxxx?

Either the Federal Reserve needs to require banks to accept pennies, or it needs to allow consumers to melt them. Thank you."

</COMPLAINT_NARRATIVE>

<ideal_output>

[{

"is_discrimination": 0,

"confidence_score": 0.85,

"reason": "While the complainant expresses frustration with bank policy regarding penny acceptance, the complaint does not indicate discriminatory treatment. The policy appears to be applied uniformly across all consumers at US Bank branches in the area. The issue relates to general banking policy and currency acceptance rather than unfair treatment or discrimination against any particular individual or group. The complainant's concerns focus on the practical value and utility of pennies as currency rather than experiencing disparate treatment."

}]

</ideal_ output>

</example>

<example>

<COMPLAINT_ NARRATIVE>

I believe that I am being discriminated against because I disclosed my race as XXXX on Section X of the XXXX loan application. I would greatly appreciate it if this could be looked into to ensure that Bank of America didn't discriminate against me by showing that they also denied mortgage loans to people of other races, particularly XXXX people, with similar credit, income or debt-to-income ratio, savings, educational, and employment backgrounds as me.

Quick summary of my background: I have excellent credit, my credit score is over XXXX. My 2 employment gaps greater than 30 days were related to school. I have a XXXX XXXX and currently in XXXX XXXX seeking a XXXX. I work full time as a mortgage loan advisor where I earn over $45000.00 annually. I have savings of $30000.00. The house I was looking to purchase cost $180000.00.

</COMPLAINT_ NARRATIVE>

<ideal_ output>

[{ "is_ discrimination": 1,

"confidence_ score": 0.95,

"reason": "The complaint explicitly alleges racial discrimination in mortgage lending by Bank of America. The complainant directly states 'I believe that I am being discriminated against because I disclosed my race' on the loan application. They specifically request an investigation to compare their loan denial with approvals for people of other races who have similar qualifications. The complainant provides detailed evidence of their strong qualifications (excellent credit score over XXXX, stable employment with $45,000 annual income, $30,000 in savings, advanced education) to support their belief that the denial was based on

race rather than legitimate lending criteria. This represents a clear case of perceived discrimination in lending practices based on a protected characteristic (race), with the complainant making explicit comparisons to how others of different races might be treated in similar circumstances." }]

</ideal_ output>

</example>

</examples>

The output uses a standardized JSON format with three key elements: (1) a binary classification indicating the presence of discrimination; (2) a confidence score ranging from zero to one for uncertainty quantification; and (3) a reasoning explanation for classification decisions.

We apply this framework to identify discrimination in complaint narratives across various financial services. Specifically, among the complaints from our target market in 2015, we identify 20,676 complaints containing narrative descriptions. Within these narrative-containing complaints, 774 are found to contain discriminatory content, accounting for 3.7%. Our analysis shows a slightly lower identification rate than the traditional keyword-based method (Li (2025)). This suggests that LLMs achieve more precise identification by semantically excluding content irrelevant to discrimination, reflecting the application of a stricter definitional standard. According to the American Community Survey, minority individuals made up 18% of the U.S. population in 2015, including 12.7% Black Americans and 5.8% non-White Hispanics. Among minority households, approximately 17% are unbanked and 30% are underbanked. As a result, the share of minority consumers who actively engage with the formal financial system is likely below 10% in the total population. The fact that this small group's discriminatory complaints account for 3.7% of all complaints suggests concentrated exposure to discriminatory treatment. On average, this implies that many minority consumers face discrimination severe enough to trigger a formal complaint, despite significant barriers to accessing financial services.

Below, we list a few example complaints with varying discrimination classification scores:

Complaint #1450743

Narrative: "I financed a vehicle thru Ally financial entering a retail installment contract on XXXX/XXXX/XXXX. The Consumer Financial Protection Bureau and U.S Department of Justice investigate Ally's auto financing business. And Based on the investigation the government agencies claimed Allys pricing and automobile dealer compensation system resulted in minorities (to whom I am an XXXX) paying higher interest rates than XXXX customers. Ally did not admit to these allegations but agreed to enter a settlement with the government agencies in XXXX XXXX. In XXXX XXXX and XXXX XXXX Ally financial reported my account 30 days late and 60 days late to the XXXX major credit bureaus XXXX, XXXX, and XXXX. This not only hurt my credit but also financially as ally was allegedly charging me a higher interest than XXXX. So when I finally refinanced the above vehicle loan with my local credit union XXXX XXXX. I owed more on the vehicle than if Ally would have charged me at a lower interest."

