Political Voice and (Mortgage) Market Participation: Evidence from Minority Disenfranchisement*

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Abstract

This paper documents the link between political voice and economic decision-making. Combining the dilution of Section 5 of the Voting Rights Act as a shock to the enfranchisement of Black Americans with granular data on the US mortgage market, we document a 14.7% decline in mortgage origination for Black Americans. This is driven by a reduction in applications rather than changes in denial rate, suggesting their self-selection out of the mortgage market. Additionally, we observe a flight of Black demand to Black lenders, indicating an increase in racial homophily. Our results indicate that disenfranchisement reduces demand by increasing the fear of rejection, potentially emanating from the fear of discrimination.

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1 Introduction

"*So long as I do not firmly and irrevocably possess the right to vote I do not possess myself. I cannot make up my mind — it is made up for me. I cannot live as a democratic citizen, observing the laws I have helped to enact — I can only submit to the edict of others.*"

-Dr. Martin Luther King Jr., 1957 speech titled "Give Us The Ballot"

The power of individuals to affect election outcomes is the gateway to advancement in all aspects of life (Button (2014)). By exercising their options, the electorate can vote out of office any politician that provides barriers to the provision of basic necessities like housing, safety, and jobs. Also, the right to vote empowers individuals with a political voice that allows them to draw greater public good toward themselves. Consequently, any change in the degree of enfranchisement can impact an agent's decision-making by altering their physical and economic environment. While existing studies have highlighted the role of enfranchisement on public good provision, microeconomic evidence on the relationship between political voice and individual decision making is limited – Do economic agents respond to changes in voting right through their economic and financial decisions? Can exclusion in the voting process result in exclusion from markets? To what extent can difference in voting rights across groups lead to inequality? What are the mechanisms through which exclusion from the voting process can increase inequality?

In this paper, we study the link between electoral disenfranchisement and economic decision making in a setting that allows us to examine the channels through which disenfranchisement can widen existing economic cleavages. Specifically, we study the impact of the dilution of the Voting Rights Act (VRA), which eroded the political voice of Black Americans, on their participation in the mortgage market and the consequent racial disparity in homeownership in the United States. Home purchases are a natural setup for the empirical investigation as houses are the most significant asset owned by most households and thereby one of the most important economic choices made by a household over its lifetime (Chetty and Szeidl (2007), Chetty, Sándor and Szeidl (2017)). Moreover, homeownership is an important medium of wealth accumulation and inter-generational wealth transfer. We focus on mortgage market outcomes as a setup to identify the effect of disenfranchisement on exclusion from markets since home mortgages are an integral part of home purchases.[1] Another motivation to exploit the setup of mortgage market follows from Charles

[1] A large number of homes are purchased through mortgage borrowing. The 2021 Statistics Research Department report - "*Number*

and Hurst (2002) who suggest that differences in mortgage application propensities can potentially explain the racial homeownership gap.

Theoretically, disenfranchisement can affect mortgage market outcomes through multiple channels – income, elevated uncertainty, fear of rejection, and migration. First, disenfranchisement can affect the economic well-being of the disenfranchised group by reducing their income (Aneja and Avenancio-León (2019), Aneja and Avenancio-Leon (2020)). The reduction in income can result in a greater propensity among banks to reject the applications of potential borrowers. Additionally, reduced income can tighten the borrowing constraints and lead to lower demand for mortgages and illiquid assets such as homes manifesting as reduced applications (Campbell and Cocco (2003)). Second, disenfranchisement can lead to increase in the uncertainty of the disenfranchised group about their economic and social conditions. Consequently they can hold back their investment in home purchases leading to lower mortgage applications (Bloom (2009), Bloom (2014)). Third, disenfranchisement can result in an increased fear of rejection manifesting as reduced applications for mortgages. The increased fear of rejection could either be because of the greater uncertainty following disenfranchisement or an expectation of increased discrimination in the mortgage markets. Disenfranchised groups will revise their expectation of discrimination upwards following a reduction in their political voice as disenfranchisement can reduce the state's incentives to protect against discrimination by shifting the median voter. Another point to note here is that if the actual level of discrimination increases following disenfranchisement, and not just the expected level, it can also manifest as greater rejection and fear of rejection. Fourth, the disenfranchised group can move to other areas in search of better representation and resources as predicted by Tiebout (1956). The exodus of the disenfranchised group can mechanically result in lower mortgage applications and originations. Disentangling these channels is crucial to understanding the underlying mechanisms through which exclusion from the voting process can increase inequality in mortgage markets.

