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

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Abstract

We examine the impact of the Consumer Financial Protection Bureau's 2015 disclosure of complaint narratives on racial disparities in financial services. Using a triple-differences approach, we find that, post-disclosure, minority consumers see improved outcomes at financial institutions under CFPB oversight. In the savings market, this includes higher deposit rates, lower maintenance fees, and increased household account ownership. In the lending market, improvements are seen in reduced interest rates on auto loans and credit cards, as well as increased auto ownership. The research emphasizes the broad impact of service quality disclosure in mitigating racial disparities in savings and lending markets.

Keywords: Disclosure; Racial disparities; Financial services

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1 Introduction

Disclosure serves as a widely adopted regulatory intervention tool across various industries (Jin and Leslie (2003); Romanosky et al. (2011); Gao and Su (2021); Tomar (2023)).[1] Unlike strict enforcement, which mandates or prohibits certain actions, disclosure relies on transparency to discipline or influence stakeholders' behaviors by providing them with information. In financial services, disclosure assumes even greater importance. Financial services play a vital role in the economy and society, influencing the overall financial landscape and individuals' daily activities (Demirgüç-Kunt and Singer (2017)).[2] Numerous studies discuss the role of disclosing operational conditions and product information (Leuz and Wysocki (2016)). However, the lack of transparency regarding the true quality of financial services that consumers receive makes it difficult to monitor the misconduct of service providers,[3] such as discrimination based on race and ethnicity.

This study investigates the impact of disclosing the quality of financial services, particularly emphasizing the effect of racial disparities in financial service markets. Racial discrimination is a pervasive and unfair treatment in financial services (Cohen-Cole (2011); Faber and Friedline (2020); Butler et al. (2023)), even though the government enacts many acts that attempt to maintain fairness in financial services (Begley and Purnanandam (2021)).[4]

[1] In the restaurant industry, Jin and Leslie (2003) observe that greater transparency about product quality encourages firms to enhance their hygiene quality. In the information security field, Romanosky et al. (2011) note that mandating firms to inform consumers if their personal information is lost or stolen leads to a significant decrease in identity theft due to data breaches. In the tourism industry, Gao and Su (2021) report that disclosing quality information boosts the development of the city's tourism economy. In the environmental protection domain, Tomar (2023) indicates that facilities compare their greenhouse gas performance with their peers using disclosed data, which can drive reductions in emissions.

[2] Based on data from the Federal Reserve Bank of St. Louis (FRED), the financial services and insurance sector accounts for 7.3% of the U.S. GDP in the third quarter of 2023. In a World Bank report, Demirgüç-Kunt and Singer (2017) point out that increasing research suggests access to suitable financial services can significantly improve the well-being of consumers, particularly for underprivileged groups such as women and low-income individuals.

[3] On the one hand, financial institutions may leverage their information advantage to steer consumers implicitly and distort their choices, resulting in welfare costs (Guiso et al. (2022)). On the other hand, due to concerns about social taboos and privacy, consumers usually do not share their consumption experiences with others after using financial services (Campbell et al. (2011)).

[4] Cohen-Cole (2011) examines the existence of racial disparities in the issuance of consumer credit, finding that the available portion of credit card limits remains racially disproportionate even after controlling for factors such as credit scores. Faber and Friedline (2020) find that Black and Latinx populations need higher minimum balances to avoid bank account service fees. Butler et al. (2023) finds that in the auto loan market, Black and Latinx applicants are more likely to have their loan applications rejected based on their

This implies that minority consumers, compared to the dominant white consumers, currently receive lower-quality services from financial institutions. The lack of financial literacy makes minority consumers more susceptible to being taken advantage of by financial institutions (Guiso et al. (2022)). Moreover, the long-standing racial discrimination also makes it more challenging for minority consumers to establish strong relationships with financial institutions (Scott et al. (2023)). Finding effective policy solutions to address racial disparities in financial services is essential but challenging. To the best of our knowledge, this study is the first to investigate the impact of disclosure policies on racial discrimination in financial services, specifically focusing on the savings and loan markets.

We utilize the natural experiment created by the Consumer Financial Protection Bureau's (CFPB) complaint narrative disclosure policy. As the primary regulatory agency for consumer financial markets in the United States, the CFPB is crucial in protecting consumer interests (Hayes et al. (2021)). On June 25, 2015, the CFPB began publicly disclosing detailed narratives of consumer complaints with the permission of the consumers (CFPB (2015)). Implementing this disclosure policy provides consumers, media, investors, and potentially competing financial institutions with direct access to negative consumer evaluations of financial services. Once these complaint narratives with strong negative connotations are made public, they may bring reputation concerns and litigation risks to the targeted financial institutions. The competitors and investors of these institutions in capital markets may also take corresponding actions (Dou and Roh (2023)). Unlike the disclosure of enforcement actions, submitting complaints has a lower barrier to entry and higher public participation, making it more likely for the general financial consumers to be aware of and change their engagement (Flannery et al. (2023)). These potential impacts may collectively prompt financial institutions to provide better resolution outcomes to complaints they receive and to improve their service quality.[5]

The disclosure of complaint narratives can have real effects only if complaints with disclosed narratives capture the attention of various stakeholders in the financial market.

race and pay higher interest rates. Begley and Purnanandam (2021) examine the Community Reinvestment Act and find that even in communities deemed "underserved" (which are typically low-income and minority-dominated communities), financial institutions increase the number of approved loans. Still, the quality of financial services remains poor.

[5]Through discussions with CFPB insiders, we confirm that financial institutions regularly review and analyze consumer complaints to evaluate the quality of their products and services.

To examine how much institutions attend to this disclosure policy, our study first utilizes a buffer period set by the disclosure policy to construct a difference-in-difference (DID) model at the complaint-level.[6] We find that financial institutions pay closer attention to complaints with narratives than ordinary complaints without narratives after the narratives are disclosed to the public. This is reflected in the fact that after consumers' complaint narratives are disclosed, they are more likely to obtain monetary relief, have their complaints handled on time by the financial institution, and are less likely to dispute the resolution outcome. These results prove that the disclosure policy impacts the quality of financial services by influencing the ex-post handling of complaints.

Furthermore, we investigate whether financial institutions attempt to preempt the potential negative effects of complaint narrative disclosure by improving service quality in advance rather than solely focusing on the ex-post handling of complaints. Minority communities have long suffered from lower service quality, which also leads to more complaints in these communities (Begley and Purnanandam (2021)). We focus on whether institutions effectively address this racially unfair issue due to the policy targeting service quality disclosure. Compared to ex-post remedies, these real effects of disclosure on financial services may have broader and more positive social significance.

To identify changes in racial gaps, we exploit the CFPB disclosure policy to construct a triple difference (DDD) model. Specifically, we categorize counties into two groups based on the proportion of minority populations: majority-minority and majority-white.[7] Next, we identify financial institutions regulated by the CFPB. Using the branch-level financial product performance dataset from RateWatch, we identify branches of institutions under CFPB regulation and those not under CFPB regulation. We term these branches as treated branches and control branches, respectively. The former belongs to institutions directly regulated by the CFPB, meaning their complaints are disclosed after the policy's enactment. Thus, in our triple-difference setting, we focus on the performance differences (racial gaps) of treated branches in different types of counties. We examine whether these differences, after the CFPB disclosed complaint narratives, show significant changes compared to the

[6]On March 19, 2015, the CFPB finalized the disclosure policy, but complaints authorized for narrative disclosure were not made public until June 25, 2015. Using this period as the pre-shock period allows us to compare the relative changes in complaints with narratives before and after they are "made public."

[7]In our setting, minorities include all races except white. A county is defined as a majority-minority community if the minority population exceeds 50% of the total population.

differences in control branches across different counties.[8]

This triple-difference setting offers several advantages for identifying our focus. First, instead of directly requiring comparability between treated and control branches, we focus on changes in racial gaps. Since institutions under CFPB oversight are often larger, despite setting a total assets cap to mitigate potential systemic differences between large and small institutions, there may still be unobservable differences that could introduce bias. By introducing minority and white counties as the third difference, we change the parallel trends assumption to focus on the racial disparities between treated branches and control branches. This assumes no systemic differences between the racial gaps in the absence of the disclosure policy, and our analysis results confirm this assumption.

Second, reducing racial discrimination is not the core objective of the CFPB's disclosure policy. The CFPB decided to disclose (with consumer consent) complaint narratives to allow all consumers to benefit from getting access to consumer complaints. By focusing on racial gaps, we avoid the influence of policy objectives on our identification results.[9] We can thus identify a pure impact attributable to complaint narratives disclosure.

Finally, our setting can identify improvements in racial discrimination. To estimate financial services performance at the branch-product by year-quarter level, we employ a fixed effects design that includes branch, year-quarter, institution-year, product-year, and location-year fixed effects, as well as county-level time-varying control variables. These settings can strip out confounding factors such as local economic conditions, unobservable local policies, and the unique characteristics of the financial institution to which the branch belongs, such as its operating conditions and pricing models. By leveraging these empirical strategies and the fact that the disclosure policy itself is exogenous to racial disparities, our identification can capture the real effects of disclosure on racial gaps. Clearly, if the current pricing in treated branches is not related to racial discrimination, the branches have no incentive to make additional changes solely due to the disclosure policy.

Our study considers both the savings and lending markets. The CFPB's oversight en-

[8]This setting is properly interpreted as the change in the difference between the performance of treated branches and control branches in minority counties relative to the change in the difference between the two types of branches in white counties after the disclosure.

[9]If the CFPB's goal were to improve services for minority consumers under-regulated institutions, the CFPB might consciously or unconsciously adopt unobservable behaviors affecting the institutions' actions, confounding the estimated effects of complaint narratives disclosure.

compasses financial products in both markets, enabling us to analyze the consumer finance service market comprehensively. To thoroughly assess the impact of bank behavior on the real economy, it is essential to jointly consider credit availability and household wealth accumulation, which depend on the performance of the lending and savings markets, respectively. Furthermore, we expect to observe different directional impacts of the disclosure policy on the savings and lending markets. Evidently, if minority consumers' welfare improves, deposit interest rates will increase positively, while loan interest rates will decrease negatively. This phenomenon of opposite movements helps eliminate interference from some alternative hypotheses that are not the focus of our study. For instance, if certain monetary policy adjustments cause the effects we identify, the changes in interest rates in the savings and lending markets should move in the same direction.

We first focus on the savings market. The savings market is substantial and serves as a crucial entry point for individuals to establish relationships with financial institutions and access financial services.[10] However, the savings market has historically been subject to less stringent regulatory scrutiny concerning discriminatory practices compared to the lending market.[11] As a result, examining this market is crucial for gaining insights into financial inclusion and the disparities in wealth accumulation. Our research covers two critical indicators in the savings market between 2013 and 2022: deposit rate, and account maintenance fee. As the most fundamental indicator, the interest rate directly affects individuals' wealth accumulation, while fees determine the entry barriers to financial services.[12] Additionally, we analyze the impact of the disclosure policy on bank account ownership at the household-level, providing a more precise assessment of the policy's real effects on improved racial

[10]According to the Federal Reserve Bank of St. Louis, more than $9.34 trillion were stored in nest eggs across U.S. financial institutions in 2019, and this amount increased to over $10.63 trillion in 2020. Additionally, the personal saving rate (the percentage of disposable income that people save) in the U.S. reaches a high of 16.8% in 2020 and remains at 11.8% in 2021.

[11]Many U.S. consumer protection laws focus on providing equal access to financial services for those living in minority or low-income communities, such as the Equal Credit Opportunity Act, Fair Housing Act, and Community Reinvestment Act. However, these laws primarily target lending scenarios. In the savings market, regulatory priorities mainly revolve around deposit insurance and bank stability (e.g., the Federal Deposit Insurance Act and Truth in Savings Act). The establishment of the CFPB and its complaint-based regulatory approach play a crucial role in the specific regulation of potentially discriminatory behavior in the savings market.

[12]Deposit interest rates are usually associated with the federal government's monetary policy, and existing research has thoroughly discussed the impact of changes in these interest rates on residents' savings and consumption behavior (Drechsler et al. (2017); Agarwal et al. (2021); Chen et al. (2022)).

identification.

Our analysis shows that the disclosure policy causes branches in minority communities to raise their deposit rates by 6.4 basis points for 12-month CDs with a $10,000 account size.[13] Similar results are identified in our analysis of all mainstream deposit products, indicating that the CFPB disclosure improves consumer welfare in minority communities by at least $50.2 million annually. Our baseline setting reveals that after disclosing complaint narratives, treated branches in minority communities lower maintenance fees by 32.2% compared to white communities. This reduction translates to a $1,325 decrease in the minimum balance requirement for checking accounts and $131 for savings accounts per consumer in minority communities. Additionally, we find that, after implementing the disclosure policy, the likelihood of account ownership among minority households, particularly those with low incomes, increases by 2.8%, demonstrating a positive impact of the policy on account ownership within these households.

We then examine the impact of disclosure on lending markets. Lending services constitute a significant portion of financial services and are unavoidable in consumers' lives.[14] We analyze interest rates for two essential loan products—auto loans and credit card loans—at the branch-level, as well as changes in auto ownership at the household-level. In lending markets, mortgage loans are widely discussed due to their high regulatory scrutiny and strong data availability. Using the HMDA database, Li (2023b) demonstrates the mitigating effect of narrative disclosure on racial disparities in mortgage loans. However, auto loans lack structure, oversight, and transparency (Butler et al. (2023)), making quality disclosure critical for consumers. As credit cards are the most frequently used loan service and shape consumers' future credit access (Cohen-Cole (2011)), mitigating racial differences in this market will have far-reaching significance.

Focusing on the CFPB's disclosure policy, our findings show that, compared to branches

[13]Adjustments to deposit interest rates made by branches beyond macroeconomic policies reflect the specific preferences of different branches when providing deposit services. No studies have yet focused on whether the disclosure policy at this level leads to preferential treatment for consumers in minority communities.

[14]Total consumer debt in the U.S. continues to grow in recent years, reaching approximately $17 trillion by 2022, according to data from the Federal Reserve Bank of New York. Among this, total auto loan balances exceed $1.55 trillion in 2022, and credit card debt surpasses $1.1 trillion. Additionally, a survey by GOBankingRates shows that more than 40% of Americans have auto loan payments. A report by the Government Accountability Office (GAO) shows that in 2022, 82% of U.S. adults have at least one credit card.

in white communities, those in minority communities that are subject to the disclosure policy reduce their loan rates by 41.6 basis points for 36-month auto loans (equivalent to 0.25 standard deviations of interest rate) and by 33.7 basis points for 48-month auto loans (equivalent to 0.22 standard deviations of interest rate). Analysis of household-level auto ownership shows that, following the policy implementation, the likelihood of auto ownership among minority households, particularly those with low incomes, increases by 0.4%. In the credit card loan market, treated branches in minority communities, compared to white communities, lower loan rates by 22 basis points. The regular credit card loan rate decreases by 30.2 basis points.

We perform a dynamic trend analysis for all these results, which supports the assumption of parallel trends. This is evident from the fact that prior to the policy, there were no significant differences between the racial gaps identified in treated branches and control branches. The results of the dynamic trend analysis also show that the CFPB disclosure policy has long-term effects, as the CFPB continuously receives and discloses complaint narratives.

Finally, we conduct an initial exploration and discussion of the channels through which the disclosure policy takes effect. The reason why publicly disclosed complaint narratives can influence financial institutions' pricing behavior is that these complaints, especially the discriminatory ones we focus on, are observed by various stakeholders. Based on real news reports and findings from previous research, we discuss the potential impacts of complaint narratives disclosure on various subjects, including consumers, capital market investors, media, financial institution employees, and peer institutions of the focal institution.

We also employ two tests to examine consumer behavior in response to complaints, complementing previous research that focused primarily on institutional behavior. First, We examine changes in branch deposit amounts, which reflect shifts in individuals' willingness to deposit funds across different branches, and have been proven to significantly impact the stability of the banking system (Egan et al. (2017)). Our analysis shows that the disclosure policy leads to the highest flow of total deposits in minority communities at treated branches receiving discriminatory complaints, followed by branches receiving non-discriminatory complaints, and the least impact on branches without complaints. This result supports the real effects of discriminatory complaint narratives. Second, we assess households' self-reported confidence in credit card approval. We find that minority households residing in states with

higher numbers of discriminatory complaints experience a significant increase in confidence after the policy is implemented. This analysis offers insight into the effectiveness of complaint narratives disclosure from the perspective of individual self-perception. Regarding institutional behavior, we also provide preliminary insights by leveraging similar baseline analysis results. Our findings indicate that discriminatory complaint narratives influence the impact of the disclosure policy on improving minority consumer welfare, indirectly supporting the inferences drawn from our channel discussion.

This study contributes to the growing body of literature exploring the broader effects of disclosure policies. Firstly, we discuss the CFPB's disclosure of complaint narratives in a financial context, which complements the literature on information disclosure in finance and accounting while also connecting to the discussion on the role of consumer reviews in marketing. Previous research on disclosure in finance typically focuses on improving the transparency of corporate (or product) information (Sah and Loewenstein (2014); Leuz and Wysocki (2016); Chen et al. (2018); Bertomeu et al. (2021); Adams et al. (2021)). While enhancing product information transparency may help improve consumer welfare, the discussion on the disclosure of the quality of financial products and services, as reflected by consumer narratives about their experiences, is inadequate. In studies related to consumer behavior, the role of consumer-generated negative reviews based on their own consumption experiences has been extensively discussed (Fennis and Stroebe (2014); Zhang and Li (2021); Varga and Albuquerque (2023)). Our research is the first study to examine the causal effects of disclosing negative consumer reviews of service quality in financial services (savings and loan markets).