Is_discrimination: Yes

Confidence_score: 0.9

Reason: The complaint narrative indicates potential discrimination related to interest rate practices by Ally Financial. The complainant references a government investigation that found Ally's pricing system resulted in minorities paying higher interest rates, and the complainant identifies as a minority. The complainant also describes financial harm due to allegedly being charged a higher interest rate than others, which aligns with interest rate discrimination. The narrative suggests a comparison between the complainant's treatment and that of non-minority consumers, indicating perceived unfair treatment based on race or ethnicity.

Complaint #1324587

Narrative: "I was contacted by Halsted financial services. I asked if they could send me a copy of the paperwork that determined I hold the debt. They refused to provide me with

the paperwork as well as hung up on me. I called back XXXX 4 times after being hung up continuously. After finally speaking with someone and requesting the documents again I was told no multiple times and that I would experience wage garnishments as well as being sued in court if I did not settle the debt immediately. I again asked for the proper documentation that showed I owed the debt the representative refused to send me the paperwork. I asked to speak with their supervisor and was immediately told no that is not possible at this time. I said I will have nothing further to discuss with you until speaking with your supervisor I was hung up on. I've been called back and got the company name to file the complaint."

Is_discrimination: No

Confidence_score: 0.8

Reason: The complaint describes issues with debt collection practices, including refusal to provide documentation and threats of wage garnishment. However, there is no mention or implication of discrimination or unfair treatment based on protected characteristics or comparisons to others. The complaint focuses on procedural issues and aggressive collection tactics rather than discriminatory practices.

The first case represents clear racial discrimination in lending, where the minority borrower is systematically charged higher interest rates compared to non-minority consumers, supported by regulatory investigation findings. In contrast, the second case, while showing poor customer service and aggressive collection practices, does not indicate any differential treatment based on protected characteristics.

Appendix E Changes in Complaint Trends

The disclosure of complaint narratives can induce financial institutions to proactively manage their reputational risk by reducing the incidence of future complaints. To achieve this, institutions may improve service quality, increase transparency in product terms, or strengthen internal compliance mechanisms, all of which can help mitigate consumer dissatisfaction before it escalates into a formal complaint. Such a decline in complaint volumes may signal a broader, forward-looking behavioral adjustment by financial institutions, rather than a purely reactive approach to individual complaints.

In this section, we explore how institutions respond to their overall complaint volume by examining how different types of complaints evolve over time. Because the number of complaints received by a financial institution in one period may correlate with the number in the next, we test whether the autocorrelation between complaint volumes across adjacent periods changes following the implementation of the disclosure policy. The analysis covers complaints in the savings, auto, and credit card markets from March 19 to December 31, 2015. This sample window is balanced around the policy shock. Based on institution-month-level complaint counts, the empirical model is specified as follows:

$$\begin{aligned} Complaints_{i,t+1} = \alpha + \beta_1 Complaints_{i,t} + \beta_2 Complaints_{i,t} \times Post_t \\ + \mu_{Institution} + \mu_{Market \times YearMonth} + \epsilon_{i,t} \end{aligned}$$

In this equation, $Complaints_{i,t+1}$ represents three distinct measures of complaints for institution i in month $t+1$: total complaints ($ComplNum_{i,t+1}$), complaints with narratives ($NarrComplNum_{i,t+1}$), and complaints with discriminatory narratives ($DiscComplNum_{i,t+1}$). Our specification includes three measures of complaints in month t and their interactions with a policy indicator, defined as $Complaints_{i,t} \times Post_t$, where $Post_t$ equals one for months after June 2015 when the CFPB made complaint narratives public. The coefficient β_1 measures the autocorrelation of complaints across consecutive months, while β_2 captures the

change in this autocorrelation following the policy implementation. We include institution and market-year-month fixed effects to account for unobserved heterogeneity and cluster standard errors at the institution level.