A direct test to identify the effect of changes in enfranchisement or political voice on mortgage market outcomes requires an exogenous variation in the cost of voting. The temporal and spatial variation in federal voting rights protection created by the 2013 US Supreme Court ruling in *Shelby*

of new home sales in the U.S. 2000-2020, by financing type" states that two in three home purchases between 2000 and 2020 were financed through a conventional mortgage <LINK>. Redfin analysis of home purchases indicates that an average of 25% of homes were purchased using all cash between 2001 and 2021 <LINK>. The 2014 survey of potential home-buyers by loanDepot finds that 71% of all Americans who want to buy a home will need financing <LINK>.

v. Holder provides for such a variation. Voting Rights Act (VRA) was signed into law on the 6th of August 1965. It outlawed many discriminatory voting practices in the United States that prevented minorities in general and Black Americans in particular from participating in the electoral process. Section 2 of VRA eliminated all nationwide voting restrictions that denied the right to vote on account of race. Section 5 of VRA empowered federal authorities with oversight powers to protect minorities' right to vote by requiring compulsory preclearance of all changes in voting laws. Section 5 is widely considered to be the heart of the VRA as it shifted the burden of proof from voters to the election officials. Unlike Section 2, Section 5 of VRA was applied to selected jurisdictions (mainly in the South) according to the formula prescribed in Section 4(b). The US Supreme Court, in its judgement on *Shelby v. Holder*, ruled that the coverage formula defined in Section 4(b) was unconstitutional, making Section 5 inoperable.

This judgement stripped VRA of its most potent provision and struck a blow to the political voice of Black Americans. This is evident by Justice Ginsberg's dissenting judgement highlighting that "[t]hrowing out preclearance when it has worked and is continuing to work to stop discriminatory changes is like throwing away your umbrella in a rainstorm because you are not getting wet." Removal of preclearance requirement was immediately met with the enactment of controversial voter laws in jurisdictions previously covered by Section 5 of VRA (Ang (2019)). For example, within 24 hours of the ruling, Texas announced and passed strict photo identification law that had previously failed the preclearance under Section 5. Other states such as Georgia and North Carolina also implemented several discriminatory voter laws and purged several Black Americans from its voter list. We establish the quantitative relevance of the dilution VRA as a potential shock to the political voice of Black Americans. We show that voter turnout during presidential elections declined sharply in counties previously covered by Section 5 of VRA and a greater share of Black population. This result, following the seminal work of Tingsten (1937), reflects a decline in the political voice of Black Americans after the Shelby ruling.

Therefore, the natural experiment created by Shelby ruling allows us to study the effect of erosion in voting rights of Black Americans on the racial homeownership gap. Since mortgage lending is imperative in determining homeownership, we exploit the richness of information available in mortgage markets to empirically investigate the role of voting rights in widening the existing racial economic disparity. We combine the spatial information on jurisdictions originally covered

under Section 5 of VRA with detailed Home Mortgage Disclosure Act (HMDA) dataset to identify the relationship between changes in the cost of voting and mortgage market outcomes.

Two features of our data allow for credible identification. First, the data provide information on borrowers' race which is imperative in examining the effect of Shelby ruling across races. Second, detailed information on property location allows us to focus on contiguous counties separated only by jurisdictional borders in cases where one county was covered by Section 5 of VRA, and the other was not. This is important because a direct comparison of all covered and uncovered counties is likely to contaminate the estimation due to selection bias issues or omitted variables potentially correlated with racial differences in economic status. The assumption of using this sub-sample of covered and uncovered contiguous counties is that these counties are immediately adjacent neighbors and are expected to be similar in both observable, and more importantly, unobservables and likely to follow similar paths in the absence of policy changes.

Our empirical strategy uses a border discontinuity design. It estimates a dynamic triple differences specification that exploits three dimensions of heterogeneity - spatial differences in the coverage of Section 5 across adjacent counties, the difference in the impact of the repeal of Section 5 across races within a county, and time-series variation before and after the dissolution of Section 5. The key identifying assumption behind this empirical strategy is that, in the absence of Shelby ruling, outcomes for Black and white borrowers in the treatment and control groups would have evolved according to parallel trends.