Secondly, we link the quality disclosure of financial products and services to the widespread issues of diversity, equity, and inclusion (DEI). We highlight the real effects of disclosure by demonstrating that disclosure in financial services can effectively mitigate racial discrimination. Numerous studies have confirmed the existence of unexplained racial discrimination issues in financial services (Cohen-Cole (2011); Faber and Friedline (2020); Bartlett et al. (2022); Butler et al. (2023)), and some research has explored the role of regulation acts (Ladd (1998)). However, these regulations are not always effective and may even cause financial institutions to face a quantity-quality trade-off, hindering the improvement of minority consumers' conditions (Begley and Purnanandam (2021)). Our research examines CFPB complaints, which provide a platform for consumers to independently share their ex-

periences with poor service quality. Our study is the first to verify that even disclosing basic details about these experiences can significantly reduce discrimination in financial services.

Thridly, this paper also expands on existing studies about the CFPB and its regulatory impacts. Previous research offers varied perspectives on the CFPB's effectiveness. Proponents argue that the CFPB has successfully curbed deceptive and predatory practices, reduced risky lending, potentially prevented foreclosures, and helped stabilize the financial system (Fuster et al. (2021); DeFusco et al. (2020)). However, critics contend that CFPB's oversight increases regulation and compliance costs, raising legal liabilities, which might limit the availability of consumer credit (Neugebauer and Williams (2015); Fuster et al. (2021); DeFusco et al. (2020)). Our paper takes a DEI perspective to explore the CFPB's role in addressing discrimination in financial services. We find that public disclosure of these narratives enhances transparency and helps reduce disparities in the treatment of different consumer groups.

The public availability of the CFPB's complaints database provides researchers with access to consumer evaluations of the quality of financial products and services (Haendler and Heimer (2021); Begley and Purnanandam (2021)). However, existing discussions regarding the disclosure of complaints primarily focus on the mortgage market. Based on the CFPB's policy to make the complaints database accessible in 2013 (only complaint numbers are visible, without narratives), related research finds that consumer complaints reduce the number of mortgage loan applications received by institutions with misbehavior (Dou and Roh (2023)), leading to the expansion of their competitor institutions (Dou et al. (2024)). Regarding the disclosure of complaint narratives in 2015, Li (2023b) research in the mortgage market indicates that disclosure improves the opportunities and quality of mortgage loans received by disadvantaged groups. In fact, most complaints collected by the CFPB are unrelated to mortgages (see Figure A2), and little is known about the impact of complaint narrative disclosure on the entire financial market. At a broader level, our work focuses on a wide range of products and services in the comprehensive savings and lending markets, offering a more comprehensive set of insights into this domain.

The rest of the paper is as follows. Section 2 describes the relevant background, the datasets used, and the summary statistics results. Section 3 analyzes institutions' responses to the CFPB's disclosure of complaint narratives. Section 4 presents the main analysis of the paper, examining the impact of disclosure on racial disparities in the savings market.

Section 5 reports the other main analysis, investigating the effect of disclosure in the lending market. Section 6 provides an initial discussion on the channels through which the disclosure takes effect. Section 7 concludes the paper.

2 Background and Data

2.1 Background of CFPB Complaint Narrative Disclosure

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

On March 19, 2015, the CFPB finalized a policy allowing consumers to share their grievances regarding consumer financial products and services publicly.[15] Specifically, when consumers complain, the CFPB asks them to describe "what happened." After entering these descriptions (i.e., complaint narratives), the CFPB provides a checkbox informing consumers that they can make the narratives public so that "others can learn from my experience." Figure A1 shows a screenshot of the page where consumers submit complaints through the CFPB website.[16]

[15] As early as March 28, 2013, the CFPB discloses complaints about mainstream financial products and services under its regulation. However, the disclosure in 2013 does not release any complaint narratives, and the public only has access to the number of complaints.

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

To familiarize companies with this new system, the CFPB provides a grace period of over 90 days during which consented-to complaint narratives are not published. This period extends until June 25, 2015, and from that date forward, narrative information begins to appear in the public-facing consumer complaint database. This means that on June 25, 2015, the CFPB publicly released the narratives of consumer complaints. Since then, the public has been able to download information related to the type of financial product involved in the complaint, the submitting consumer's zip code, the submission date, the name of the implicated bank, and the bank's brief response. This disclosure also attracts significant attention from mainstream media.[17] In Figure A2, we present the trends in the number of complaints received across major categories from 2013 to 2022. It is readily apparent that complaints in the savings and lending markets have experienced varying degrees of growth over the sample period, reflecting that the CFPB's complaints system is gaining increasing attention from the public.

CFPB's other policy adjustments in close temporal proximity may potentially interfere with our identification results. However, after careful examination of relevant policy changes this issue does not impact our findings. One pertinent policy is Section 1071 of the Dodd-Frank Act. This act amended the Equal Credit Opportunity Act (ECOA) to require financial institutions to compile, maintain, and submit certain data to the Bureau on credit applications for minority-owned, women-owned, and small businesses. Nonetheless, the final rule for this section was not issued until March 2023 (discussions on making this section began in 2017), with formal data collection scheduled for 2024 or 2025, which does not overlap with the sample period of our study. Additionally, this act focuses on credit applications for specific businesses and does not directly relate to the consumer complaints and interest rates we examine in this paper.

Our study focuses on the changes in racial disparities in the savings and lending markets following the CFPB's public release of complaint narratives in June 2015.[18] After the disclosure policy takes effect, there are 871,960 complaints with narratives in the savings and lending markets. We apply the textual analysis method described by Li (2023a) to the

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

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

complaint narratives, identifying 38,679 complaints related to racial discrimination.[19] Figure 1 shows the trend of the fraction of discriminatory complaints among all complaints with disclosed narratives in the savings and lending markets from 2015 to 2022. In the savings market, discriminatory complaints account for 4.53%. In the lending market, the proportion of discriminatory complaints stands at 6.32% in the auto loan market and 4.29% in the credit card loan market. It indicates that racial disparity is prevalent in financial services and causes consumer dissatisfaction.

[Insert Figure 1 about here]

Additionally, we provide three examples of identified discriminatory complaints in the savings and lending markets in Table A1 to demonstrate the accuracy of the text identification. These examples clearly show information including "Date received," "Product," "Consumer complaint narrative," "Company," and "Company response to consumer," among others. Although personal data are de-identified in complaint narratives, claims of racial discrimination are evident. For instance, in panel A of Table A1, a consumer writes, "... due to abuse of power by the president at the bank also based on stigmatized and stereotyped being of another race." These indicators suggest potential racial misconduct by this financial institution towards this consumer.

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

2.2 Data Sources

2.2.1 RateWatch

We collect a broad range of branch-level financial product interest rate and fee data from RateWatch, focusing on the deposit interest rate, loan rate, and fee at the bank branch-week

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

level. Our dataset spans from January 2013 to December 2022,[20] aggregated to the quarterly level.[21] Our analysis primarily examines product pricing performance in the savings and lending markets. We aim to identify how institutions proactively respond to disclosure policies. Therefore, we limit our examination to branches that actively set their rates (Drechsler et al. (2017)). From the wide variety of products in RateWatch, we primarily focus on CDs and maintenance fees within the savings market, as well as auto loan rates and credit card rates in the lending market. Specifically, we select the following products for our analysis:

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

(2) In the lending market, we begin our discussion with auto loan rates for the most common new and used vehicles over 36-month and 48-month terms (Wang (2018); Yi (2022)). We also examine credit card loan rates, focusing on regular and introductory interest rates (Chava et al. (2023)).

2.2.2 CFPB Database

We utilize the publicly available CFPB consumer complaints database to assess the frequency and nature of complaints against institutions in the savings and lending markets. In June 2015, the CFPB starts publicly disclosing consumer complaint narratives. In addition to displaying the narrative details of complaints, this complaints database also presents the company's response to the consumer and indicates whether the consumer disputes the response. We collect all complaints from the CFPB complaints database between 2015 and 2022 and identify complaints in the savings and lending markets (including both auto loans and credit card loans) based on the product information related to the complaints.

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

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

According to the official regulation rules, the CFPB exercises supervisory authority over banks, thrifts, and credit unions with assets exceeding $10 billion and their affiliates. We match these institutions with our RateWatch and SOD datasets using the institution ID (Research, Statistics, Supervision, and Discount ID) from the CFPB's regulated institution list.[22] This process identifies institutions directly impacted by the CFPB's complaints disclosure policy. Moreover, the CFPB oversees non-depository mortgage originators and servicers, payday lenders, and private student lenders of all sizes, as well as larger participants in other consumer financial markets as defined by CFPB rules. Institutions of these types appearing in our datasets are also considered under the influence of disclosure regulations.

2.2.3 County Characteristics

To assess the impact of the CFPB disclosure policy on racial gaps, we compile county-level demographic data from 2013 to 2022. This data is sourced from the Bureau of Economic Analysis and the Census Bureau. The sociodemographic characteristics we gather include the total population and racial composition, as well as the per capita income of each county for each year. The proportion of minority groups in each county is used to identify minority communities. We employ both population and per capita income growth rates as covariates to control for the influence of local economic and population environments on product pricing strategies.

2.2.4 Others

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

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

[22]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.

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

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

2.3 Summary Statistics

Table 1 displays the summary statistics for the key variables from our data sample spanning from 2013 to 2022. Panel A of Table 1 showcases the distribution of branch-level variables. These include interest rates for deposits, auto and credit cards, minimum account balances required to avoid maintenance fees in the savings market from RateWatch, and deposit amounts for each branch from the SOD database. Due to varying data frequencies across different databases, variables from RateWatch are presented on a year-quarter basis, while deposit amounts from the SOD are on an annual basis. Panel B of Table 1 offers insights into county-level characteristics, with these data points also measured annually. In compiling these statistics, we apply a cap of 100 billion total assets, including only branches from institutions with total assets below 100 billion dollars as of the second quarter of 2015. We drop large banks to ensure that institutions affected by the disclosure policy (treatment group) and those not affected (control group) are comparable without systematic differences (Li (2023b)).[23]

[Insert Table 1 about here]

Furthermore, to investigate whether banks treat minority consumers unfairly, we identify the racial difference in interest rates within savings and lending markets across various communities. Given the substantial variation in micro-level and macro-level characteristics among consumers in different communities, a direct comparison of interest rates may not adequately reveal the racial disparities of interest. Therefore, we focus on institutions with branches in both minority and white communities where the minority population exceeds

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

(or below) 50% of the county's total population. These institutions, familiar with serving diverse ethnic groups, set interest rates that more precisely reflect the attitudes towards consumers of different races. By focusing on these institutions, we position our comparison on whether institutions operating across communities offer different rates and fees to minority communities. This helps us minimize the disparities in pricing strategies among various institutions.

[Insert Figure 2 about here]

Figure 2 displays the observed racial differences in the savings market from 2013 to the first quarter of 2015, just before the public disclosure of complaint narratives. Consumers in white communities receive more favorable deposit rates than those in minority communities. This difference is evident in the median values (0.3% versus 0.15%, indicated by the thick black line within the box in Figure 2) and the overall range of the value distribution (indicated by the red box in Figure 2), which are significantly lower in minority communities. Additionally, depositors residing in white communities receive an average deposit rate of 0.27%, whereas the rate stands at 0.17% for those in minority communities. A T-test confirms that this divergence is statistically significant, with a p-value of 0.000. This disparity implies that, on average, each branch in minority communities pays approximately $372,000 less in interest to minority depositors.[24]

[Insert Figure 3 about here]

Figure 3 highlights the racial gaps in the lending market, with part (a) focusing on auto loan rates and part (b) on credit card loan rates. For both types of loans, interest rates in minority communities, particularly median values, are higher than in white communities (for auto loans, White: 3.5% vs. Minority: 3.735%; for credit card loans, white: 9.24% vs. Minority: 10.24%).[25] These differences suggest that, before the disclosure policy, minority consumers may suffer from unfavorable interest rates due to their race. The model-free figures clearly indicate racial disparities in interest rates.

[24] In this analysis, the average deposit amount in branches within minority communities is $372.85 million. Multiplying this figure by the racial gap in interest rates (0.27% - 0.17% = 0.1%) results in a difference of $0.37 million.

[25] The racial disparities in interest rates on loan markets seem less pronounced than those in the savings market. One reason could be the larger numerical values and variances of loan rates, leading to a less concentrated distribution. However, the differences in the median values of loan rate gaps are substantial, suggesting that minorities face less favorable borrowing conditions.

3 The Impact on Complaints' Resolution Outcomes

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

Before delving into a detailed analysis of the performance of financial products in the savings and lending markets, it is crucial to establish that financial institutions indeed take serious account of the complaints narratives disclosure policy. After the CFPB discloses complaint narratives, the information in these narratives should be captured by various social entities, such as consumers, media, investors, and potentially competing financial institutions. Out of concern for the potential adverse actions these entities may take after learning about the negative news of the complained institution, the complained institution will have the motivation to improve service quality more diligently than before the complaint narratives are made public.

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

Using data from the CFPB complaints dataset, we use a difference-in-difference model to examine how complaints' resolution outcomes change after disclosing complaint narratives to the public.

We select the period from March 19, 2015, to December 31, 2015, as the analysis period. The pre-disclosure period is from March 19 to June 25, 2015. Starting on March 19, 2015, consumers could choose to make their complaint narratives public when submitting complaints to the CFPB. However, from March 19 to June 25, 2015, the CFPB did not disclose these narratives to the public to provide regulated financial institutions with some buffer

time. On June 25, 2015, the CFPB began publicly sharing the complaint narratives, marking the effective initiation of the CFPB disclosure policy. This means that our pre-disclosure period is only from March 19 to June 25, 2015. During this period, consumers who submitted complaints to the CFPB faced the same situation as those who submitted complaints after June 25, 2015. This setting helps mitigate self-selection bias from the consumers' side, as we believe that consumers' behavior in choosing whether to disclose complaints with narratives does not exhibit systematic differences between the pre-disclosure and after-disclosure periods.

The sample period ends on December 31, 2015, for two reasons. First, using only data before 2016 eliminates the impacts of the rapidly growing number of complaints. The number of complaints received by the CFPB skyrockets after 2016, which may bring some unknown disturbances. Second, the balance in data structure before and after disclosure requires consideration. Given that the pre-disclosure period in this setting spans only three months, the sample period is limited to before 2016 to ensure the reliability of the regression estimation results. We also test the setting with the limitation on the sample period relaxed to December 31, 2016, and the results remain robust.

Ultimately, 27, 993 samples are retained from the savings and lending markets during the time period that we focus on. The regression model is as follows:

$$\begin{aligned} Y_{i,t} =& \alpha + \beta_1 Treat_i \times Post_t \\ &+ \beta_2 Treat_i + \beta_3 Post_t + \mu_{Institution \times YearMonth} \\ &+ \mu_{Zip \times YearMonth} + \mu_{Market \times YearMonth} + \epsilon_{i,t} \end{aligned} \tag{1}$$

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

For the outcome variables, $Y_{i,t}$, we employ three different indicators to measure the complaints' resolution outcomes. First, we focus on whether complaints filed to the CFPB are resolved with monetary relief.[26] Second, we examine whether the institution's response is

[26]Complaints filed to the CFPB can be resolved in the following ways: closed, closed with explanation, closed with monetary relief, closed with non-monetary relief, and untimely response. Monetary relief is a

timely.[27] Third, we consider the consumers' responses after the institution responds, which is reflected by whether the consumer chooses to dispute the resolution results provided by the corresponding financial institution. These three outcome variables are all in dummy form. In Equation 3, β_1 is the coefficient of interest, which captures the change in resolution outcomes for complaints with narratives relative to those without narratives after the disclosure policy takes effect.

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

As shown in Table 2, the coefficient of $Treat \times Post$ in Column (1) is significantly positive. This indicates that, after implementing the disclosure policy, the likelihood of complaints being resolved with monetary relief increases by 2.1%, corresponding to 10.2% of a standard deviation. Meanwhile, $Post$ in Column (1) is also significantly positive, indicating that after narratives are disclosed to the public, all complaints are more likely to receive monetary relief. Comparing the coefficients of $Treat \times Post$ and $Post$, we find that after disclosure, the increase in the likelihood of complaints with narratives receiving monetary relief is 2.1 times ((0.019+0.021) / 0.019) that of complaints without narratives.

Next, we estimate the impact of the disclosure policy on the efficiency of complaint responses. The coefficient for $Treat \times Post$ in Column (2) is positive and significant at the 5% level, while the coefficient of $Treat$ is significantly negative. These estimations indicate that before narratives are publicly accessible, complaints with narratives are not processed as timely as complaints without narratives. However, after disclosure, this situation changes, and complaints with narratives are handled more efficiently by institutions compared to ordinary complaints. The estimated coefficient here suggests that after disclosure, timely

resolution outcome desired by consumers, and this type of resolution has been shown to exhibit significant racial bias (Haendler and Heimer (2021)).

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

responses to complaints increase by 0.5%, this is equivalent to a 8.5% standard deviation. In Column (3), we estimate how consumers' attitudes change after receiving responses when complaint narratives are disclosed. The estimation results show that before disclosure, the proportion of resolutions being disputed for complaints with narratives is higher relative to ordinary complaints ($Treat$), but the disclosure decreases consumer disputes by 3.9% ($Treat \times Post$), amounting to a 10.1% standard deviation.