Columns (1) to (3) in Table A17 show positive autocorrelation between current and subsequent periods across all three complaint measures. The interaction terms reveal that this autocorrelation weakens during the disclosure period, suggesting that institutions enhanced their complaint management practices. According to Column (1), narrative disclosure reduces the autocorrelation of total complaints by 21.3% (0.247/1.157). Column (2) shows that the autocorrelation for complaints with narratives decreases by 25.3% (0.297/1.174). Most notably, the coefficient on $DiscComplNum_{i,t} \times Post_t$ is statistically significant and negative in Column (3), indicating that autocorrelation for discriminatory complaints declines by 29.9% (0.213/0.713), the largest reduction among the three measures. This pattern aligns with our earlier findings regarding fairer pricing outcomes, suggesting that these adjustments are part of a consistent institutional effort to reduce exposure to negative publicity following the CFPB disclosure policy.

Table A17. Effects of CFPB Disclosure on Complaint Trends

This table presents the effects of CFPB disclosure on complaint volumes. The analysis covers complaints from three core markets, namely savings, auto, and credit cards, during the period from March 19, 2015, to December 31, 2015. The estimation sample is based on institution-month-level data for three types of complaints: all complaints ($ComplNum_{t+1}$), complaints with narratives ($NarrComplNum_{t+1}$), and complaints with discriminatory narratives ($DiscComplNum_{t+1}$). These serve as the dependent variables, measured in period $t+1$. The main independent variables include contemporaneous complaint volumes and their interactions with $Post_t$, which captures the effect of disclosure on complaint trends. $Post_t$ equals one for periods after June 2015, representing the period when the CFPB began publicly releasing complaint narratives. All columns include fixed effects for institution and market-year-month. Standard errors are clustered at the institution level and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
VARIABLES	$ComplNum_{t+1}$	$NarrComplNum_{t+1}$	$DiscComplNum_{t+1}$
$ComplNum_t$	1.157***		
	(0.039)		
$ComplNum_t \times Post_t$	-0.247***		
	(0.053)		
$NarrComplNum_t$		1.174***	
		(0.046)	
$NarrComplNum_t \times Post_t$		-0.297***	
		(0.054)	
$DiscComplNum_t$			0.713***
			(0.049)
$DiscComplNum_t \times Post_t$			-0.213***
			(0.074)
Institution FE	YES	YES	YES
Market-Year-Month FE	YES	YES	YES
Observations	10,935	10,935	10,935
R-squared	0.956	0.938	0.508

Appendix F Heterogeneous Effects

F.1 Discriminatory Complaints Relative to Assets

Institutions facing more salient or severe complaint disclosures, particularly those involving discriminatory treatment, have stronger incentives to adjust their conduct in response to reputational risk. Here, we present a heterogeneity analysis that examines whether the ratio of discriminatory complaints to total assets influences how a financial institution adjusts its product pricing and services. When public disclosures allow stakeholders to identify discriminatory practices and institutions internalize these concerns, the policy's impact on financial product pricing may vary across institutions depending on the intensity of complaints relative to assets. To test this, we adapt the baseline triple-difference model and divide the treatment group by the severity of discriminatory complaints relative to assets.

Table A18 presents the results. Column (1) compares deposit interest rates across institutions stratified by their complaints-to-assets ratio (above- and below-median). Coefficient estimates reveal heterogeneous effects across these groups: the triple interaction term $HighDiscCompl \times Post \times Minority$ is statistically significant for the high complaints-to-assets group, indicating stronger policy responsiveness in this group. For the low complaints-to-assets group, the effect is weaker, consistent with the interpretation that disclosure effects primarily target institutions engaged in severe discriminatory practices.

Column (2) analyzes lending market responses through auto loan and credit card rates, incorporating product and market-institution-year fixed effects to account for differences between loan types. The results show that branches of CFPB-supervised institutions exhibit stronger loan-rate responses when their institutions have more discriminatory complaints relative to assets. These patterns underscore the policy's efficacy in incentivizing institutions to prioritize equitable service provision, particularly when a high volume of complaints draws public attention to discriminatory practices.