Using the dynamic triple differences specification in a sample of bordering counties, we document a parallel movement before the Shelby ruling and a sharp decline in mortgage origination and applications for Black borrowers in the treated counties compared to Black borrowers in adjacent control counties following the Shelby ruling. Meanwhile, we do not observe changes in mortgage rejection or denial rates. The inclusion of county $\times$ year, race $\times$ year, county $\times$ race, and county-pair $\times$ race $\times$ year fixed effects in the empirical specification indicates that the results are not driven by time-varying shocks within a county, aggregate time-varying shocks to a race, the time-invariant status of a race within a county, or time-varying shocks to race within a pair of adjacent counties. The role of county-pair $\times$ race $\times$ year fixed effects is to ensure that the outcome differences among Black and white households in the control group provide a counterfactual of what would have happened to differences among Black and white households if the US Supreme

Court would not have removed the pre-existing protections under Section 5.

We further supplement our baseline analysis with a geographic regression discontinuity (DRD) wherein we estimate the effect of Shelby ruling on mortgage market applications, originations, and denial rates measured at the census tract level in a sample of bordering counties. The key innovation of the RD design is to include census-tract × year fixed effects along with county-pair × race × year fixed effects allowing us to address three issues – the large counties on each side of the border might not be similar enough, the economic shocks in a county may not evolve over space such that all areas within a county are affected similarly, and heterogeneous policy spillovers within a county. The geographic RD results show that the mortgage origination amount (number) for Black Americans in treated counties declined by 14.7% (8.3%) after the Shelby ruling. Additionally, the mortgage application amount (number) for Black Americans in treated counties declined by 12.5% (7.0%) after the Shelby ruling. However, as before, we find no effect on the denial rate around the Shelby ruling. The results indicate that lower mortgage origination for Black Americans in treated counties is almost entirely driven by the reduction in mortgage applications by Black borrowers and not by an increase in the mortgage denial rate of Black Americans.

Our baseline results are robust to a placebo analysis wherein we randomize the treatment status indicating the relevance of the treatment status and non-spuriousness of our results. In addition, we document a 9.9% decline in mortgage origination amount for another minority – non-Black and non-white Hispanics – whose voting rights are also likely to be negatively affected by the Shelby ruling. Lastly, we document that lower applications and originations by Black borrowers in treated counties after the Shelby ruling translates into reduced home purchases for Black households. This indicates that the effect of disenfranchisement on mortgage origination and applications can result in real effects and further exacerbate the pre-existing racial homeownership gap.

A concern with the analysis so far is that Congress did not randomly choose the jurisdictions subject to the stringent oversight under Section 5. A state or a county was covered under Section 5 of VRA if it used a test or device to restrict voting, such as a literacy test, and had a voter turnout of less than 50% in the 1964 Presidential elections. The inclusion of county × race (census-tract × race) and the border discontinuity design (geographic RD) addresses this concern to an extent. To further address this issue of selection bias, we conduct a differences-in-regression-discontinuity (DRD) analysis by restricting the sample to counties within a narrow margin of 5% around the

treatment threshold of 50% voter turnout in the 1964 Presidential election. The estimates from the DRD analysis also show that the origination and applications fell for Black Americans in treated counties after Shelby ruling, whereas the effect on denial rate is economically small and statistically insignificant. The DRD analysis indicates that the results are unlikely to be driven by the specific sample employed in baseline estimation or driven by selection bias.

A major concern with our analysis is that omitted aggregate factors correlated with the timing of Shelby ruling drive our results. These contemporaneous omitted variables can include – aggregate macroeconomic shocks – such as interest rate – or regulatory changes – such as the final compliance deadline of the Dodd-Frank Act in 2013 – which changed bank credit. Black and white households could have different responses to such aggregate macroeconomic and regulatory changes given the wealth inequality between the two. However, for these aggregate shocks to explain away our results, we would need Black households in the treated and control counties to have different sensitivities to aggregate shocks. We verify this assumption using the data from the pre-Shelby period and find that Black households in treated and control counties have similar sensitivity to a range of aggregate shocks such as 15-year and 30-year mortgage rates, term spread, bank credit, and GDP growth rate. However, this assumption is insufficient to mitigate the concern if the relative sensitivity of the Black households in treated and control counties changes after 2013. Therefore, we further address this issue by re-running our baseline analysis while controlling for the triple interaction term of macroeconomic shocks, the borrower's race, and the county's treatment status. Our results are robust to the inclusion of these controls. Hence, it is unlikely that contemporaneous aggregate shocks will drive our baseline effect.