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

[Insert Table 2 about here]

The premise for the difference-in-difference model to provide accurate estimates is that the parallel trend assumption can be satisfied. We conduct an event study based on the setting in Equation (3) to ensure the reliability of our estimation. As shown in Figure 4, we designate June 25, 2015, as the policy event date and analyze the dynamic treatment effects three months before and five months after this date (for example, a month number of 0 means one entire month starting from June 25, 2015).

[Insert Figure 4 about here]

Figure 4 (a), (b), and (c) represent the dynamic results for the three outcomes, respectively. The effects are not significantly different from zero in the months before the disclosure, and the estimated coefficients for the pre-trend generally remain stable over time, indicating no abnormal trends. Importantly, the improvement in response outcomes occurs almost immediately at the time of disclosure. Although the improvement effects fluctuate across different outcomes, they all have long-lasting impacts, with the estimated coefficient for the 5th month showing a consistent direction to the coefficients in the initial period. All these results remain robust when the end date of the sample for analysis is extended for one year, as shown in Table A3.

4 The Impact of CFPB Disclosure on Racial Gaps in the Savings Market

This section empirically assesses the impact of CFPB complaint narrative disclosure on racial gaps in savings markets. The savings market has long lacked rigorous regulatory oversight regarding discriminatory practices, necessitating a comprehensive analysis. We analyze deposit interest rates and account maintenance fees at the institutional level, and assess bank account ownership at the household-level to capture the policy's impact.

4.1 Results on Racial Gaps in Deposit Interest Rates

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

$$\begin{aligned} DepositRate_{i,c,t} =& \alpha + \beta_1 Treat_i \times Post_t \times Minority_c \\ &+ \beta_2 Treat_i \times Post_t + \beta_3 Post_t \times Minority_c + \mathbf{X}\theta \\ &+ \mu_{Branch} + \mu_{YearQuarter} \\ &+ \mu_{Institution \times Year} + \mu_{Product \times Year} + \epsilon_{i,c,t} \end{aligned} \tag{2}$$

Where the $DepositRate_{ict}$ represents the deposit interest rates of branch i in county c at time t. $Treat_i$ is a binary variable; it equals one if branch i belongs to an institution under the oversight of the CFPB in the first quarter of 2015. A zero value of $Treat_i$ indicates that branch i is not under CFPB regulation. $Post_t$ captures the period before and after the CFPB made complaint narratives public, equating to one if the time is in the second quarter of 2015 or later. We categorize the counties where branches are located into two groups based on the minority ratio. If the ratio exceeds 50%, the dummy variable $Minority_c$ is set to one. Otherwise, it is zero. $\mathbf{X}$ is a vector of county characteristics, the county's population, and the growth rates of per capita income.

We employ a series of fixed effects to capture unobservable variations across different years in the entities setting deposit rates. Branch fixed effects control for the unique characteristics of different branches (such as the quality of the branch's service). Time (year-quarter) fixed effects absorb changes in the savings market over time (such as government

transitions and adjustments to economic policies). Institution-year fixed effects control for pricing differences in interest rates among different institutions. This fixed effect allows us to identify pricing disparities adopted by banks with similar characteristics solely due to the racial composition of the communities they serve. When our analysis encompasses more than one product discussed in a single regression, we include product-year fixed effects to mitigate time-varying disturbances between products.[28] We cluster standard errors at the institution level to address potential bias arising from correlated disturbances within institutions. The coefficient of triple difference interaction item β_1, which we focus on, identifies changes in the racial gap regarding the setting of interest rates and fees in the treatment group after the disclosure of the complaint narrative, compared to the control group.

To estimate the impact of complaint narratives disclosure on deposit rates, we focus on the most commonly used CDs, specifically 12-month CDs with an account balance of $10,000 (12MCD10K). As shown in Table 3, the deposit rates in Columns (1) to (3) correspond to the rates from the last week of each quarter, representing the final rate level for that branch within the quarter. The coefficient for the triple-difference analysis ($Treat \times Post \times Minoriry$) in Column (1) is positive and significant at the 1% level. This indicates that, on average, the disclosure policy leads branches in minority communities to increase their deposit rates by 6.4 basis points, which corresponds to a rise of 14.2% of a standard deviation. Conversely, in white communities, the deposit rate in treated branches decreases by 3.8 basis points, amounting to 8.4% of a standard deviation (the coefficient for $Treat \times Post$). These findings collectively suggest that treated banks reduce the racial gaps in setting deposit rates across different communities after the implementation of the disclosure policy.

We also employ the same specification with state-year fixed effects and institution-year-month fixed effects in Columns (2) and (3) to control for unobservable potential biases. These results are highly consistent with those found in Column (1). Even with the inclusion of institution-year-month fixed effects, which leads to a large number of omitted samples, the $Treat \times Post \times Minority$ coefficient in Column (3) remains significantly positive. Furthermore, in Column (4), we change the outcome variable to the average rate of a branch within a quarter. In Column (5), we adjust the rates from Columns (1) to (3) by subtracting the Federal funds target rate, resulting in a rate spread.[29] These results reinforce our findings,

[28] Due to the inclusion of these fixed effects, some items involved in the triple difference model are absorbed by fixed effects due to collinearity. These items are not displayed in this equation.

[29] We collect the Federal Reserve Economic Data (FRED) on the Fed funds target rate from 2013 to 2022

demonstrating that our conclusions are robust and not sensitive to the form of the outcome variable.

[Insert Table 3 about here]

A potential concern is that our specification uses a cap (total assets within $100 billion for institutions) that might artificially restrict the institutions analyzed, thereby possibly biasing the results. To address this, we adjust the cap thresholds based on the setting in Column (1) of Table 3 and display the triple interaction items estimated at different caps in Figure 5.

As shown in the figure, we set a new cap every $20 billion from $20 to $500 billion and perform an estimation at each point. The significance of the coefficients displayed in Figure 4 validates the effectiveness of our estimation results. The trend in the coefficients suggests that smaller caps yield more pronounced estimation effects, which may be due to systemic differences between large financial institutions and smaller ones. When we use $20 billion as the asset cap for institutions in the treatment group, the estimation coefficient in Figure 5 (the leftmost bar) indicates that the disclosure policy leads branches in minority communities to increase their deposit rates by 7.6 basis points. When the cap is set at $500 billion, the effect of disclosure on increasing deposit rates can still reach 4.8 basis points (the rightmost column bar). Considering the distribution of observations in treated and control branches, we conclude that the baseline cap (indicated by the red bar in the figure) is appropriate.

[Insert Figure 5 about here]

Furthermore, it is important to note that the validity of the triple-difference model in estimation hinges on the satisfaction of the parallel trends assumption. In our setting, this assumption can be described as follows: the racial gaps between treated branches in minority counties and control branches in minority counties, and racial gaps in white counties, share parallel trends (prior to the disclosure policy). When this assumption is met, we have grounds to believe that the triple-difference model can accurately estimate the true effects of the disclosure policy. We employ two strategies to verify the validity of the assumption of parallel trends. First, using the control variables and fixed effects setup in Equation (5) without incorporating any triple-difference items, we identify the residuals of the deposit rates set by branches. We then calculate and plot the differences in the residualized depositors' rates between the treatment and control groups over time, as depicted in Figure A3. This figure

to identify the rate spread of the products of interest.

demonstrates the parallel pre-trends of residualized depositors' rates before disclosure, as well as changes in minority communities after disclosure.

Second, we conduct event study tests based on Equations (5). The event study not only statistically validates the parallel trend assumption but also provides a dynamic estimation of the impact of the disclosure policy. Figure 6 reports these results. In the quarters before the disclosure, no effects significantly different from zero are identified, and the estimated coefficients for the pre-trend are stable over time, showing no abnormal trends. After the disclosure, immediate and long-lasting changes in the deposit rate settings for minority communities occur. The disclosure policy is not a one-time policy shock but a long-term design that has been in effect since its inception. This means that the CFPB continuously receives and discloses narratives related to complaints. Therefore, the observation of the long-term impacts of this policy in the event study is undoubtedly consistent with expectations.

[Insert Figure 6 about here]

We have already observed a significant improvement in deposit settings for minority communities on the 12MCD10K product following the CFPB's disclosure of complaint narratives. To verify the extent of this disclosure's impact, we expand our analysis to include other mainstream deposit products in the savings market. Table 4 displays the results of changing the product scope. In Columns (1) and (2), we replace 12MCD10K with two other commonly used CDs, 06MCD10K and 12MCD100K. The direction and magnitude of the coefficients for $Treat \times Post \times Minority$ and $Treat \times Post$ are consistent with those in Table 3, indicating the generalizability of the disclosure's impact. In Column (3), we introduce the most common money market account, MM25K, and estimate the impacts on both 12MCD10K and MM25K, controlling for product-year effects to address time-varying differences between products, with results remaining robust. Column (4) includes 12 types of CDs and MM products from the savings market. All these results remain robust after adding state-year fixed effects, as shown in Table A5.[30]

The large sample estimation provides strong evidence for a direct effect of the disclosure policy on deposit rates that increase within minority communities. Based on the estimates from Column (4), the coefficient of $Treat \times Post \times Minority$ indicates that a treated branch

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

in minority communities will, on average, increase the deposit rate by 3.1 basis points. We roughly calculate that the CFPB disclosure brings to consumers in minority communities by the CFPB disclosure amounts to at least $50.2 million per year.[31] Considering that this disclosure policy is not specifically designed to resolve racial disparities, this effect is substantial.

[Insert Table 4 about here]

Additionally, we employ various robustness strategies to corroborate the reliability of our findings. First, we substitute the dummy variable representation of minority communities with the continuous minority ratio for each county in our main results presented in Table 3 and Table 4. The outcomes remain consistent, as demonstrated in Table A6. Second, we investigate the distinct impacts of the disclosure policy on the three primary non-white racial groups: Black, Hispanic, and Asian. Table A7 reveals that complaints disclosure positively enhances deposit rates across all three racial groups, with a notably strong effect observed for Hispanics.

Third, we employ a difference-in-discontinuities (diff-in-disc) design (Bennedsen et al. (2022); Grembi et al. (2016)) to identify the effects of any potential preexisting discontinuities at the threshold. This model captures the difference between the pre-disclosure and after-disclosure periods at institutions with total assets of $10 billion within both minority and white communities. [32] Figure A4 presents the diff-in-disc dynamics trend. For deposit rates in minority communities (Panel A), there is no significant change in discontinuity before the second quarter of 2015, and it increases and widens following the implementation of the disclosure policy. In contrast, Panel B shows that the discontinuity in deposit rates for white communities remains relatively stable throughout the study period.

[31] Our calculation is based on the following process: the average total deposit amount per branch for treated branches operating in minority communities is $174.37 million. In Column (4) of Table 3, the coefficient for Treat×Post×Minority indicates that a treated branch in minority communities will increase the deposit rate by 3.1 basis points. Simplifying this, it means that each branch must pay an additional $0.54 million per year in deposit interest to consumers in minority communities. According to the Summary of Deposit, there are 928 treated branches operating in minority communities, indicating that, across the savings market for one year, consumers in minority communities receive an improvement in interest payment of at least $50.2 million.

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

4.2 Results on Racial Gaps in Account Maintenance Fees

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

We still estimate the impact on maintenance fees based on the setting in Equation (5). The data structure used to identify fees is consistent with the data structure when discussing deposit interest rates. However, here, the dependent variable becomes maintenance fees, specifically the minimum balances required to avoid fees. For these threshold-based fees, we consider their performance on both checking and savings accounts simultaneously. Therefore, product-year fixed effects are included in the regression.

[Insert Table 5 about here]

Table 5 shows how the racial gaps in minimum balances required to avoid fees on savings and checking accounts are influenced by CFPB disclosure. Column (1), based on the baseline setting, reveals that after the disclosure of complaint narratives, treated branches in minority communities reduce maintenance fees by 32.2% compared to white communities. Column (2) builds on Column (1) by adding state-year fixed effects to absorb potential biases from different state policies. Based on the results for different account types presented in columns (3) and (4), we calculate that this reduction corresponds to a decrease of $1325 in the minimum balance requirement for a checking account and $131 for a savings account for each consumer in minority communities.[33] Given the extensive use of savings and checking accounts, this effect has a significant economic magnitude. Additionally, we conduct an event study analysis of this effect, demonstrating that our analysis does not have pre-trend issues, as detailed in Figure A5.

[33] In this dataset, the average minimum balances set by treated branches in minority communities to avoid service fees are $5455.4 for checking accounts and $282.8 for savings accounts.

4.3 Results on Racial Gaps in Bank Account Ownership

The possession of a checking or savings account is a fundamental aspect of financial inclusion, providing households with essential access to financial resources and services. For low-income and minority households, being *unbanked* can lead to exclusion from critical financial tools, such as savings, credit building, and affordable loans, thereby limiting economic mobility and stability.

In previous analyses, we use population distributions at the county-level to differentiate between minority and white communities. This approach may raise concerns due to imprecision and potential confounding effects.[34] In this subsection, we discuss the impact of disclosure policy on different racial households, specifically focusing on improvements in bank account ownership. This approach could offer a more nuanced understanding of racial disparity and policy effectiveness.

We use the bank account ownership status at the household-level from the CPS and construct the following regression specification:

$$\begin{aligned} AccountOwnership_{i,c,t} =& \alpha + \beta_1 DiscCompl_{i,c} \times Post_t \\ &+ \beta_2 DiscCompl_{i,c} + \beta_3 Post_t + \mathbf{X}\theta \\ &+ \mu_{State} + \mu_{Year} + \mu_{SimilarHousehold} + \epsilon_{i,c,t} \end{aligned} \tag{3}$$

Here, the dependent variable, $AccountOwnership_{i,c,t}$, represents whether household i in county c owns a savings or checking account in year t. Our primary focus is on account ownership within low-income households in minority samples.[35] We concentrate on these households because low-income families often have lower participation rates in financial services, particularly in bank account ownership, which directly impacts their ability to accumulate wealth and ensure financial security (Célerier and Matray (2019)). The key independent variable of interest, $DiscCompl_c \times Post_t$, is an interaction term that captures the effect of the policy intervention in relation to the level of complaints within the community. $DiscCompl_{i,c}$ is a binary variable indicating whether there were any discriminatory complaints in county c in 2015. $Post_t$ is a post-policy implementation indicator that equals

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

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

one for years 2015 and beyond, and zero otherwise. Control variables, denoted as $\mathbf{X}$, include the per capita income growth rate of county c and the logarithm of the total population in county c, both measured in year t. Year fixed effects μ_{Year} and state fixed effects μ_{State} account for unobserved temporal and spatial heterogeneity. $\mu_{SimilarHousehold}$ represents the interaction of household characteristic variables, including income level, maximum education level, household size, and employment category. This ensures that the effects we identify reflect the impact of the disclosure policy on households with similar conditions. Standard errors are double clustered at the county and year level to address potential correlations.

[Insert Table 6 about here]

Table 6 presents the regression results examining the impact of complaints on account ownership across different racial households. Column (1) reports the results for minority households. The estimated coefficients of the interaction term $DiscCompl \times Post$ indicate that after the implementation of the disclosure policy, the likelihood of account ownership in minority households, particularly those in low-income brackets, increases by 2.8%, corresponding to a statistically significant change of approximately 8.58% standard deviations (0.326), demonstrating a positive impact of the policy on account ownership within these households.

In contrast, Column (2) reports the results for the samples of white households. The coefficient on $DiscCompl$ is positive and statistically significant at the 5% level, with a value of 3.5%. This indicates that, prior to the disclosure policy, white households in these counties had a higher likelihood of account ownership compared to those in other counties, suggesting factors that contribute to racial disparities. Moreover, the coefficient on the interaction term $DiscCompl \times Post$ is negative and statistically significant at the 5% level, indicating a decrease of 4% in the likelihood of account ownership after the disclosure policy implementation. This decrease effectively offsets the pre-existing advantage, implying that the disclosure policy mitigated the potential advantages that white households previously held in these counties.

5 The Impact of CFPB Disclosure on Racial Gaps in Lending Markets

The above tests on the savings market reveal that disclosing complaint narratives significantly reduces racial disparities. This section empirically examines the impact of complaint narrative disclosure on lending markets. We examine two representative loan rates—auto loans and credit cards—while also analyzing changes in household-level auto ownership to evaluate the real effects of the disclosure policy.

5.1 Results on Racial Gaps in Auto Loan Rates

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

We select auto loans with the two most common loan terms (36-months and 48-months) and construct a triple-difference model for analysis:

$$\begin{aligned} AutoLoanRate_{i,c,t} =& \alpha + \beta_1 Treat_i \times Post_t \times Minority_c \\ &+ \beta_2 Post_t \times Minority_c + \mathbf{X}\theta \\ &+ \mu_{Branch} + \mu_{Institution \times YearQuater} \\ &+ \mu_{Product \times YearQuater} + \epsilon_{i,c,t} \end{aligned} \tag{4}$$

Here, the dependent variable, $AutoLoanRate_{i,c,t}$, represents the auto loan rates offered by branch i in county c at time t. It is worth noting that we primarily focus on the auto loan rates for used autos in our discussion. On the one hand, used cars account for a large share of the market in all vehicle financing.[36] On the other hand, the used auto product is the more

[36] According to Experian's State of the Automotive Finance Market Report, used cars accounted for the majority of vehicle financing in Q2 2020, with a market share of 59.3%, while new cars comprised the

common choice for minority consumers.[37] We also discuss the impact on new auto products and obtain consistent results. The coefficient, β_1, of $Treat_i \times Post_t \times Minority_c$ in Equation (4) represents the magnitude of the impact of the disclosure policy on treated branches in minority communities. The county-level characteristic control variables are consistent with those used in the analysis of savings markets (Equation (5)). Furthermore, we impose more stringent fixed effects controls in Equation (4), including branch and institution-year-quarter fixed effects, as well as product-year-quarter fixed effects when simultaneously discussing used and new auto loans. These fixed effects settings better absorb the intervention of unobservable variables, making our estimation more credible.[38] We continue to cluster the standard errors at the institution level to address within-group correlations at the institution level.