Table A18. Heterogeneous Effects of CFPB Disclosure on Racial Gaps in Interest Rates: High versus Low Discriminatory Complaints-to-Assets Ratios

This table presents the heterogeneous effects of CFPB disclosure on racial gaps in deposit and loan interest rates under different complaint conditions. The estimation sample is based on branch-level data aggregated by year-quarter. In the estimation, we divide treated institutions into two groups based on the volume of discriminatory complaints they received relative to their total assets in 2015. The first group includes branches of institutions with above-median levels of discriminatory complaints as a share of total assets. The second group consists of branches of institutions with below-median levels. Column (1) reports results using deposit interest rates, while Column (2) reports results using combined auto loan and credit card rates. Both columns control for county-level demographic variables, including the logarithm of total population and the growth rate of per capita income, along with branch and year-quarter fixed effects. Column (1) also controls for institution-year fixed effects, while Column (2) incorporates product and market-institution-year fixed effects. All interaction terms in the triple-difference specification are included, and only the two key interaction terms are shown in the table. Standard errors are clustered at the institution, county, and year levels and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Deposit Rate	Loan Rate
HighDiscCompl×*Post*×*Minority*	0.252***	-0.397***
	(0.033)	(0.045)
LowDiscCompl×*Post*×*Minority*	0.091**	-0.093
	(0.033)	(0.065)
County Characteristics	YES	YES
Branch FE	YES	YES
Product FE	-	YES
Year-Quarter FE	YES	YES
Institution-Year FE	YES	-
Market-Institution-Year FE	-	YES
Observations	308,746	297,838
R-squared	0.881	0.978

F.2 Public Attention

Public attention reflects the market's awareness of complaint narrative disclosures. We examine whether market attention moderates the effect of the complaint narratives policy. In areas where residents pay greater attention to complaint disclosures, the policy's disciplinary effects are likely to be more pronounced. To test this prediction, we use changes in Google search interest related to the CFPB from 2014 to 2015 as a proxy for shifts in public attention following the disclosure. Within the treatment sample, institutions are divided into above- and below-median groups based on the change in Google search interest. This measure is assigned at the state level according to each institution's branch location in 2015.

Table A19 presents the results. Column (1) compares deposit interest rates between financial institutions that receive high versus low levels of public attention. The estimated coefficients show that the disclosure impact varies across these groups, with a stronger effect observed in institutions with higher attention levels than in those with lower attention. The deposit-rate coefficients are positive in both groups, suggesting broader improvements in savings-market outcomes. Column (2) examines lending market responses through auto loan and credit card rates, incorporating product and market-institution-year fixed effects to control for variations between loan types. The results reveal that the disclosure policy significantly narrows racial gaps in loan pricing in high-attention groups. The low-attention loan coefficient is positive but statistically insignificant. These findings collectively indicate that public engagement and information accessibility enhance the policy's capacity to reduce racial disparities in deposit and loan pricing.

Table A19. Heterogeneous Effects of CFPB Disclosure on Racial Gaps in Interest Rates: High versus Low Public Attention

This table presents the heterogeneous effects of CFPB disclosure on racial gaps in deposit and loan interest rates under varying levels of public attention. The estimation sample is based on branch-level data aggregated by year-quarter. In the estimation, we divide treated branches into two groups based on the increase in Google search interest in their respective states from 2014 to 2015. The first group includes branches of institutions located in states that experienced above-median increases in Google search interest from 2014 to 2015. The second group includes those in states with below-median increases. Column (1) reports results using deposit interest rates, while Column (2) reports results using combined auto loan and credit card rates. Both columns control for county-level demographic variables, including the logarithm of total population and the growth rate of per capita income, along with branch and year-quarter fixed effects. Column (1) also controls for institution-year fixed effects, while Column (2) incorporates product and market-institution-year fixed effects. Standard errors are clustered at the institution, county, and year levels and are shown in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Deposit Rate	Loan Rate
HighAttention×*Post*×*Minority*	0.099**	-0.252**
	(0.035)	(0.082)
LowAttention×*Post*×*Minority*	0.078**	0.164
	(0.027)	(0.145)
County Characteristics	YES	YES
Branch FE	YES	YES
Product FE	-	YES
Year-Quarter FE	YES	YES
Institution-Year FE	YES	-
Market-Institution-Year FE	-	YES
Observations	308,746	297,838
R-squared	0.881	0.978

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

Our research demonstrates that disclosure policies enhance minority gains in financial services by promoting transparency and accountability. Li (2023) developed a platform that provides a ranking of mortgage lenders in the mortgage market. Building on our focus in this paper, we expand this platform with a ranking system that reveals how financial institutions serve different communities in both savings and lending markets. Our latest extension broadens the platform's scope substantially. The update reduces the cost for disadvantaged groups to discover and access such information (Blankespoor et al. (2020)). By lowering these information frictions, the system can advance transparency and equity in financial services.