Next, we focus on the underlying mechanism that can explain our results. We disentangle the income and the fear of rejection channel through three tests. These tests indicate that the effect of VRA on mortgage market outcomes is likely driven by increased fear of rejection following the Shelby ruling rather than being a downstream effect of income changes.

First, we document the flight of mortgage demand – applications – by Black borrowers to Black lenders in treated counties following the Shelby ruling. The intuition of this test is that if the decline in income, following Shelby ruling, is the primary channel driving our results, then the reduction in loan applications by the Black Americans should be similar across all banks. However, if fear of rejection is the potential channel, one would expect a flight of mortgage applications

from the Black borrowers to the Black banks. Our results show that while applications by Black borrowers decline for non-Black lenders following the Shelby ruling, the applications to Black lenders increase. Specifically, Black borrowers' mortgage application amount (number) to Black lenders increased by 11.9% (15.0%) in treated counties relative to control counties, following the Shelby ruling. This indicates a flight of Black demand to Black lenders following the Shelby ruling. Overall, these results suggest that our baseline results are unlikely to be entirely driven by reduced income and increased fear of being rejected by the non-Black lenders after the Shelby ruling could be an important driver. Another advantage of this test is the inclusion of census-tract $\times$ race $\times$ year fixed effects allows us to better control for the asymmetric effect of observed and unobserved omitted aggregate factors correlated with the timing of Shelby ruling.

Second, we examine the effect of VRA on home purchases using mortgages and cash. The intuition of this test is that reduced income and greater future uncertainty, following the Shelby ruling, will result in an overall decline in home purchases through cash and mortgages. However, the fear of rejection channel will manifest only through mortgages. Additionally, the fear of rejection can result in the marginal Black home buyer initially indifferent between mortgage and cash to strictly prefer home purchases through cash. Using Zillow home transaction data, we show that Black Americans reduced their usage of mortgages to finance their home purchases and instead shifted to using cash for home purchases. This change in the choice of payment mode of the marginal Black household indicates that the reduction in mortgage applications is more consistent with the fear of rejection channel. Specifically, it suggests that the fear of rejection is likely driven by increased fear of anticipated discrimination in mortgage markets following the Shelby ruling.

Third, we investigate the size of our baseline effect over the income distribution of borrowers. The intuition of this test is that if the results are just a manifestation of reduced income, then the effect would be more pronounced in the lower end of the income distribution as the marginal effect of reduction in income is likely to be higher for low-income households. However, we document that the magnitude of the effect is stable over the income distribution, suggesting that the impact of the Shelby ruling on Black mortgage demand is not just a downstream effect of reduced income.

Another channel that could mechanically generate our baseline results is the emigration of Black households from treated counties following the Shelby ruling. However, our analysis using the outflow and inflow of people in treated counties with high share of Black population and the

precise shares population by race at the zip code tabulation area (ZCTA) before and after the Shelby ruling indicates that the migration channel is unlikely to explain our results.

Overall, the majority of evidence shown so far seems to favor the fear of rejection as the primary channel that can explain our results. Specifically, we argue that this fear of rejection is driven by greater anticipation of discrimination among Black households in the mortgage markets. Lastly, we document some suggestive evidence that the increased expectation of being discriminated against could be fueled by increased hate crimes and hatred against Black households in treated counties following the Shelby ruling. Additionally, trust of state agents among Black Americans declines in treated counties after the Shelby ruling.

Contribution: The primary contribution of our work is to investigate the economic impact of disenfranchisement. The extant literature has studied the relationship between the expansion of enfranchisement and provision of public goods and government spending.[2] Aneja and Avenancio-Leon (2020) and Aneja and Avenancio-León (2019) provide evidence showing that improvement in voting rights of Black Americans increased government incentives to improve Blacks' relative economic position through increased public employment. Facchini, Knight and Testa (2020) find that, following the enactment of VRA, Black arrest rates fell for less serious offenses, for which police might have more enforcement discretion. Broadly, these works examine the change in government relationship with the (dis)enfranchised group. In contrast, this paper documents that individuals alter their economic decision-making in response to changes in their political voice. Specifically, using mortgage markets as a setup, our results show that mortgage origination declines for Black Americans post their *de facto* disenfranchisement, primarily driven by a reduction in their demand. Our work highlights that disenfranchisement reduces demand directly by increasing the fear of rejection. Overall, this paper shows that discrimination in the voting process can result in exclusion from the markets and the underlying channels.