Table 7 shows the results. Column (1) and Column (2) report the changes in loan rates for used autos with 36-month and 48-month terms, respectively. The estimated coefficients of the triple interaction indicate that after complaint narratives are disclosed to the public, the loan rates set by treated branches in minority communities, compared to rates in white communities, decrease by 41.6 basis points for 36-month auto loans, equivalent to 25.4% of a standard deviation, and by 33.7 basis points for 48-month auto loans, equivalent to 21.7% of a standard deviation. These statistically and economically significant results demonstrate the improvement in lending conditions for consumers in minority communities due to the disclosure policy.

Columns (3) and (4) include both used and new autos with the two terms in the analysis. The results show that the improvement effect of the disclosure policy on minorities decreases to some extent for both terms, hinting that new autos are less affected than used autos. This

remaining 40.8%.

[37] First, the credit score required to purchase used auto loans is relatively lower. According to the State of the Automotive Finance Market Report, between 2016 and 2020, the average credit scores for buyers of new cars were around 700, while the average credit scores for buyers of used cars were in the 600s. Furthermore, according to Cox Enterprises' survey, in 2020-2021, the proportion of minorities (Blacks and Hispanics) purchasing used cars was 12.5% higher than those purchasing new cars. Moreover, Butler et al. (2023) point out that in 2017, subprime borrowers with credit scores less than 660 account for 42% of auto loan originations. Among these subprime auto loans, roughly three-quarters are used car loans.

[38] Auto loan rates exhibit substantial variation at the institution by year-quarter level, so using stringent fixed effects does not lead to a significant loss of observations. In contrast, the focal products in savings markets do not meet the conditions for including such stringent fixed effects (the loss of observations is too large, which may cause potential sample selection bias in the estimation results).

may be because used auto products are more flexible in loan pricing,[39] making it easier for minority consumers to experience differential treatment.

[Insert Table 7 about here]

The event study results in Figure 7 support our triple-difference estimation results. Based on the setting in Column (1) of Table 7, the quarterly estimation results in Figure 7 indicate that before the disclosure occurs, the identified racial gaps in treated branches do not significantly differ from those in control branches. The policy effects persist over the long term. The majority of the post-disclosure estimated coefficients displayed in the figure exhibit negative values.

[Insert Figure 7 about here]

5.2 Results on Racial Gaps in Auto Ownership

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

We select the household vehicle availability variable from the ACS and estimate the following regression specification:

$$\begin{aligned} AutoOwnership_{i,c,t} =& \alpha + \beta_1 DiscCompl_{i,c} \times Post_t \\ &+ \beta_2 DiscCompl_{i,c} + \beta_3 Post_t + \mathbf{X}\theta \\ &+ \mu_{State} + \mu_{Year} + \mu_{SimilarHousehold} + \epsilon_{i,c,t} \end{aligned} \tag{5}$$

Here, the dependent variable, $AutoOwnership_{i,c,t}$, represents whether household i in

[39] The average car loan APRs by credit score released by consumer credit reporting company Experian show that in 2023, the range of rate variation with credit scores for used cars is much larger than the range of rates for new cars.

county c owns an auto in year t. Our primary focus is on auto ownership within low-income households in minority samples since high-income households are unlikely to be affected by this disclosure policy, as they typically already own vehicles. The main independent variable, $DiscCompl_c \times Post_t$, is an interaction term that captures the effect of the policy intervention in relation to the level of complaints within the community, following the same structure as in Equation (3).

Table 8 presents the regression results examining the impact of complaints on auto ownership across different racial households. Column (1) reports the results for minority households. The estimated coefficients of the interaction term $DiscCompl \times Post$ indicate that after the implementation of the disclosure policy, the likelihood of auto ownership in minority households, particularly those in low-income brackets, increases by 0.4%, corresponding to a statistically significant change of approximately 1.03% standard deviations (0.388), demonstrating the positive impact of the policy on auto ownership within these communities.

[Insert Table 8 about here]

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

5.3 Results on Racial Gaps in Credit Card Loan Rates

Credit cards are widely used and play a crucial role in providing households with access to short-term funds and additional financial support. They help consumers manage their spending on various items and services, as well as deal with unexpected costs and financial challenges that may arise. Prior research demonstrates racial disparities in the credit card market, showing that individuals in black communities receive less consumer credit than those in white communities, even when borrowers have identical personal characteristics (Cohen-Cole (2011)). Consequently, it is important to examine whether the disclosure of complaint narratives is an effective method for mitigating racial gaps in the credit card

market.

We empirically analyze the impact of the disclosure policy on credit card loan rates using a triple-difference setting:

$$\begin{aligned} CreditCardLoanRate_{i,c,t} =& \alpha + \beta_1 Treat_i \times Post_t \times Minority_c \\ &+ \beta_2 Treat_i \times Post_t + \beta_3 Post_t \times Minority_c + \mathbf{X}\theta \\ &+ \mu_{Branch} + \mu_{YearQuater} \\ &+ \mu_{Institution \times Year} + \mu_{Product \times Year} + \epsilon_{i,c,t} \end{aligned} \tag{6}$$

The identification in Equation (6) is consistent with that of deposit rates in the savings market (i.e., Equation (5)), with the only difference being that we change the dependent variable to the credit card loan rates offered by branch i in county c at time t, $CreditCardLoanRate_{i,c,t}$ in the identification, we still focus on the estimated coefficient of the triple-difference interaction term, β_1. We control for county-level characteristics, as well as branch, year-quarter, and institution-year fixed effects. In the analysis, we simultaneously consider the regular loan rates of credit cards, for which we use the loan rates of the most commonly used Visa card as a proxy, and introductory loan rates, which are typically used to attract new users. Therefore, product-year fixed effects are also included in Equation (6). Finally, we continue to cluster the standard errors at the institution level.

We present the analysis results in Table 9. Columns (1) and (2) show the combined results for both types of loan rates. The estimated coefficient of $Treat \times Post \times Minority$ indicates that treated branches in minority communities, compared to those in white communities, lower loan rates by 22 basis points. When we include state-year fixed effects, this effect increases to 37.7 basis points and becomes statistically significant at the 5% level.

Columns (3) and (4) separately discuss regular loan rates and introductory loan rates. We find that the effect of disclosure is primarily reflected in regular rates. For introductory loan rates, although the negative impact persists, the statistical significance is not strong, possibly because introductory rates are easily set to zero, leaving no room for branches to compete even if they want to. The coefficient of the triple interaction term in Column (3) indicates that treated branches in minority communities reduce loan rates by 30.2 basis points due to the implementation of the disclosure policy, reaching a magnitude of 11.8% standard deviations. The mitigating effect of complaint narratives disclosure on racial gaps in credit

card loan rates is generally not as statistically significant as that on deposit rates or auto rates. This may be because credit card loan rates are highly dependent on an individual's credit situation (such as credit score), and some minority consumers may lack a long-term perspective when using credit cards.

[Insert Table 9 about here]

Our event study results provide some support for our argument. Figure 8 illustrates that following the implementation of the disclosure policy, treated branches gradually reduce loan rates in minority communities. However, the long-term effect of this impact, as indicated by the coefficient for the final period in the figure, is less pronounced compared to the short-term effects.

[Insert Figure 8 about here]

6 Channel Discussion

We observe that after the disclosure of complaint narratives, minority consumers experience improvements in both savings and lending markets compared to white consumers. This effect likely follows a two-stage influence process. First, the public disclosure of complaints may harm the financial institution's reputation, leading to reduced trust among consumers and other stakeholders. These parties may respond by altering their behavior, such as withdrawing assets from institutions perceived to have discriminatory practices, thereby signaling these institutions. Second, financial institutions, worried about the behavior of stakeholders or the negative impacts they have already suffered, may take steps to enhance consumer welfare and mitigate the negative impacts of complaint disclosures on their operations.

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

6.1 The Dissemination and Impact of Complaints

Various reports and academic studies suggest that such disclosures can indeed affect an institution's goodwill. A notable example is the case of Wells Fargo, the fourth-largest bank in the United States, which faced another phony bank accounts scandal in 2022. This incident potentially exposed the bank to fines and penalties amounting to billions of dollars. During this exposure, the complaint narratives in the CFPB attracted media attention. Some media outlets actively questioned Wells Fargo and contacted banking regulators.[40]

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

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

Chen et al. (2022) show that bank information transparency can influence depositors' behavior in transferring deposits. While the CFPB's disclosure policy does not directly reveal financial institutions' performance information, it exposes the public to consumers' (negative) evaluations of these institutions. If treated branches in minority communities

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

exhibit inappropriate practices and are exposed to complaints narratives, depositors in these branches might transfer some of their deposits after disclosure, resulting in branch-level deposit outflows.

We use changes in branch by year level deposit amounts from the SOD dataset to identify the impact of the disclosure policy. We modify Equation (5) by changing the time level to yearly and splitting the treatment group branches into three subgroups based on their institutions' 2015 complaints. The first group includes branches of institutions with discriminatory complaints (*DiscCompl*), the second group comprises branches of institutions with non-discriminatory complaint narratives (*OtherCompl*), and the third group consists of branches of institutions without complaint narratives in 2015 (*NonCompl*). This segmentation allows us to observe whether discriminatory complaints influence deposit transfer behavior in minority communities. This setup is equivalent to estimating three triple-difference models simultaneously in one regression. Table 10 presents the results.

[Insert Table 10 about here]

Table 10 confirms the existence of deposit outflows, with varying degrees across branches with different complaint situations. The term $DiscCompl \times Post \times Minority$ shows that deposit transfers are significant in treated branches within minority communities with discriminatory complaint records, leading to a 7.7% deposit loss, as shown in Column (1). The other two segmented treatment groups also show negative coefficients for the triple interaction terms but with smaller magnitudes. This suggests that consumers effectively use information from complaint narratives and confirms that the public notices and utilizes the CFPB's narrative disclosure policy. Column (2) adds state-year fixed effects to absorb unobservable disturbances across locations in different years, with results remaining robust.

Depositors adjusting their choice of financial institutions demonstrates the negative impact consumers can exert. Moreover, consumer attitudes may evolve when institutions address or signal intent to address issues raised by discriminatory complaints. Specifically, when consumers who have faced discrimination believe that institutions will tackle discrimination issues exposed by the disclosure policy, they may develop increased confidence in the improvement of financial services. The shifting perceptions of financial services across different racial groups are significant yet underexplored. We examine the potential increase in confidence among minority households applying for credit cards after the disclosure policy using survey data from the SHED.

In line with our previous analysis setting in Equation (3), we now focus on the households' self-reported confidence in credit card approval. This variable is categorized into three levels: One for "Not confident", Two for "Somewhat confident", and Three for "Very confident". Our primary independent variable remains $DiscCompl \times Post$, but unlike the previous county-level analysis, it now interacts with state-level complaints with the post-policy period since the original dataset only provides samples at the state-level rather than the detailed county-level information. $DiscCompl$ is a binary variable that equals one if a state's discriminatory complaints exceed the median, and zero otherwise. This allows us to assess whether the disclosure policy has effectively enhanced financial confidence among minority households. By focusing on responses from low-income households, we aim to isolate the impact of these policy interventions on a demographic that is frequently marginalized in financial markets.

[Insert Table 11 about here]

Table 11 presents the regression results examining the impact of complaints on credit confidence across different racial households, utilizing both Ordinary Least Squares (OLS) and Poisson Pseudo-Maximum Likelihood (PPML) estimation methods. Columns (1) and (2) show the OLS results for minority and white samples, respectively. The coefficient on $DiscCompl \times Post$ is 0.426 for minorities, statistically significant at the 1% level, accounting for approximately 5.20% of the standard deviation of credit confidence (0.819). For whites, the coefficient is also statistically significant, but the value is much lower at 0.040, accounting for only 0.47% of the standard deviation (0.849), providing little reason to believe that the policy has strong economic significance for whites. To further validate these findings, I employ Fisher's permutation test on the between-group difference, revealing that the empirical distribution of the coefficients differs significantly between minorities and whites, with a difference of 0.372 and a p-value of 0.022, confirming that the policy's impact is significantly greater for minorities than for whites. The substantial difference between these coefficients underscores the policy's stronger impact on credit confidence among minorities, highlighting the critical role of the policy in addressing racial disparities in financial accessibility.

Given that the dependent variable represents count data, we applied the Poisson Pseudo-Maximum Likelihood (PPML) estimation to explore the policy's impact, with the results presented in Columns (3) and (4) for minority and white samples, respectively. The coefficient on $DiscCompl \times Post$ is 0.236 for minorities and 0.022 for whites. The Fisher's

permutation test shows that the difference in coefficients between minorities and whites is 0.215, with a p-value of 0.000, confirming that the policy's impact is significantly greater for minorities than for whites. The pronounced difference between these coefficients is consistent with the OLS results, further reinforcing the conclusion that the policy intervention has a disproportionately positive impact on financial confidence among minority households.

6.2 The Response of Complaint Respondents

Financial institutions, as respondents to complaints, have a motive to improve their management practices to mitigate potential losses from both the direct and indirect effects of complaint dissemination. Our discussion in Section 3 shows that after public disclosure, complaints with narratives are resolved faster, receive more monetary relief, and result in fewer subsequent disputes. Li (2023b) analyzes officer career path data in the mortgage market and finds that after public disclosure, officers in institutions with many discriminatory complaints are less likely to be promoted, more likely to change jobs, and often move to smaller institutions. These responses demonstrate that financial institutions pay attention to complaint narratives. This attention may stem from concerns about reputation, potential legal risks associated with discriminatory behavior, or commitment to DEI compliance. These motivations lead institutions to take steps to improve conditions for minority consumers following the public disclosure of complaint narratives.

Although this study cannot identify all the channels through which financial institutions improve minority consumer welfare, we provide evidence based on the varying outcomes that institutions perform when institutions respond to various complaint situations. If stakeholders can detect discriminatory complaints due to public narrative disclosure, and institutions take these seriously, we should observe different effects of disclosure on financial product pricing (i.e., interest rates) across branches with varying complaint situations. Using a setup similar to Table 10, we extend the baseline triple difference model discussed in Sections 4 and 5 by dividing the treatment into three groups based on complaint situations.

[Insert Table 12 about here]

Table 12 presents our findings. Column (1) and Column (2) show differences in deposit interest rates among three groups: those with discriminatory complaints, those with non-discriminatory complaints, and those without complaint narratives. The estimated co-

efficients indicate a gradual decrease in disclosure impact across these groups. T-test results reveal that the coefficient for the triple interaction term $DiscCompl \times Post \times Minority$ is significantly larger for the group with discriminatory complaints compared to the other two groups. Particularly, the difference is most pronounced when compared to the group without any complaint narratives. Although the disclosure policy's effect varies among institutions with different complaint situations, the consistent direction of coefficients suggests potential spillover effects. This implies that even institutions without direct discriminatory complaints may improve the fairness of their financial services.

Columns (3) and (4) present loan interest rates in the lending market, using combined data from auto loan and credit card rates (with market-year fixed effects to account for differences between these loan types). The results demonstrate that branches under CFPB regulation show different policy effects based on their complaint situations. The analysis in Table 12 supports the effectiveness of the disclosure policy and suggests that awareness of complaint narratives can motivate financial institutions to place greater emphasis on fairness and equality in their financial services.

7 Conclusion

This paper comprehensively investigates the impact of the CFPB's disclosure of complaint narratives in 2015 on reducing racial disparities across multiple financial services. First, we empirically confirm that financial institutions indeed provide better resolution outcomes for complaints with narratives due to the disclosure policy. Subsequently, we examine the disclosure policy's actual effects on the savings and lending markets. The results show that following the disclosure, minority communities experience general welfare enhancements. In the savings market, minority communities benefit from higher interest rates and reduced maintenance fees, and low-income minority households also see an increase in bank account ownership. The auto loan and credit card markets also show positive changes, with minority communities receiving lower interest rates and greater auto ownership. Finally, we discuss the factors contributing to the effectiveness of the disclosure policy. We confirm the presence of deposit outflows in savings markets due to discriminatory practices and increased confidence in credit card approval among minority households in the lending markets.

Our findings support the important role of quality-based information disclosure in fi-

nancial services. As disclosing this negative information about service quality can lead to improvements for disadvantaged consumers, it suggests that consumers should choose to disclose narratives when filing complaints to regulators. By doing so, they can better resolve their issues by leveraging social supervision in addition to regulatory oversight.