Specifically, we introduce 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. We generate these rankings by comparing branches of the same institutions in minority areas to those in white areas. To isolate the impact of racial composition in each location, we control for branch, year-quarter, state-year, and product-year fixed effects. By analyzing these financial outcome disparities, we assess whether branches systematically differentiate their product offerings according to local racial demographics. The model specification is as follows.

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

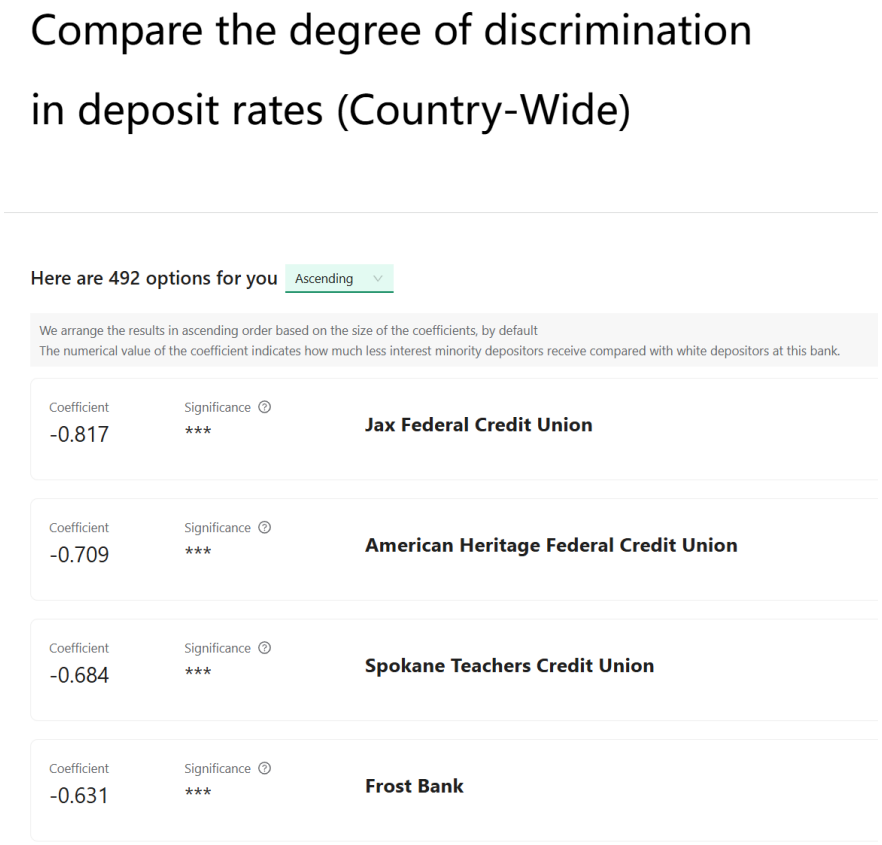
In this equation, i, z, and t represent the branch, location (ZIP code), and year-quarter, respectively. The Outcome variable captures one of four financial indicators: deposit rate, maintenance fee, auto loan rate, or credit card rate, offered by branch i in location z during

year-quarter t. The key independent variable, $Minority$, equals one if the branch operates 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, $Minority \times InstitutionID$, allows us to examine branch-level variations across different communities within the same financial institution. The coefficient β measures the racial disparity in outcomes between branches serving minority and white communities. For deposit rates, a negative β suggests lower deposit rates in minority areas, representing less favorable savings options, while a positive β indicates the opposite. For auto loan rates, credit card rates, and maintenance fees, a positive β reflects higher charges in minority areas. We rank financial institutions based on the estimated magnitude of pricing differentials faced by minority communities (value of β).

Figure A11 illustrates part of our ranking system that encompasses 492 financial institutions ordered by the magnitude of deposit rate disparities between their branches in minority and white communities. These rankings 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 this initiative will increase awareness of financial disparities and, in the long run, support efforts to create a more equitable financial environment.

Figure A11. Example of Online Ranking of Racial Gaps in Financial Services

This figure illustrates a screenshot extracted from the website, ranking 492 financial institutions nationwide according to racial disparities in deposit interest rates. The table contains three columns: Column (1) reports the coefficient, measuring the difference in deposit interest rates between minority and white communities for each institution. More negative values reflect greater disparities. Column (2) presents the significance, showing the statistical significance of the coefficients. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively. Column (3) lists financial institutions.



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