Our work joins the literature that attempts to understand racial differences in mortgage lending. Munnell et al. (1996) document the role of discrimination in explaining the racial disparity in mortgage lending. Several works since then have highlighted the role of the supply side in explaining the racial differences in mortgage originations.[3] Bhutta and Hizmo (2021) show that

[2]See Husted and Kenny (1997), Lott and Kenny (1999), Miller (2008), Moehling and Thomasson (2012), Naidu (2012), Cascio and Washington (2014), Carruthers and Wanamaker (2015), Fujiwara (2015), Debnath, Kapoor and Ravi (2017), Aidt and Jensen (2009), and, Aidt and Jensen (2013) among others.

[3]See, Holmes and Horvitz (1994), Tootell (1996), Ross et al. (2008), Ghent, Hernandez-Murillo and Owyang (2014), Cheng, Lin

gaps by race and ethnicity in interest rates reflect their differences in liquidity or preferences to sort to different locations on the schedule. Our results add to this set of papers by showing that changes in the socio-political environment may cause Black Americans to self-select out of the mortgage market, thereby exacerbating the existing racial divide. We document that reduction in political voice through disenfranchisement can reduce demand for home mortgages by increasing the fear of rejection. Hence, our result is closest in spirit to the hypothesized explanation for racial differences in mortgage origination presented in Charles and Hurst (2002) - *"We speculate that the portion of the gap that remains unexplained after controlling for income, demographics, and wealth may be the result of Blacks anticipating a greater chance of rejection when they apply for mortgages."*

Our paper also contributes to the broad literature studying the impact of political influence on expansion in consumer credit supply and delaying foreclosure on delinquent mortgages.[4] McCartney (2021) shows that a decline in local house prices decreases the voter participation rate of the average mortgaged homeowner. Gyongyosi and Verner (2021) show that conflict between creditors and debtors can shape political outcomes after household debt crisis. Akey et al. (2018) find a reduction in credit supply in less-competitive political races where politicians' have lower incentives to cater to their constituents' preferences. We differ from this literature in two ways. First, we show that the primary instrument of political voice – electoral enfranchisement – can have a role in mortgage outcomes in general and participation of disenfranchised groups in particular. Second, we argue that reduction in politicians incentives to cater to the disenfranchised groups and protect them against discrimination manifest as a direct reduction in demand. Hence, our results highlight the role of changes in political incentives in changing the individual choice set.

We document the flight of Black borrowers to Black banks following the attenuation of their political voice. This indicates that the dilution of political voice can make racial identity salient and increase homophily, turning Black Americans to community-based institutions for insurance against such shocks. This result supports the theoretical work of Ambrus, Mobius and Szeidl (2014) showing that social networks can provide insurance against such shocks. Hence, we contribute to the literature examining the role of of cultural, racial and social proximity in determining economic

and Liu (2015), Hanson et al. (2016), Bartlett et al. (2021), Bhutta, Hizmo and Ringo (2021), Fuster et al. (2020), and Giacoletti, Heimer and Yu (2021) among others.

[4]See, Mian, Sufi and Trebbi (2010), Mian, Sufi and Trebbi (2013), Agarwal et al. (2018), Chavaz and Rose (2019), Antoniades and Calomiris (2020), and Akey, Heimer and Lewellen (2020) among others.

outcomes in general and bank lending in particular.[5]

This paper proceeds as follows. Section 2 discusses background information on the VRA. Section 3 describes the data. Section 4 delineates the empirical strategy. Section 5 presents the baseline effect of the repeal of Section 5 of VRA on mortgage market outcomes. Section 6 documents the underlying mechanisms. Section 7 discusses external validity of our findings. Section 8 concludes.

2 Institutional Details

This section discusses the Voting Rights Act of 1965 and its significance for Black American. Following which we highlight the 2013 US Supreme Court Judgement in *Shelby v. Holder* that declared Section 4(b) of VRA – which determines which jurisdictions are covered by Section 5 – unconstitutional making Section 5 of VRA – that required preclearance for any change in voting rules – inoperable.