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

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

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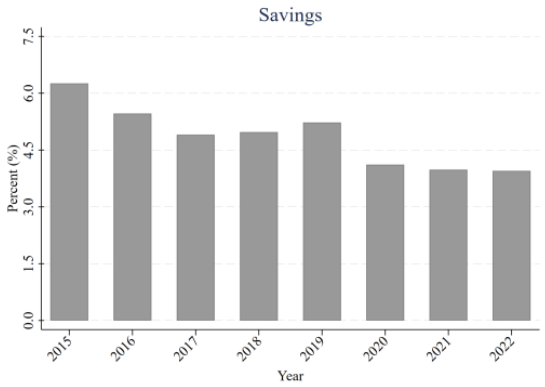
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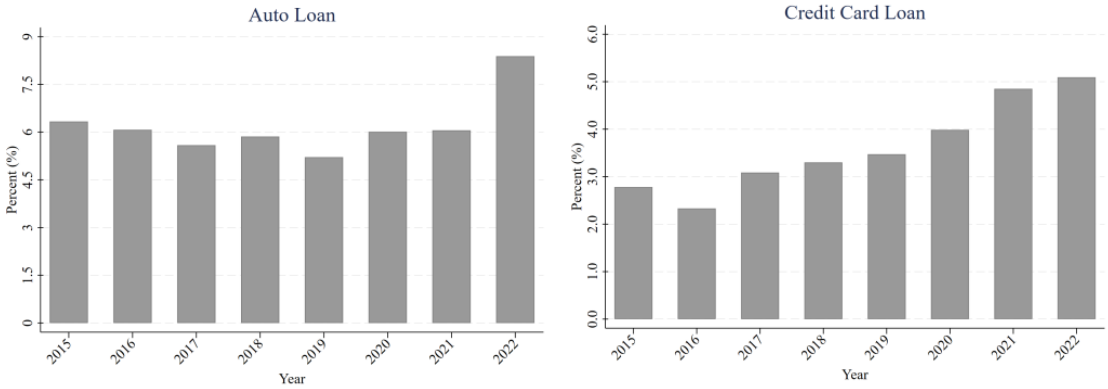
Figures and Tables

Figure 1. Fraction of Complaints about Discrimination in Savings and lending Market

This figure illustrates the trend of the fraction of discrimination complaints in the savings and lending markets from 2015 to 2022. Panel (a) illustrates the situation in the savings market, while panel (b) provides information on the lending market, including both the auto loan market and the credit card loan market. The x-axis represents the year, and the y-axis represents the proportion of complaints involving discrimination among all complaints with narratives.



(a) Savings Market



(b) lending Market (Auto and Credit Card)

Figure 2. Racial Differences in Deposit Rates Before Disclosure in the Savings Market

This figure illustrates the differences in deposit rates across different communities in the savings market during the pre-disclosure period, based on the rates for the product 12MCD10K. We retain the rates from institutions that have branches in both minority and white communities, using the deposit amount at the branch level as weights. Thus, we are comparing the deposit-weighted average interest rate differences between minority and white communities. The two boxes in the figure represent the distribution of interest rates in white and minority communities, respectively. The thick black line within each box indicates the median value of the rate distribution, while the top and bottom edges of the box show the 75th and 25th percentiles of rates, respectively. The whiskers extending beyond the box represent the lower and upper adjacent values, which are no more than 1.5 times the interquartile range. The outermost red dots signify outlier values, precisely those data points that exceed the lower and upper adjacent values. On the X-axis, "Majority-Minority" refers to minority communities, defined as counties where the minority population exceeds 50% of the total population. Correspondingly, "Majority-White" denotes counties where the minority population comprises less than 50%.

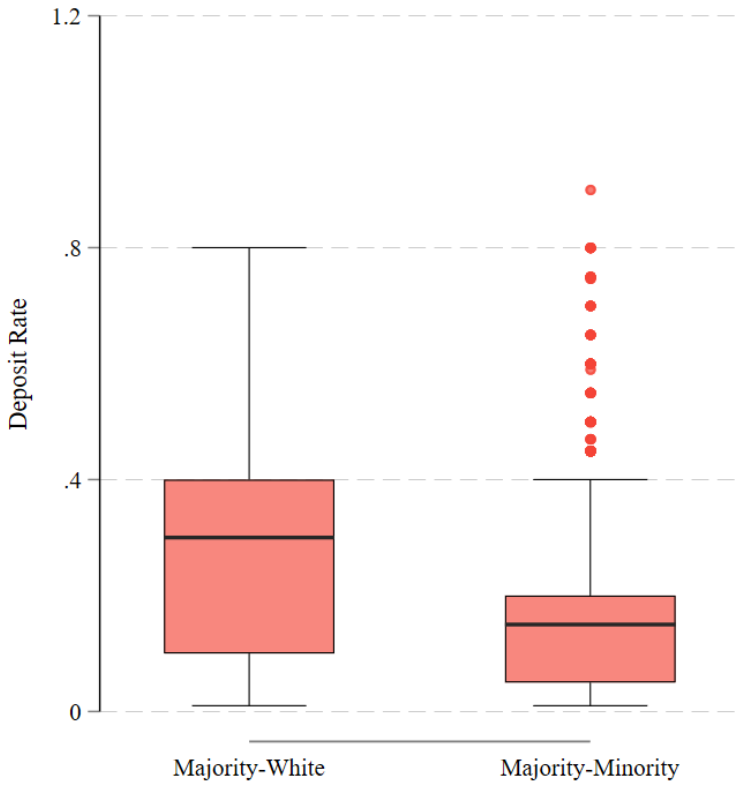
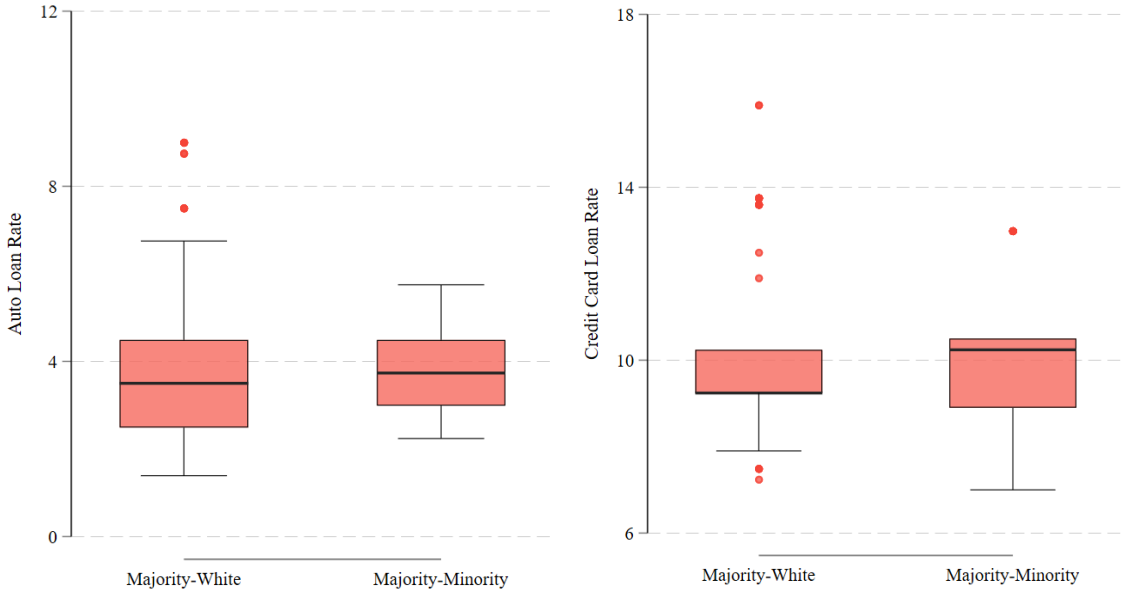


Figure 3. Racial Differences in Loan Rates Before Disclosure in the Lending Market

This figure illustrates the differences in loan rates across different communities in the loan market during the pre-disclosure period. Part (a) displays the gap in auto loan rates, focusing on the product "Used Auto-36M". Part (b) addresses the situation with credit card loans, concentrating on the "Regular Rate". We include rates from institutions operating branches in both minority and white communities. The two boxes in the figure represent the distribution of interest rates in white and minority communities, respectively. The thick black line within each box indicates the median value of the rate distribution, while the top and bottom edges of the box show the 75th and 25th percentiles of rates, respectively. The whiskers extending beyond the box represent the lower and upper adjacent values, which are no more than 1.5 times the interquartile range. The outermost red dots signify outlier values. On the X-axis, "Majority-Minority" refers to minority communities, defined as counties where the minority population exceeds 50% of the total population. Correspondingly, "Majority-White" denotes counties where the minority population comprises less than 50%.

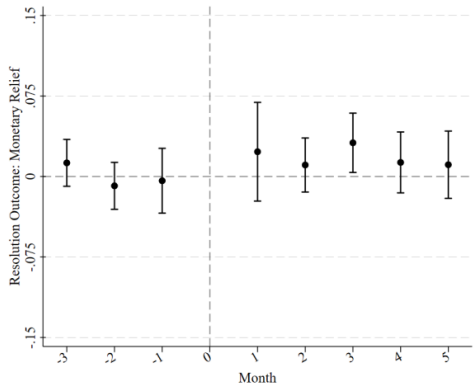


(a) Auto loan

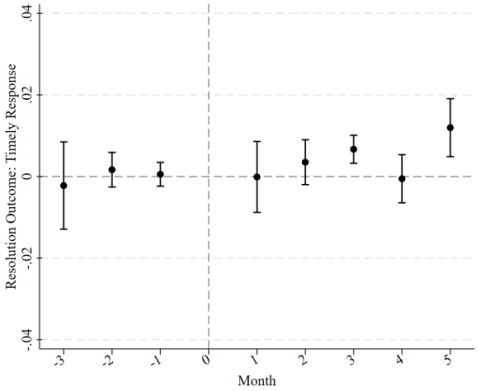
(b) Credit Card Loan

Figure 4. Event Study Trend for Impact of CFPB Disclosure on Complaints' Resolution Outcomes

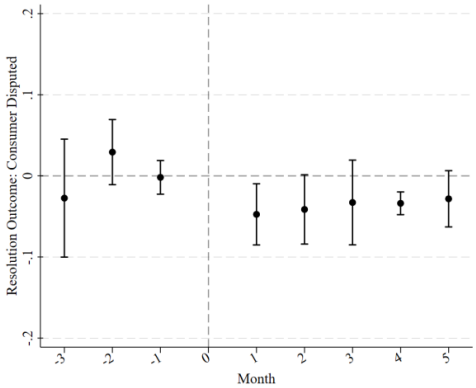
This figure illustrates the trend of an event study assessing the impact of the CFPB disclosure policy on the complaints' resolution outcomes. It addresses three resolution outcomes: In panel (a), Monetary Relief measures whether complaints filed to the CFPB result in monetary relief for the complainant. In panel (b), Timely Response assesses whether the institution's response occurs in a timely manner. In panel (c), Consumer Disputed evaluates whether the consumer opts to dispute the resolution outcomes provided by the respective financial institution. This figure covers the results from three months before the initiation of the disclosure policy on June 25, 2015, to five months after its implementation. For the fifth month after disclosure, the last few days of 2015 (i.e., December 25 to 31, 2015) are also included. During the estimation, we use the month when the disclosure occurs as the baseline period. The vertical axis displays the magnitude of the coefficients for the double-interaction terms, $Treat \times Post$ and the horizontal axis represents various periods, with period zero corresponding to the time of disclosure. The regression specification used to generate this figure is consistent with Column (1) of Table 2. Black circles indicate the coefficient estimates for different periods, and the black vertical lines signify the confidence intervals (set at a 5% significance level).



(a) Monetary Relief



(b) Timely Response



(c) Consumer Disputed

Figure 5. Impact of CFPB Disclosure on Racial Gaps in Deposit Interest Rate Across Asset Size Caps

This figure illustrates the impact of CFPB disclosure on racial gaps in deposit interest rates across different asset size caps. The horizontal axis in this figure represents the caps used for sample selection. We perform an estimation every $20 billion from $20 to $500 billion. The vertical axis in this figure represents the size of the coefficients for the triple-interaction items in the triple-difference model estimated at different cap thresholds. These coefficients are estimated based on the setting in Column (1) of Table 3. The dots represent the coefficient values, and the lines extending above and below each dot represent their confidence intervals (set at a 5% significance level). The red line in this figure shows the estimated results for this paper's baseline cap, which includes institutions with total assets under $100 billion.

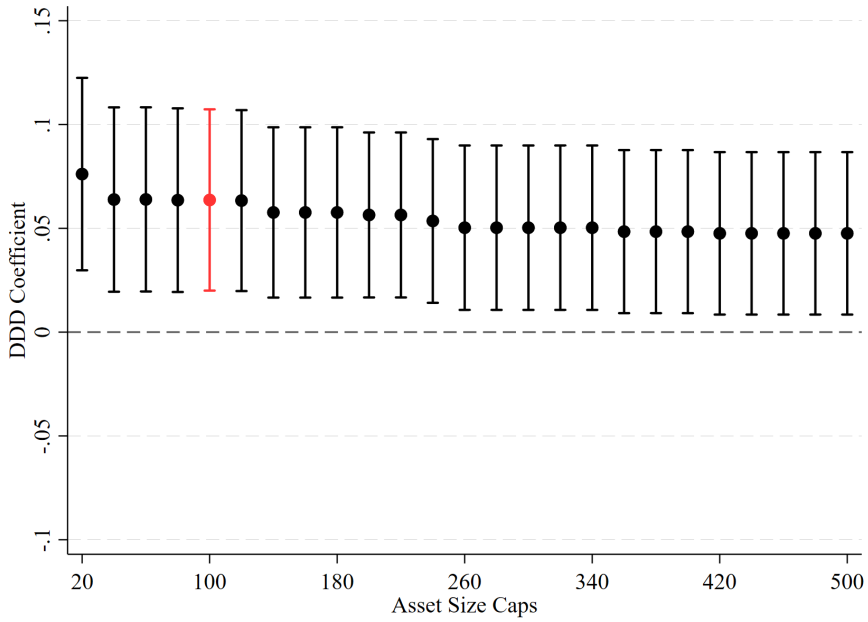


Figure 6. Event Study Trend for Impact of CFPB Disclosure on Racial Gaps in Deposit Interest Rates

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

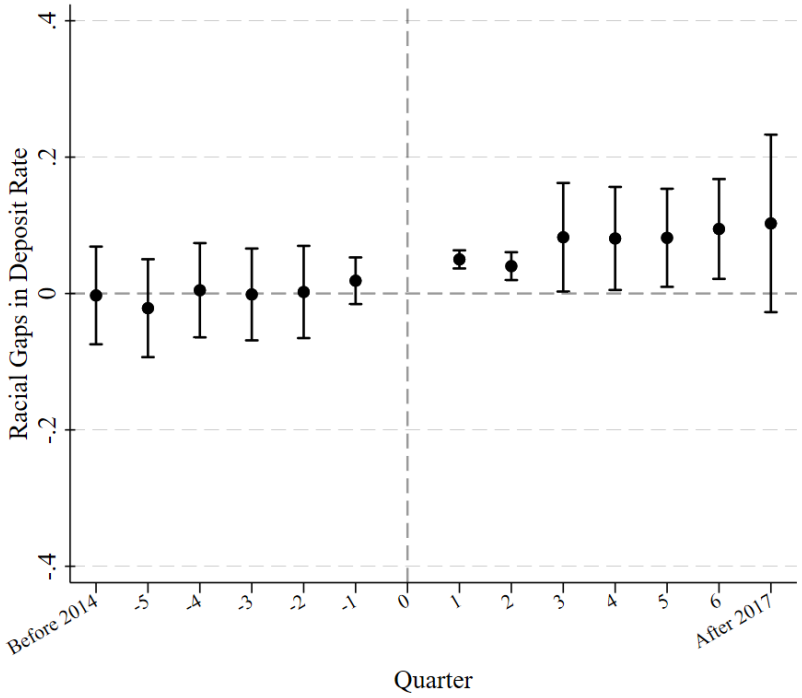


Figure 7. Event Study Trend for Impact of CFPB Disclosure on Racial Gaps in Auto Loan Rates

This figure illustrates the trend of the event study on the impact of CFPB disclosure on racial gaps in auto loan interest rates. It includes outcomes from six quarters before the second quarter of 2015—the initiation point of the disclosure policy—through seven quarters after its implementation. Samples outside this selected span are grouped into the initial and final periods. During the estimation, we use the quarter when the disclosure occurs as the baseline period. The vertical axis displays the size of the coefficients for the triple-interaction items, and the horizontal axis represents varying periods, with period zero corresponding to the disclosure. The regression specification used to generate this figure aligns with that in Column (1) of Table 7. Black circles indicate the coefficient estimates for different periods, and the black vertical lines signify the confidence intervals (set at a 5% significance level).