2.1 The Voting Rights Act

The growing racial disparity in the US led to the emergence of the American Civil Rights movement during the mid 1950s.[6] The "Jim Crow" laws and the subsequent decline in the economic and the social status of Black Americans put the right to vote at the heart of the American Civil Rights movement.[7] The enactment of the Voting Rights Act (VRA) in 1965 is regarded as the biggest legislative achievements of the Civil Rights movement. The law was enacted following the aftermath of the Selma's "Bloody Sunday" and provided life to the Fifteenth amendment. President Lyndon B. Johnson described VRA as, "the goddamndest, toughest voting rights act [possible]".

2.1.1 What did VRA Do?

The VRA prohibited the denial or abridgement of the right to vote on account of race or color, forbidding all electoral structures that deny racial minorities the "opportunity...to participate [equally] in the political process and to elect representatives of their choice." VRA achieved the equal opportunity to vote through two principal mechanisms enrishned in its Section 2 and 5.

[5]See, Karlan (2007), Hjort (2014) Fisman, Paravisini and Vig (2017), Haselmann, Schoenherr and Vig (2018), Agarwal et al. (2019), and Fisman et al. (2020) among others. We direct the readers to Jackson, Rogers and Zenou (2017), and Shayo (2020) for an in-depth review of literature highlighting the economic consequences of social network structure.
[6]We expound on this background in appendix B.
[7]The southern state legislatures enacted several laws between the late 19th and the early 20th century, referred to as the "Jim Crow" laws, to impose *de-facto* suffrage restrictions on Black Americans.

Section 2 eliminated all voting restrictions, in the spirit of Jim Crow laws, that denied the right to vote on account of race. Section 2 is seen as the reinforcement of the voting rights act guaranteed in the Fourteenth and the Fifteenth Amendments. This section was implemented nationwide and increased citizens ability to sue as means of enforcing equal voting opportunity and challenging vote-denying practices.

Section 5 of the VRA empowered federal authorities with oversight powers to protect minorities' right to vote. Section 2 made it easier to strike down discriminatory voting laws. However, as noted by Pitts (2003), suspension of discriminatory laws in the past often resulted in an immediate enactment of new discriminatory rules hampering the ability of such ex-post checks. Section 5 of the VRA addresses this issue by requiring compulsory pre-clearance of all changes in voting laws from either the US Attorney General or the US District Court for DC. The jurisdictions, proposing changes to voting laws, were required to demonstrate that the proposed change neither had a discriminatory purpose or effect on Black American voters. Hence, Section 5 shifted the burden of proof from voters to the election officials and is widely considered to be the heart of the VRA.

2.1.2 Implementation and Impact of VRA

While the Section 2 was implemented nationwide, the Section 5 of the VRA was primarily active in the South where the voting rights of the Black Americans had been suppressed the most. The counties or states where the the Section 5 of VRA was active were referred as "covered" jurisdictions. Specifically, Section 5 applies to jurisdictions encompassed by the "coverage formula" prescribed in Section 4(b). The coverage formula includes any jurisdiction – such as city, state or county – if it employed a test or device and had less than a 50% voter turnout in the 1964 presidential election.[8] Section 5 was initially applied to all counties in Alabama, Georgia, Louisiana, Mississippi, South Carolina, and Virginia, 41 counties in North Carolina, and 1 county in Arizona. Amendments to the VRA , in 1970 and 1975, extended coverage to all counties in Texas, and several counties in Florida, Oklahoma, Arizona, New Mexico, Michigan, California, New York and New Hampshire.

[8]The term "test or device" is defined based on Section 201 and Section 4(f)(3). It includes the four devices prohibited nationally by Section 201. These devices include literacy tests, educational or knowledge requirements, proof of good moral character, and requirements that a person be vouched for when voting. Another device defined in Section 4(f)(3) is also included – in jurisdictions where more than five percent of the citizen voting age population are members of a single language minority group, any practice or requirement by which registration or election materials are provided only in English.

We refer to the counties covered by the Section 5 of the VRA by 1975 as the covered counties or the treated counties. Figure 1 shows the counties covered under the Section 5 of VRA by 1975.

VRA was instrumental in reducing the widespread political and economic disparity across races. The impact of VRA on enfranchisement of Black Americans was immediate. Valelly (2009) shows that between 1964 and 1968 presidential elections, Black voter registration increased 67% among southern states. Using data for 40 years since 1975, Ang (2019) shows that the preclearance oversight of the Section 5 of VRA increased the long-run voter turnout by 4-8 percentage points, due to lasting gains in minority participation in the electoral process. Cascio and Washington (2014) find that counties with higher Black population shares in former literacy test states saw greater increases in both voter turnout and state transfers after the implementation of VRA. Aneja and Avenancio-León (2019) shows that the enactment of the Section 5 of the VRA helped reduce the Black-white labor market inequality over the second half of the twentieth century. They argue that the Black-White convergence in labor market inequality is driven by changes in the incentives faced by all politicians rather than just the increased presence of Black elected officials. Facchini, Knight and Testa (2020) find that, following the enactment of VRA, Black arrest rates fell for less serious offenses, for which police might have more enforcement discretion.

2.2 Section 5 of VRA and *Shelby County v Holder*

The US Supreme Court ruling of 2013 in the case of *Shelby County v Holder* came as a massive blow to Section 5 of VRA. US Supreme Court ruled by 5 to 4 that the coverage formula defined in Section 4(b) was unconstitutional, reasoning that it was an old formula and no longer responsive to current conditions. In the majority opinion, Chief Justice John Roberts claimed that the things in the South have changed, and using 40-year-old facts to define preclearance today was not logical. Justice Roberts further proposed that political discrimination was no longer a problem and the law was no longer needed. Others on the bench expressed doubt to the majority opinion. In her dissent with the majority opinion, Justice Ruth Bader Ginsberg argued that the increased voting equality is because of VRA and warned against the dangers of overthrowing the act - “throwing away your umbrella in a rainstorm because you are not getting wet". The unconstitutionality of Section 4(b) made Section 5 of VRA inoperable until Congress enacted a new coverage formula. While Congress has attempted to enact several new preclearance formulas since the 2013 ruling,

none have passed the Congress. Therefore, the 2013 US Supreme Court ruling freed all states and counties covered by Section 5 of the VRA from federal oversight.

2.3 Voting Laws after *Shelby County v Holder*

The effect of removal of protections provided under Section 5 on electoral process was rather immediate. Since the Shelby v Holder ruling of 2013, several covered jurisdictions have implemented controversial voting changes (Ang (2019)). Within 24 hours of the ruling, Texas announced and passed strict photo identification law that was previously rejected by the US Attorney General under preclearance. Mississippi and Alabama, also began to enforce photo identification laws that had previously been barred because of federal preclearance. Less than two months after Shelby ruling, North Carolina enacted a voting bill that instituted a strict photo identification requirement; curtailed early voting; eliminated same day registration; restricted pre-registration; ended annual voter registration drives; and eliminated the authority of county boards of elections to keep polls open for an additional hour. This law was later stuck down by the U.S. Court of Appeals for the Fourth Circuit in July 2016. However, the discriminatory law remained active in North Carolina for three years highlighting the challenges of ex-post litigation as opposed to the preventive machinery under Section 5 of VRA.

The Shelby ruling also had quantitative effect on voter turnout. Ang (2019) shows that following the Shelby decision the voter turnout in the covered counties declined by 1.5 percentage points, the largest drop in voter turnout since 1975. The 2018 state of voting study by the Brennan Center for Justice found that voters in 23 states were likely to face tougher voting restrictions than they did in 2010 (Weiser and Feldman (2018)). These restrictions include tougher voting identification laws, additional burden for registration among voters and cutbacks to early voting and absentee voting. The study notes that after the Shelby decision voters experienced a seesaw effect as new voting rules were imposed, blocked by courts, and then reinstated in modified form, only to be challenged again preventing thousands of voters to cast their ballots across multiple elections. Another 2018 Brenan Center report found that previously covered states have purged voters off their rolls at a significantly higher rate than non-covered jurisdictions (Brater et al. (2018)). The study calculates that 2 million fewer voters would have been purged over those four years if jurisdictions previously subject to federal preclearance had purged at the same rate as those jurisdictions not

subject to that provision in 2013. For instance, after the Shelby decision Georgia purged twice as many voters as it did before the ruling.