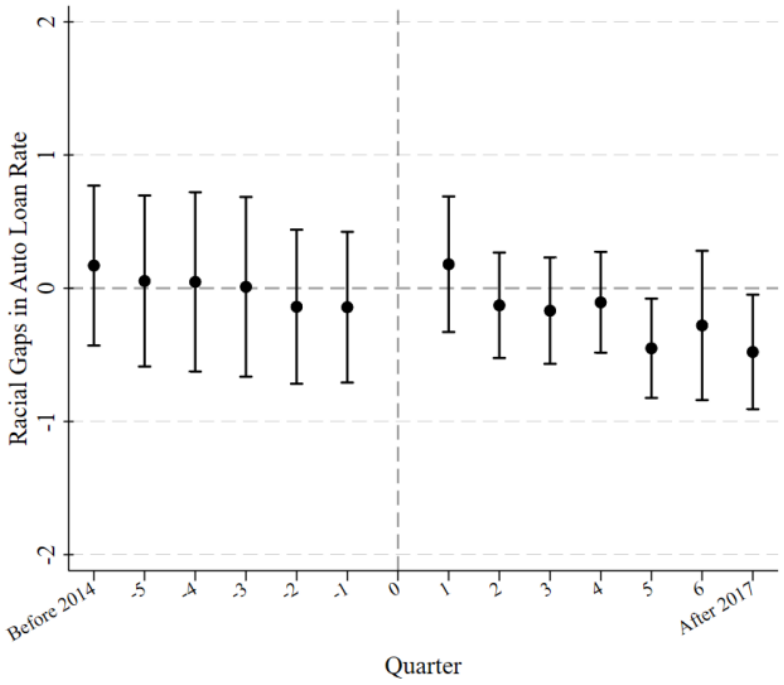


Figure 8. Event Study Trend for Impact of CFPB Disclosure on Racial Gaps in Credit Card Rates

This figure illustrates the event study trend for the impact of CFPB disclosure on racial gaps in credit card loan interest rates. It includes outcomes from six quarters before the second quarter of 2015—the initiation point of the disclosure policy—through seven quarters after its implementation. Samples outside this selected span are grouped into the initial and final periods. During the estimation, we use the quarter when the disclosure occurs as the baseline period. The vertical axis displays the size of the coefficients for the triple-interaction items, and the horizontal axis represents varying periods, with period zero corresponding to the disclosure. The regression specification used to generate this figure aligns with that in Column (3) of Table 9. Black circles indicate the coefficient estimates for different periods, and the black vertical lines signify the confidence intervals (set at a 5% significance level).

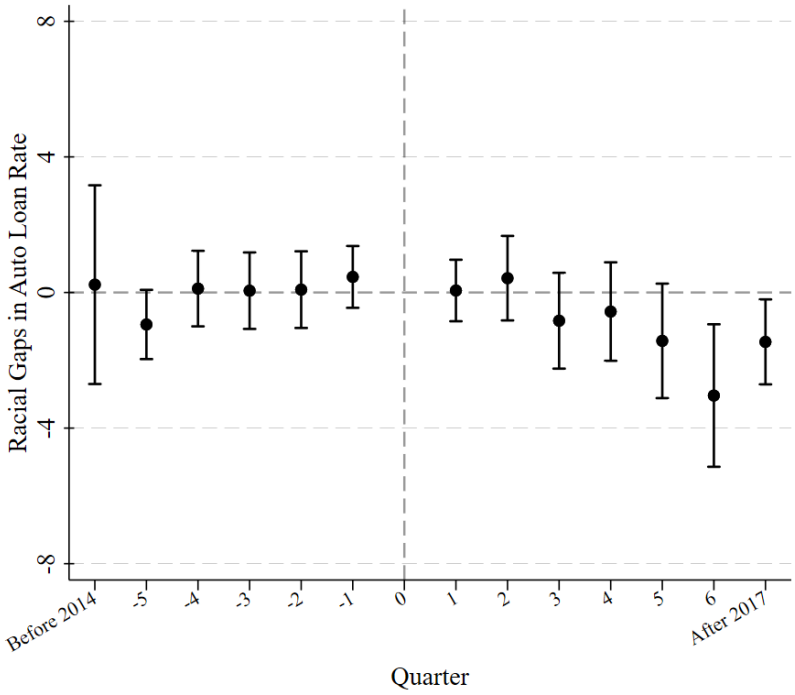


Table 1. Summary Statistics

This table shows the summary statistics for the key variables from our data sample spanning from 2013 to 2022. Panel A highlights branch-level variables, including interest rates for deposits, auto loans, and credit cards, along with the minimum account balances necessary to bypass maintenance fees of bank accounts, sourced from RateWatch, and the deposit amounts for each branch from the Summary of Deposits (SOD) database. Within the savings market, our primary focus is on the interest rate for the product labeled "12MCD10K," which refers to 12-month Certificates of Deposit (CDs) with an account size of $10,000. Additionally, we examine the rates for other popular deposit products, with Table 1 displaying the distribution for "06MCD10K," "12MCD100K," and "MM25K" ($25K money market accounts). Appendix Table A2 presents all the CDs and Money Market (MM) products analyzed, amounting to 12 types. Regarding minimum account balances to avoid maintenance fees for savings and checking accounts. For deposit amounts, we use the total deposits for each branch as of June 30 each year from the SOD database as a proxy. In the lending market, our discussion centers on the interest rates for auto loans and credit card loans. For auto loan rates, we focus on the rates for the most common terms, 36M and 48M, and further observe these rates across both used and new auto loans. Similarly, we examine both the introductory and regular rates for credit card loans. Among these five categories of indicators, deposit amounts are measured annually, while the others are quantified quarterly. Panel B summarizes county-level characteristics, with these data points measured annually. The variables at the county level in our analysis include the proportion of minority populations (specifically, the combined total fraction of African American and Hispanic populations), the total population of the county, and the growth rate of per capita income.

	N	Mean	Q1	Median	Q3	Std. Dev
Panel A. Branch-Level Characteristics						
Savings Market - *Deposit Interest Rate (%)*						
12MCD10K	310,883	0.52	0.25	0.40	0.60	0.45
06MCD10K	303,834	0.34	0.15	0.25	0.40	0.33
12MCD100K	293,060	0.54	0.25	0.40	0.65	0.46
MM25K	282,103	0.22	0.10	0.15	0.25	0.20
Savings Market - *Amount to Avoid Fee ($)*						
Checking Account	24,680	2,019.01	500	1,000	2,000	2,656.62
Savings Account	15,570	201.69	100	100	250	293.19
Savings Market - *Deposit Amount ($M)*						
Amount	568,991	97.30	21.61	41.77	78.36	976.96
Lending Market - *Auto Loan Interest Rate (%)*						
Used Auto-36M	234,346	4.12	2.95	3.75	5	1.64
New Auto-36M	125,213	3.62	2.64	3.34	4.45	1.32
Used Auto-48M	218,757	4.12	2.99	3.75	5	1.55
New Auto-48M	121,995	3.72	2.75	3.49	4.49	1.30
Lending Market - *Credit Card Loan Interest Rate (%)*						
Regular Rate	25,370	11.98	9.99	11.99	13.96	2.57
Introductory Rate	17,938	1.38	0	0	2.90	2.08

Continued on next page

Table 1 - *Continued from previous page*

Panel B. County-Level Characteristics						
Minority Ratio *(%)*	30,868	18.77	4.31	10.65	28.93	19.03
Population *(K)*	30,868	104.33	10.81	25.71	67.82	333.43
Per Capita Income Growth Rate *(%)*	30,868	3.82	1.28	3.58	6.24	5.65

Table 2. Impact of CFPB Disclosure on Complaints' Resolution Outcomes

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

	(1)	(2)	(3)
VARIABLES	Monetary Relief	Timely Response	Consumer Disputed
Treat×*Post*	0.021***	0.005*	-0.039**
	(0.006)	(0.002)	(0.012)
Treat	0.011	-0.004**	0.079***
	(0.008)	(0.001)	(0.011)
Post	0.019***	0.001	0.005
	(0.003)	(0.001)	(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	0.559	0.601	0.542

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

This table presents the results on the impact of CFPB disclosure on racial gaps in deposit interest rates, focusing on the product 12MCD10K. The dataset used for estimating this table consists of branch-level data aggregated by year-quarter. Columns (1) to (3) use the rates from the last week of each quarter as the outcome variable. Column (4) uses the average rate of a branch within a quarter, and Column (5) uses the rate spread, calculated as the last-week rate minus the Fed funds target rate, as outcome variables. All columns control for demographic variables at the county level, including the logarithm of the total population and the growth rate of income per capita, and use the annual population of each county for weighting (Célerier and Matray (2019)). We also control for branch, year-quarter, and institution-year fixed effects. The estimation results for county-level control variables are shown in Table A4. Column (2) adds state-year fixed effects on top of Column (1), and Column (3) includes institution-year-quarter fixed effects. Throughout the estimation process, we include all interaction items involved in the triple-difference settings, with items absorbed by fixed effects due to collinearity not displayed in this table. The key estimated coefficient, $Treat \times Post \times Minority$, denotes the effect of disclosure on the deposit rates in minority communities. Standard errors, shown in parentheses, are clustered at the institution level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
	Deposit Interest Rate				
	12MCD10K				
VARIABLES	Quarter-End Rate			Mean Rate	Rate Spread
Treat×*Post*×*Minority*	0.064***	0.072**	0.092*	0.051**	0.064***
	(0.022)	(0.031)	(0.049)	(0.020)	(0.022)
Treat×*Post*	-0.038**	-0.039**		-0.046*	-0.038**
	(0.017)	(0.017)		(0.023)	(0.017)
Post×*Minority*	-0.033*	-0.038*	-0.078	-0.026	-0.033*
	(0.019)	(0.021)	(0.048)	(0.017)	(0.019)
County Characteristics	YES	YES	YES	YES	YES
Branch FE	YES	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES	YES
Institution-Year FE	YES	YES	-	YES	YES
State-Year FE	-	YES	-	-	-
Institution-Year-Quarter FE	-	-	YES	-	-
Observations	309,372	309,372	50,535	309,372	309,372
R-squared	0.879	0.879	0.956	0.886	0.941

Table 4. Impact of CFPB Disclosure on Racial Gaps in Deposit Interest Rates of Other Mainstream Deposit Products

This table presents the results on the impact of CFPB disclosure on racial gaps in deposit interest rates, focusing on various products. The dataset for this analysis comprises branch-product-level data aggregated by year-quarter. Columns (1) to (2) are based on the deposit rates for the products 06MCD10K and 12MCD100K, respectively. In Column (3), we introduce the most common money market account, MM25K, and estimate the impacts on both 12MCD10K and MM25K. Column (4) includes 12 types of CDs and MMs products from the savings market. All columns account for demographic variables at the county level, including the logarithm of the total population and the income per capita growth rate, and use the annual population of each county for weighting. We also control for branch, year-quarter, and institution-year fixed effects. Additionally, when estimating Columns (3) to (4), we control for product-year effects to address time-varying differences between products. Throughout the estimation process, we include all interaction items involved in the triple-difference settings, with items absorbed by fixed effects due to collinearity not displayed in this table. The key estimated coefficient, $Treat \times Post \times Minority$, denotes the effect of disclosure on the deposit rates in minority communities. Standard errors, shown in parentheses, are clustered at the institution level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Deposit Rate			
VARIABLES	06MCD10K	12MCD100K	12MCD10K and MM25K	All CDs and MMs
Treat×Post×Minority	0.038**	0.060**	0.032*	0.031**
	(0.015)	(0.024)	(0.017)	(0.013)
Treat×Post	-0.014***	-0.041**	-0.028**	-0.028***
	(0.004)	(0.017)	(0.012)	(0.011)
Post×Minority	-0.020	-0.031	-0.020	-0.014
	(0.013)	(0.021)	(0.013)	(0.012)
County Characteristics	YES	YES	YES	YES
Branch FE	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES
Institution-Year FE	YES	YES	YES	YES
Product-Year FE	-	-	YES	YES
Observations	302,311	291,565	592,661	3,225,707
R-squared	0.858	0.870	0.761	0.754

Table 5. Impact of CFPB Disclosure on Racial Gaps in Deposit Account Fees

This table presents the results on the impact of CFPB disclosure on racial gaps in deposit account fees, focusing on minimum balances required to avoid fees. The dataset for this analysis comprises branch-account type-level data aggregated by year-quarter. Columns (1) to (2) are based on a consolidation of fees for both savings accounts and checking accounts. Column (2) builds upon Column (1) by incorporating state-year fixed effects. Columns (3) and (4) separately discuss the results for saving accounts and checking accounts, respectively. All columns account for demographic variables at the county level, including the logarithm of the total population and the income per capita growth rate, and use the annual population of each county for weighting. We also control for branch, year-quarter, and institution-year fixed effects. Throughout the estimation process, we include all interaction items involved in the triple-difference settings, with items absorbed by fixed effects due to collinearity not displayed in this table. The key estimated coefficient, $Treat \times Post \times Minority$, denotes the effect of disclosure on the fees in minority communities. Standard errors, shown in parentheses, are clustered at the institution level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Log(Amount to Avoid Fee)			
VARIABLES	Checking and Savings Accounts		Checking Accounts	Savings Accounts
Treat×*Post*×*Minority*	-0.322***	-0.347**	-0.243**	-0.466***
	(0.069)	(0.117)	(0.108)	(0.074)
Treat×*Post*	0.151**	0.142*	0.208**	0.175***
	(0.065)	(0.073)	(0.098)	(0.048)
Post×*Minority*	0.190***	0.222**	0.055	0.249***
	(0.056)	(0.096)	(0.072)	(0.069)
County Characteristics	YES	YES	YES	YES
Branch FE	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES
Institution-Year FE	YES	YES	YES	YES
Product-Year FE	YES	YES	-	-
State-Year FE	-	YES	-	-
Observations	37,630	37,630	19,598	9,023
R-squared	0.821	0.821	0.645	0.987

Table 6. Impact of CFPB Disclosure on Bank Account Ownership Across Different Racial Households

This table presents the results of the impact of discriminatory complaints on bank account ownership across different racial households, focusing on low-income households, which are defined as a household with an income above the federal poverty line but below twice the federal poverty line. The dependent variable is a binary indicator of whether a household owns a savings or checking account. Column (1) reports results for minority households and Column (2) reports results for white households. The variable $DiscCompl$ indicates whether there were any discriminatory complaints in the county. The interaction term, $DiscCompl \times Post$, captures the differential effect of the policy based on the level of complaints within the community. Note that the $Post$ variable is not reported in the table since it is absorbed by year-fixed effects. All models control for per capita income and the logarithm of total population at the county level, and use the representativeness of each household for weighting. Fixed effects for year, state, and similar household characteristics (the interation term of income level, education level, household size, and employment category) are included. Standard errors, shown in parentheses, are double clustered at the county and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
	Account Ownership	
	Minority Households	White Households
$DiscCompl \times Post$	0.028***	-0.040**
	(0.003)	(0.012)
$DiscCompl$	0.006	0.035**
	(0.016)	(0.011)
County Characteristics	YES	YES
Year FE	YES	YES
State FE	YES	YES
Similar Household FE	YES	YES
Observations	2,112	5,213
R-squared	0.223	0.211

Table 7. Impact of CFPB Disclosure on Racial Gaps in Auto Loan Rates

This table presents the results on the impact of CFPB disclosure on racial gaps in auto loan rates, focusing on used auto and new auto products with terms of 36 months and 48 months. The dataset for this analysis comprises branch-product type-product term-level data aggregated by year-quarter. Columns (1) and (2) are based on used auto products, with Column (1) focusing on used auto products with 36-month terms and Column (2) focusing on those with 48-month terms. Columns (3) and (4) discuss the situation for both used auto and new auto products simultaneously. Column (3) focuses on used auto and new auto products with 36-month terms, while Column (4) focuses on those with 48-month terms. All columns account for county-level demographic variables, including the logarithm of the total population and the income per capita growth rate, and use the annual population of each county for weighting. The estimation results for county-level control variables are shown in Table A8. We also control for branch, institution-year-quarter, and product-year-quarter fixed effects. Throughout the estimation process, we include all interaction items involved in the triple-difference settings, with items absorbed by fixed effects due to collinearity not displayed in this table. The key estimated coefficient, $Treat \times Post \times Minority$, denotes the effect of disclosure on the auto loan rates in minority communities. Standard errors, shown in parentheses, are clustered at the institution level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Auto Loan Rate			
	Used Auto		Used Auto and New Auto	
VARIABLES	36M	48M	36M	48M
Treat×*Post*×*Minority*	-0.416**	-0.337**	-0.266*	-0.236*
	(0.173)	(0.159)	(0.141)	(0.137)
Post×*Minority*	0.357**	0.287*	0.212	0.173
	(0.166)	(0.148)	(0.132)	(0.130)
County Characteristics	YES	YES	YES	YES
Branch FE	YES	YES	YES	YES
Institution-Year-Quarter FE	YES	YES	YES	YES
Product-Year-Quarter FE	-	-	YES	YES
Observations	221,516	199,719	357,624	337,851
R-squared	0.966	0.960	0.945	0.931

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

This table presents the results of the impact of discriminatory complaints on auto ownership across different racial households, focusing on low-income households. A low-income household is defined as a household with an income above the federal poverty line but below twice the federal poverty line. The dependent variable is a binary indicator of whether a household owns an auto. Column (1) reports results for minority households and Column (2) reports results for white households. The variable *DiscCompl* indicates whether there were any discriminatory complaints in the county. The interaction term, $DiscCompl \times Post$, captures the differential effect of the policy based on the level of complaints within the community. Note that the *Post* variable is not reported in the table since it is absorbed by year fixed effects. All models control for per capita income and the logarithm of total population at the county level, and use the representativeness of each household for weighting. Fixed effects for year, state, and similar household characteristics (the interaction term of income level, education level, household size, and employment category) are included. Standard errors, shown in parentheses, are double clustered at the county and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
	Auto Ownership	
	Minority Households	White Households
DiscCompl × *Post*	0.004***	0.000
	(0.001)	(0.002)
DiscCompl	-0.051**	-0.042***
	(0.017)	(0.012)
County Characteristics	YES	YES
Year FE	YES	YES
State FE	YES	YES
Similar Household FE	YES	YES
Observations	257,167	316,645
R-squared	0.280	0.191

Table 9. Impact of CFPB Disclosure on Racial Gaps in Credit Card Rates

This table presents the results on the impact of CFPB disclosure on racial gaps in credit card loan rates, focusing on regular rates and introductory rates. The dataset for this analysis comprises branch-product type-level data aggregated by year-quarter. Columns (1) and (2) discuss the situation for both regular rates and introductory rates simultaneously. Column (2) includes state-year fixed effects in addition to the controls in Column (1). Columns (3) and (4) separately discuss the results for regular rates and introductory rates, respectively. All columns account for demographic variables at the county level, including the logarithm of the total population and the income per capita growth rate, and use the annual population of each county for weighting. The estimation results for county-level control variables are shown in Table A9. We also control for branch, year-quarter, institution-year, and product-year fixed effects. Throughout the estimation process, we include all interaction items involved in the triple-difference settings, with items absorbed by fixed effects due to collinearity not displayed in this table. The key estimated coefficient, $Treat \times Post \times Minority$, denotes the effect of disclosure on the auto loan rates in minority communities. Standard errors, shown in parentheses, are clustered at the institution level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Credit Card Rate			
VARIABLES	Regular and Introductory Rate		Regular Rate	Introductory Rate
Treat×*Post*×*Minority*	-0.220*	-0.377**	-0.302*	-0.145
	(0.115)	(0.170)	(0.172)	(0.136)
Treat×*Post*	0.029	0.053	0.151	0.011
	(0.103)	(0.109)	(0.229)	(0.021)
Post×*Minority*	0.114	0.135	0.202	0.117
	(0.099)	(0.099)	(0.151)	(0.133)
County Characteristics	YES	YES	YES	YES
Branch FE	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES
Institution-Year FE	YES	YES	YES	YES
Product-Year FE	YES	YES	YES	YES
State-Year FE	-	YES	-	-
Observations	42,777	42,776	24,876	17,356
R-squared	0.955	0.955	0.954	0.969

Table 10. Impact of CFPB Disclosure on Deposit Outflows in Minority Communities Across Different Complaint Situations

This table presents the results on the impact of CFPB disclosure on deposit outflows in minority communities under different complaint situations. The dataset for this analysis comprises branch-level deposit amounts data by year. In the estimation, the dependent variable is the logarithm of deposit amounts. Throughout the estimation process, we divide treated branches into three groups based on the complaints they received in 2015. The first group includes branches of institutions that received discriminatory complaints. The second group consists of branches of institutions that received complaints with narratives but no discriminatory complaints. The third group includes branches of institutions that did not receive any complaints with narratives. In other words, we estimate three triple-difference models simultaneously in one regression. Column (1) controls for demographic variables at the county level, including the logarithm of the total population and the income per capita growth rate, along with branch and institution-year fixed effects. Column (2) builds upon Column (1) by incorporating state-year fixed effects. We include all interaction terms involved in the triple-difference settings, but only show the three core interaction terms of interest here. Additionally, we perform two two-sided t-tests to separately examine the differences between the triple-interaction term coefficients in the first and second triple-difference models, and between the first and third models, reporting their p-values. Standard errors, shown in parentheses, are clustered at the institution level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Log(Deposit Amount)	
DiscCompl×Post×Minority	-0.077**	-0.092**
	(0.039)	(0.037)
OtherCompl×Post×Minority	-0.050	-0.051
	(0.045)	(0.043)
NonCompl×Post×Minority	-0.033	-0.051
	(0.037)	(0.036)
DiscCompl vs. OtherCompl (p-value)	0.563	0.364
DiscCompl vs. NonCompl (p-value)	0.261	0.263
County Characteristics	YES	YES
Branch FE	YES	YES
Institution-Year FE	YES	YES
State-Year FE	-	YES
Obeservations	500,952	500,952
R-squared	0.947	0.948

Table 11. Impact of CFPB Disclosure on Credit Card Approval Confidence Across Different Racial Households

This table presents the results of the impact of discriminatory complaints on credit card approval confidence across different racial households, focusing on low-income households. A low-income household is defined as a household with an income above the federal poverty line but below twice the federal poverty line. The dependent variable is a three-level categorical indicator representing the level of confidence in credit card approval. Columns (1) and (2) report results for minority households and white households using OLS regression, respectively. Columns (3) and (4) provide the corresponding results using PPML Model. The variable *DiscCompl* is a binary variable that equals one if a state's discriminatory complaints exceed the median, and zero otherwise. The interaction term, $DiscCompl \times Post$, captures the differential effect of the policy based on the level of complaints within the state. Note that the variable *DiscCompl* and the variable *Post* are not reported in the table since they are absorbed by state fixed effects and year fixed effects respectively. All models control for per capita income and the logarithm of total population at the state level. Fixed effects for year, state, and similar household characteristics (the interation term of income level, education level, household size, and employment category) are included. Standard errors, shown in parentheses, are double clustered at the state and year level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Credit Card Approval Confidence			
	OLS		PPML	
VARIABLES	Minority	White	Minority	White
$DiscCompl \times Post$	0.426***	0.040***	0.236***	0.022***
	(0.079)	(0.011)	(0.040)	(0.005)
Minority vs. White (p-value)	0.022		0.000	
State Characteristics	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
State FE	YES	YES	YES	YES
Similar Household FE	YES	YES	YES	YES
Observations	2,546	9,159	2,546	9,159
R-squared	0.098	0.068	-	-

Table 12. Impact of CFPB Disclosure on Racial Gaps in Interest Rates Across Different Complaint Situations

This table presents the results on the impact of CFPB disclosure on racial gaps in deposit and loan interest rates under different complaint situations. The dataset used for estimating this table consists of branch-level data aggregated by year-quarter. Throughout the estimation process, we divide treated branches into three groups based on the complaints they received in 2015. The first group includes branches of institutions that received discriminatory complaints. The second group consists of branches of institutions that received complaints with narratives but no discriminatory complaints. The third group includes branches of institutions that did not receive any complaints with narratives. In other words, we estimate three triple-difference models simultaneously in one regression. Columns (1) and (2) regressions are based on the baseline results from Table 3. Columns (3) and (4) regressions use combined data from auto loan rates and credit card rates, that is, the baseline results from Table 7 and Table 9. Columns (2) and (4) add state-year fixed effects on top of Columns (1) and (3), and Columns (3) and (4) include market-year fixed effects to account for differences between the two types of loans. All the columns control for demographic variables at the county level, including the logarithm of the total population and the income per capita growth rate, along with branch, year-quarter, and institution-year fixed effects. We include all interaction terms involved in the triple-difference settings, but only show the three core interaction terms of interest here. Additionally, we perform two two-sided t-tests to separately examine the differences between the triple-interaction term coefficients in the first and second triple-difference models, and between the first and third models, reporting their p-values. Standard errors, shown in parentheses, are clustered at the institution level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
VARIABLES	Deposit Rate		Loan Rate	
DiscCompl×Post×Minority	0.140***	0.140***	-0.510***	-0.625***
	(0.022)	(0.033)	(0.157)	(0.203)
OtherCompl×Post×Minority	0.070***	0.076**	-0.279	-0.411**
	(0.023)	(0.037)	(0.214)	(0.197)
NonCompl×Post×Minority	0.037*	0.038	-0.110	-0.280
	(0.020)	(0.027)	(0.109)	(0.210)
DiscCompl vs. OtherCompl (p-value)	0.000	0.117	0.182	0.327
DiscCompl vs. NonCompl (p-value)	0.000	0.004	0.000	0.014
County Characteristics	YES	YES	YES	YES
Branch FE	YES	YES	YES	YES
Institution-Year FE	YES	YES	YES	YES
State-Year FE	-	YES	-	YES
Market-Year FE	-	-	YES	YES
Observations	309,372	309,372	409,630	409,630
R-squared	0.879	0.879	0.954	0.954

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

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

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

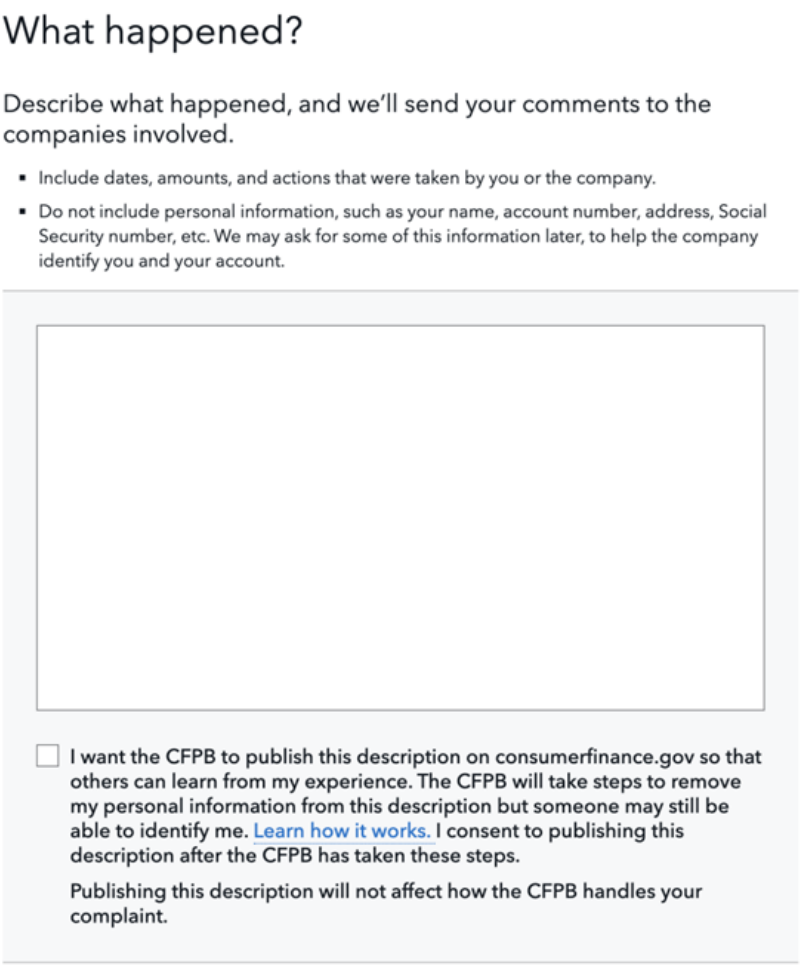


Figure A2. Trend in the Number of Complaints Across Different Product Categories

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

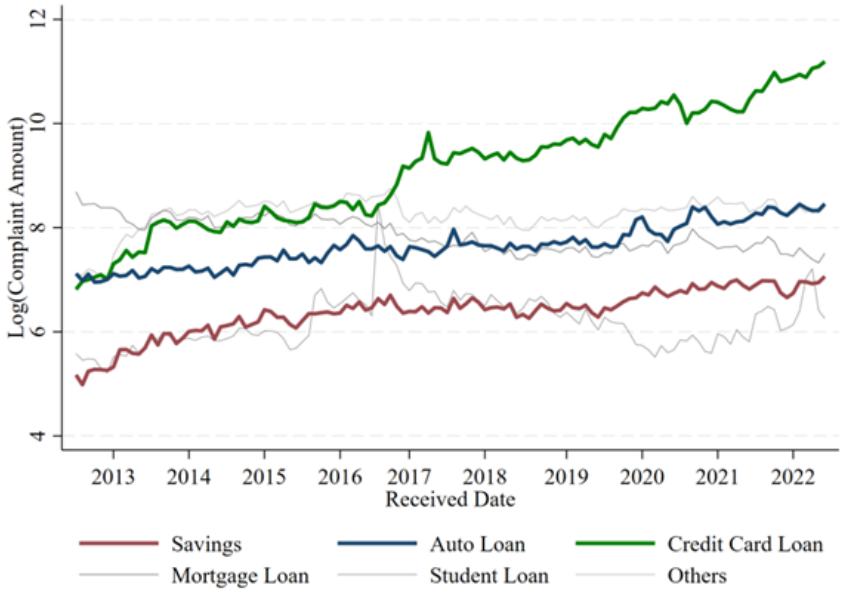


Figure A3. Trend of Average Residualized Deposit Rate Gaps in Different Communities

This figure illustrates the trend of average residualized deposit rate gaps in different communities, based on the product 12MCD10K. Utilizing the control variables and fixed effects setup from Equation (2) without incorporating any triple-difference items, we identify the residuals of the deposit rates set by branches. We then calculate the differences in the residualized depositors' rates between the treatment and control groups over time, specifically in different communities. The vertical axis represents the gaps (based on the average residualized rates of treated branches minus those in control branches), and the horizontal axis denotes time. In this figure, the black solid line represents minority communities' residual interest rate gaps—counties where minorities make up the majority of the population, while the grey solid line indicates the gaps in white communities.

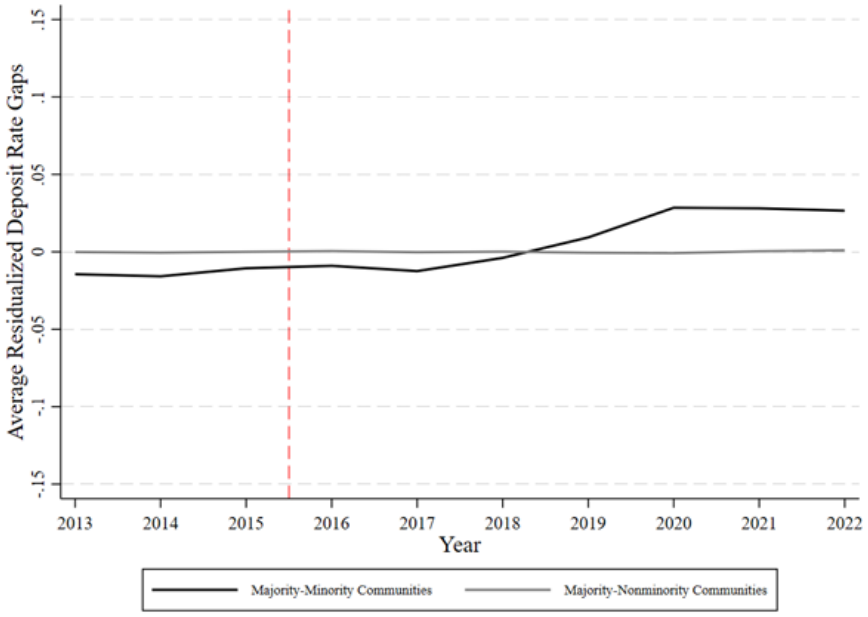
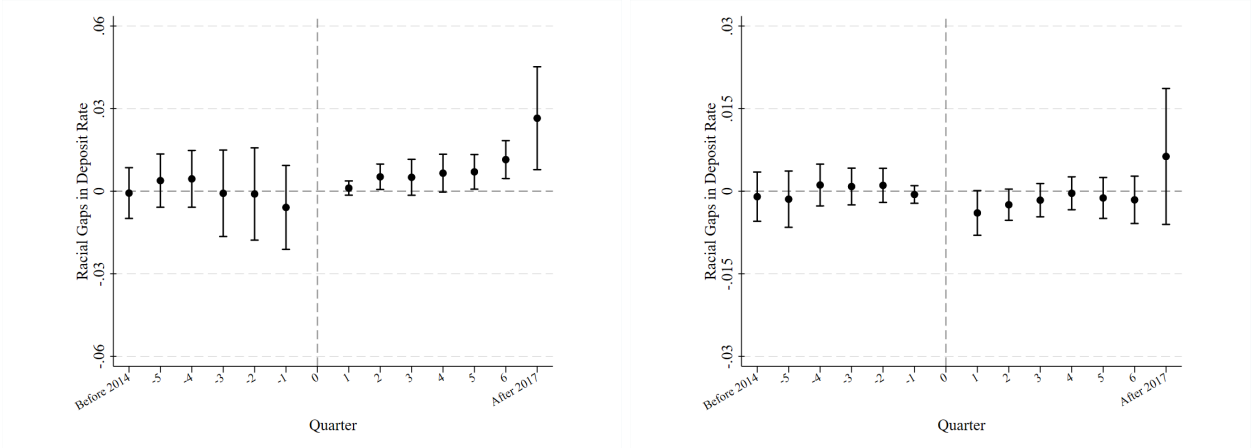


Figure A4. Diff-in-disc Dynamics Trend for the Impact of CFPB Disclosure on Racial Gaps in Deposit Interest Rate

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

$$\begin{aligned} DepositRate_{i,c,t} = {} & \alpha_i + \alpha_1(Asset_{i,t} - 10billion) + Over10_{i,t}(\beta_0 + \beta 1(Asset_{i,t} - 10billion)) \\ & + \sum_{m=-k}^{s} T_t^m[\gamma_{0,m} + \gamma_{1,m}(Asset_{i,t} - 10billion)) + Over10_{i,t}[\delta_{0,m} + \delta_{1,m}(Asset_{i,t} - 10billion))] \\ & + \mu_{Branch} + \epsilon_{i,c,t} \end{aligned}$$

Where $DepositRate_{i,c,t}$ represents the deposit interest rates of branch i in county c at time t across all types of CD products. $Over10_{i,t}$ indicates whether the total assets of a financial institution exceed the $10 billion threshold, based on the first quarter of 2015 data. T_t^m represents the observed values of each institution in the previous k quarters, and the s quarters after the CFPB disclosure was published. It takes a value of one when the time t corresponds to the mth period in the sample, and zero otherwise. We include individual fixed effects α_i. The coefficient δ_0 is the diff-in-disc estimator and identifies the treatment effect of the CFPB disclosure. Samples that fall outside the selected time frame are categorized into the initial and final periods. For the estimation process, the quarter in which the disclosure occurs is used as the baseline period. The vertical axis illustrates the magnitude of the coefficients for the difference-in-discontinuities items, while the horizontal axis delineates varying periods, with period zero aligned with the timing of the disclosure. Black circles indicate the coefficient estimates for different periods, and the black vertical lines signify the confidence intervals (set at a 5% significance level)



(a) Minority

(b) White

Figure A5. Event Study Trend for Impact of CFPB Disclosure on Racial Gaps in Deposit Fees

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

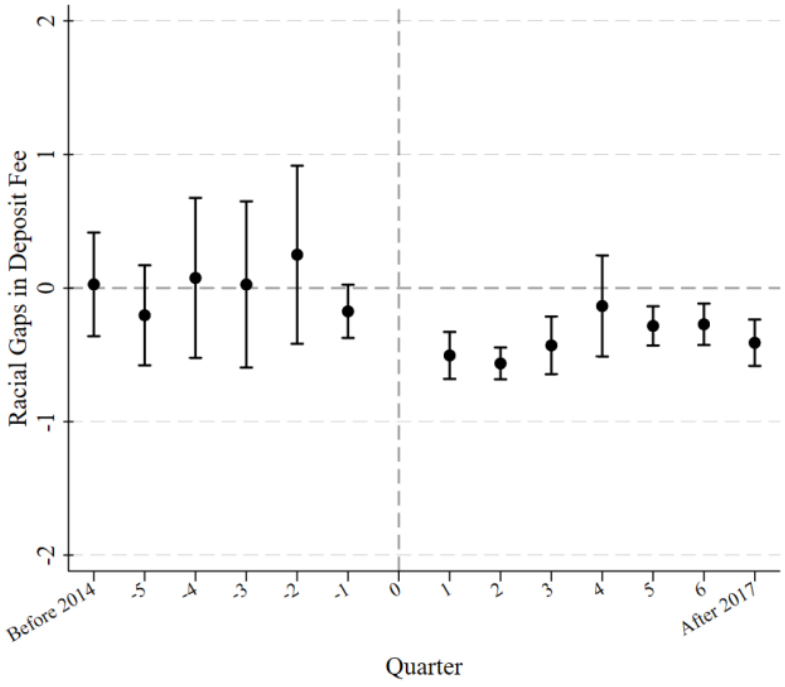


Table A1. Discriminatory Complaints Examples in Savings and Loan Markets

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

Date received	Details
Panel A. Savings Market	
Date received	1/25/18
Product	Checking or savings account
Subproduct	Checking account
Issue	Managing an account
Consumer complaint narrative	Having enough in my account from my retirement XXXX every since I open up this account constantly been accessed fees that were inappropriate due to **abuse of power by the president at the bank also based on stigmatized and sterotyped being of another race.** And taking me like I am stupid and constantly every month being charged excessive fees that were deemed to be access to my account ; Suntrust bank on XXXX XXXX in XXXX pk XXXX XXXX XXXX XXXX. facing biases.
Company	SUNTRUST BANKS, INC.
State	DC
Submitted via	Web
Company response to consumer	Closed with explanation
Panel B. Lending Market - Auto Loan	
Date received	10/31/21
Product	Vehicle loan or lease
Subproduct	Loan
Issue	Managing the loan or lease
Company	Santander Consumer USA Holdings Inc.
State	TN
Submitted via	Web
Company response to consumer	Closed with explanation
Consumer complaint narrative	I recently purchased an SUV, the asking price was almost XXXX. But after adding interest, I will be paying XXXX for a 2014 car. my credit is the the greatest, but I have been improving it. I have a car now that is almost paid for, And out of four years I have not been late, other then one time. And that due to Covid-19. I was out of work for two months. I also have two credit cards that I have never been late on. I really feel like I should have received a better interest rate. My opinion! **I feel like my race may have played a role in the very high interest rate I got.** The date of the transaction was XXXX loan company Santander Consumer USA XXXX XXXX XXXX XXXX, TX XXXX XXXX Sincerely XXXX XXXX
Panel C. Lending Market - Credit Card Loan	
Date received	6/6/22

Continued on next page

Table A1 – *Continued from previous page*

Product	Credit card or prepaid card
Subproduct	General-purpose credit card or charge card
Issue	Fees or interest
Company	CAPITAL ONE FINANCIAL CORPORATION
State	NY
Submitted via	Web
Company response to consumer	Closed with explanation
Consumer complaint narrative	On XX/XX/2022 I received an increase by Capital One without requesting it. The problem I have is I have an excellent credit score and Capital One raise my APR to a high 27.24%. **I believe this is a discriminatory practice based on my race.** My increase was based on my credit score and this high apr doesn't make since. Thank you

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

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

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

Table A3. Impact of CFPB Disclosure on Complaints' Resolution Outcomes: Sample Period Change

This table presents the results on the impact of CFPB disclosure on complaints' resolution outcomes. The dataset used for estimating this table consists of complaint-level data from March 19, 2015, to December 31, 2016. This table focuses on three resolution outcomes: Monetary Relief is a dummy variable that takes the value of one if the complaint is resolved with monetary relief for the consumer; Timely Response is a dummy variable that takes the value of one if the institution's response is timely; Consumer Disputed is a dummy variable that takes the value of one if the consumer chooses to dispute the resolution results. For the independent variables, we include three essential items in the difference-in-difference model: Treat, Post, and $Treat \times Post$. The key estimated coefficient, $Treat \times Post$, denotes the effect of disclosure on the complaints' resolution outcomes. All columns control for institution-year-month, zip-year-month, and market-year-month fixed effects. Standard errors, shown in parentheses, are double clustered at the institution level and year-month level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
VARIABLES	Monetary Relief	Timely Response	Consumer Disputed
Treat×*Post*	0.011*	0.006**	-0.020*
	(0.006)	(0.002)	(0.011)
Treat	0.011	-0.004***	0.079***
	(0.008)	(0.001)	(0.010)
Post	0.022***	0.001	-0.000
	(0.003)	(0.001)	(0.004)
Institution-Year-Month FE	YES	YES	YES
Zip-Year-Month FE	YES	YES	YES
Market-Year-Month FE	YES	YES	YES
Observations	76,051	76,051	76,051
R-squared	0.550	0.687	0.520

Table A4. Impact of CFPB Disclosure on Racial Gaps in Deposit Interest Rate: All Control Coefficients

This table presents the results on the impact of CFPB disclosure on racial gaps in deposit interest rates, with the estimated coefficients of all control variables. Columns (1) to (3) use the rates from the last week of each quarter as the outcome variable. Column (4) uses the average rate of a branch within a quarter, and Column (5) uses the rate spread, calculated as the last-week rate minus the Fed funds target rate, as outcome variables. All columns control for demographic variables at the county level, including the logarithm of the total population and the growth rate of income per capita, and use the annual population of each county for weighting. We also control for branch, year-quarter, and institution-year fixed effects. Column (2) adds state-year fixed effects on top of Column (1), and Column (3) includes institution-year-quarter fixed effects. Throughout the estimation process, we include all interaction items involved in the triple-difference settings, with items absorbed by fixed effects due to collinearity not displayed in this table. The key estimated coefficient, $Treat \times Post \times Minority$, denotes the effect of disclosure on the deposit rates in minority communities. Standard errors, shown in parentheses, are clustered at the institution level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
	Deposit Interest Rate				
VARIABLES	Quarter-End Rate			Mean Rate	Rate Spread
Treat×Post×Minority	0.064***	0.072**	0.092*	0.051**	0.064***
	(0.022)	(0.031)	(0.049)	(0.020)	(0.022)
Treat×Post	-0.038**	-0.039**	-0.046*	-0.038**	
	(0.017)	(0.017)	(0.023)	(0.017)	(0.017)
Post×Minority	-0.033*	-0.038*	-0.078	-0.026	-0.033*
	(0.019)	(0.021)	(0.048)	(0.017)	(0.019)
Log(Total Population)	0.156	0.277	0.032	0.151	0.156
	(0.175)	(0.226)	(0.175)	(0.162)	(0.175)
Per Capita Income Growth	0.001	0.002	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Branch FE	YES	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES	YES
Institution-Year FE	YES	YES	-	YES	YES
State-Year FE	-	YES	-	-	-
Institution-Year-Quarter FE	-	-	YES	-	-
Observations	309,372	309,372	50,535	309,372	309,372
R-squared	0.879	0.879	0.956	0.886	0.941

Table A5. Impact of CFPB Disclosure on Racial Gaps in Deposit Interest Rate of Other Mainstream Deposit Products: Add State-Year Fixed Effect

This table presents the results on the impact of CFPB disclosure on racial gaps in deposit interest rates, focusing on various products. Columns (1) to (2) are based on the deposit rates for the products 06MCD10K and 12MCD100K, respectively. In Column (3), we introduce the most common money market account, MM25K, and estimate the impacts on both 12MCD10K and MM25K. Column (4) includes 12 types of CDs and MM products from the savings market. All columns account for demographic variables at the county level, including the logarithm of the total population and the income per capita growth rate, and use the annual population of each county for weighting. We also control for branch, year-quarter, and institution-year fixed effects. Additionally, when estimating Columns (3) to (4), we control for product-year effects to address time-varying differences between products. Furthermore, building upon Table 4, we add state-year fixed effects as controls to all columns in the analysis. Throughout the estimation process, we include all interaction items involved in the triple-difference settings, with items absorbed by fixed effects due to collinearity not displayed in this table. The key estimated coefficient, $Treat \times Post \times Minority$, denotes the effect of disclosure on the deposit rates in minority communities. Standard errors, shown in parentheses, are clustered at the institution level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Deposit Rate			
VARIABLES	06MCD10K	12MCD100K	12MCD10K and MM25K	All CDs
Treat×*Post*×*Minority*	0.050**	0.076**	0.032*	0.038**
	(0.022)	(0.036)	(0.017)	(0.018)
Treat×*Post*	-0.014***	-0.041**	-0.027**	-0.028**
	(0.004)	(0.017)	(0.012)	(0.011)
Post×*Minority*	-0.022	-0.036*	-0.023*	-0.016
	(0.014)	(0.022)	(0.014)	(0.012)
County Characteristics	YES	YES	YES	YES
Branch FE	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES
Institution-Year FE	YES	YES	YES	YES
State-Year FE	YES	YES	YES	YES
Product-Year FE	-	-	YES	YES
Observations	302,311	291,565	592,661	3,225,707
R-squared	0.859	0.871	0.762	0.755

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

This table presents the results on the impact of CFPB disclosure on racial gaps in deposit interest rates. We replace the dummy variable *Minority* with the continuous variable *MinorityRatio*, which comes from the 2015 county-level demographic data. Columns (1) to (2) show the performance of replacing the minority variable on the 12MCD10K product. Columns (3) to (4) show the performance of replacing the minority variable on all mainstream savings products (consistent with Column (4) in Table 4). All columns control for demographic variables at the county level. We also control for branch, year-quarter, and institution-year fixed effects. Column (2) and (4) add state-year fixed effects on top of Column (1) and (3). Column (3) and (4) include product-year fixed effects. Throughout the estimation process, we include all interaction items involved in the triple-difference settings, with items absorbed by fixed effects due to collinearity not displayed in this table. The key estimated coefficient, $Treat \times Post \times MinorityRatio$, denotes the effect of disclosure on the deposit rates in communities with different minority ratios. Standard errors, shown in parentheses, are clustered at the institution level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Deposit Rate			
VARIABLES	12MCD10K		All CDs and MMs	
Treat×*Post*×*MinorityRatio*	0.064***	0.072**	0.031**	0.037**
	(0.022)	(0.031)	(0.013)	(0.016)
Treat×*Post*	-0.038**	-0.039**	-0.028***	-0.028***
	(0.017)	(0.017)	(0.011)	(0.011)
Post×*MinorityRatio*	-0.033*	-0.038*	-0.014	-0.016
	(0.019)	(0.021)	(0.012)	(0.012)
County Characteristics	YES	YES	YES	YES
Branch FE	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES
Institution-Year FE	YES	YES	YES	YES
Product-Year FE	-	-	YES	YES
State-Year FE	-	YES	-	YES
Observations	309,372	309,372	3,225,707	3,225,707
R-squared	0.879	0.879	0.754	0.755

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

This table presents the results on the impact of CFPB disclosure on racial gaps in deposit interest rates across different racial groups. We modify the definition of the *Minority* dummy variable, creating county-level *Minority* variables based on the distribution (median value) of the three main non-white racial groups: Black, Hispanic, and Asian in different counties. Columns (1) to (3) display the estimated effects of disclosure for each of these three minority races on all mainstream savings products (consistent with Column (4) in Table 4). All columns control for demographic variables at the county level. We also control for branch, year-quarter, institution-year, and product-year fixed effects. Throughout the estimation process, we include all interaction items involved in the triple-difference settings, with items absorbed by fixed effects due to collinearity not displayed in this table. The key estimated coefficient, $Treat \times Post \times MinorityRatio$, denotes the effect of disclosure on the deposit rates in communities with different minority ratios. Standard errors, shown in parentheses, are clustered at the institution level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
	Deposit Rate		
	Black	Hispanic	Asian
VARIABLES	All CDs and MMs		
Treat×*Post*×*Minority*	0.027*	0.040***	0.039**
	(0.015)	(0.015)	(0.018)
Treat×*Post*	-0.028**	-0.029***	-0.029***
	(0.011)	(0.011)	(0.011)
Post×*Minority*	0.013	-0.022*	-0.028
	(0.010)	(0.013)	(0.018)
County Characteristics	YES	YES	YES
Branch FE	YES	YES	YES
Year-Quarter FE	YES	YES	YES
Institution-Year FE	YES	YES	YES
Product-Year FE	YES	YES	YES
Observations	3,153,502	3,152,526	3,154,155
R-squared	0.755	0.755	0.755

Table A8. Impact of CFPB Disclosure on Racial Gaps in Auto Loan Rates: All Control Coefficients

This table presents the results on the impact of CFPB disclosure on racial gaps in auto loan rates, with the estimated coefficients of all control variables. Columns (1) and (2) are based on used auto products, with Column (1) focusing on used auto products with 36-month terms and Column (2) focusing on those with 48-month terms. Columns (3) and (4) discuss the situation for both used auto and new auto products simultaneously. Column (3) focuses on used auto and new auto products with 36-month terms, while Column (4) focuses on those with 48-month terms. All columns account for county-level demographic variables, including the logarithm of the total population and the income per capita growth rate, and use the annual population of each county for weighting. We also control for branch, institution-year-quarter, and product-year-quarter fixed effects. Throughout the estimation process, we include all interaction items involved in the triple-difference settings, with items absorbed by fixed effects due to collinearity not displayed in this table. The key estimated coefficient, $Treat \times Post \times Minority$, denotes the effect of disclosure on the auto loan rates in minority communities. Standard errors, shown in parentheses, are clustered at the institution level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Auto Loan Rate			
	Used Auto		Used Auto and New Auto	
VARIABLES	36M	48M	36M	48M
Treat×Post× Minority	-0.416**	-0.338**	-0.266*	-0.236*
	(0.173)	(0.159)	(0.141)	(0.137)
Post×Minority	0.358**	0.287*	0.212	0.173
	(0.166)	(0.148)	(0.132)	(0.130)
Log(Total Population)	1.561	0.939	1.591	1.080
	(1.896)	(1.720)	(1.622)	(1.469)
Per Capita Income Growth	0.006	0.005	0.004	0.004
	(0.004)	(0.005)	(0.003)	(0.004)
County Characteristics	YES	YES	YES	YES
Branch FE	YES	YES	YES	YES
Institution-Year-Quarter FE	YES	YES	YES	YES
Product-Year-Quarter FE	-	-	YES	YES
Observations	221,516	199,719	357,624	337,851
R-squared	0.966	0.960	0.945	0.931

Table A9. Impact of CFPB Disclosure on Racial Gaps in Credit Card Rates: All Control Coefficients

This table presents the results on the impact of CFPB disclosure on racial gaps in credit card loan rates, with the estimated coefficients of all control variables. Columns (1) and (2) discuss the situation for both regular rates and introductory rates simultaneously. Column (2) includes state-year fixed effects in addition to the controls in Column (1). Columns (3) and (4) separately discuss the results for regular rates and introductory rates, respectively. All columns account for demographic variables at the county level, including the logarithm of the total population and the income per capita growth rate, and use the annual population of each county for weighting. We also control for branch, year-quarter, institution-year, and product-year fixed effects. Throughout the estimation process, we include all interaction items involved in the triple-difference settings, with items absorbed by fixed effects due to collinearity not displayed in this table. The key estimated coefficient, $Treat \times Post \times Minority$, denotes the effect of disclosure on the auto loan rates in minority communities. Standard errors, shown in parentheses, are clustered at the institution level. The symbols *, **, and *** correspond to significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Credit Card Loan Rate			
VARIABLES	Regular and Introductory Rate		Regular Rate	Introductory Rate
Treat×Post×Minority	-0.220*	-0.377**	-0.145	-0.302*
	(0.115)	(0.170)	(0.136)	(0.172)
Treat×Post	0.029	0.053	0.011	0.151
	(0.103)	(0.109)	(0.021)	(0.229)
Post×Minority	0.114	0.135	0.117	0.202
	(0.099)	(0.099)	(0.133)	(0.151)
Log(Total Population)	-1.670	5.915	-2.582	4.022
	(3.187)	(3.811)	(2.122)	(2.735)
Per Capita Income Growth	0.012	0.012	-0.003	0.017
	(0.015)	(0.011)	(0.004)	(0.020)
County Characteristics	YES	YES	YES	YES
Branch FE	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES
Institution-Year FE	YES	YES	YES	YES
Product-Year FE	YES	YES	YES	YES
State-Year FE	-	YES	-	-
Observations	42,777	42,776	24,876	17,356
R-squared	0.955	0.955	0.954	0.969