2.3.1 Disproportionate effect on Black Americans

The variety of voting restrictions implemented post Shelby ruling raised the cost of voting and disproportionately affected minorities. For example, the North Carolina law HB 589, passed within a month of the Shelby ruling, had an outsized impact on the state's growing African-American population. Three years after the implementation of HB 589 the Fourth Circuit Court of Appeals found that the North Carolina voter identification law was an unconstitutional effort to "target African-Americans with almost surgical precision" (*NAACP v McCrory*). Voting purges and strict voting identification laws are likely to adversely affect the voting power or cost of Black Americans more than whites. Several preclearance requests regarding voter identification laws, before the Shelby ruling, were rejected by the federal government on the grounds that such requirements impose an undue burden among minorities such as Hispanics and Black Americans. Purging of voters also disproportionately affects minorities. Crosscheck program, used for purging voters, eliminates voters based on common names. The 2010 US Census states that 16.3 percent of Hispanic people and 13 percent of Black people have one of the 10 most common surnames, compared to 4.5 percent of white people. Therefore, purging programs based on common names are likely to purge minority voters more than white voters. Moreover, the undue burden of voting restrictions on Black voters was brought to national attention during the 2018 race for Georgia Governor involving Stacey Abrams and Brian Kemp. The US Commission on Civil Rights released a report on September 12, 2018, documenting the adverse effects of voter identification laws, voter roll purges, reduction in early voting, and polling place closures on minority voter participation (The US Commission on Civil Rights (2018)).

3 Data

The empirical analysis of this paper hinges on different datasets. This section provides a brief description of the data sources. Table 1 presents the summary statistics for the key outcome variables explored in this paper.

Home Mortgage Disclosure Act (HMDA). Our primary analysis uses mortgage application data

collected and provided under the Home Mortgage Disclosure Act (HMDA). The HMDA dataset provides application level information on requested loan amount, purpose (home purchases/home improvement/refinancing), final status of application (approved/denied), census-tract level location of property for which loan is applied, along with information on the race and ethnicity of the borrower. Our sample period spans from 2008 to 2019 to include six (five) years before (after) the repeal of VRA. Finally, we restrict the sample to adjacent county pairs that straddle states covered by Section 5 in accordance with our identification strategy (see Figure 2). Our final dataset is a county-race-year or tract-race-year level aggregated data covering 426 counties in 30 states.

American Community Survey (ACS). ACS collects housing and demographic information from over 3.5 million households each year. We use the 1-year ACS Summary Files (ACSSF) from 2009 through 2019 and construct national and state-level home-ownership rate by race. We also use the two waves of 5-year ACSSF—2008-2012 and 2013-2017—to construct home-ownership rate and the proportion of Black Americans at the Zip Code Tabulation Area (ZCTA). To explore the difference in key demographic variables between the covered and uncovered counties in Figure 1 and 2, we use the ACS Public Use Microdata Sample (PUMS) from 2008 through 2012.

The Internal Revenue Service (IRS). IRS maintains the address reported by individuals in their tax report filing. Consequently through a year-on-year change in the address, the IRS maintains data on migration.

Hate crime data collected by the Federal Bureau of Investigation (FBI). The Hate Crime Statistics Program of the FBI's Uniform Crime Reporting (UCR) Program collects data regarding geographically tagged criminal offenses that were motivated, in whole or in part, by the offender's bias against the victim's race/ethnicity/ancestry, gender, gender identity, religion, disability, or sexual orientation, and were committed against persons, property, or society. We focus on hate crimes against Black Americans from 2010 to 2019 for our analysis.

American National Election Series (ANES). ANES is an in-person survey conducted on a stratified random sample of individuals around each presidential election. The data provides information on respondent's race, gender, and state along with their stated political preferences. We use the survey waves of 2008, 2012 and 2016 focusing on the *feeling thermometer* recording responses of white males towards Black Americans. The feeling thermometer records the level of warmth or coldness that the respondent feels towards an issue or a group, in this case Black Americans, on a scale

ranging from 0 to 97 with higher value indicating a higher degree of warmth.

Zillow Transaction and Assessment Database (ZTRAX). The ZTRAX is the US's largest real estate transaction database that contains more than 400 million public deed records across more than 2,750 counties. The data includes, but is not limited to, property characteristics, geographic information, types of deed records, transaction price, and the names of sellers and buyers with their addresses. We start from the universe of raw deed records and exclude non-residential property sales and partial-interest sales. We also exclude non-market transactions such as intra-family sales and the transfer of ownership caused by the affidavit of death. We then distinguish mortgage-based housing transactions from cash-based transactions using the dollar amount of mortgages recorded in the deeds. We identify the race of home buyers based on the last name of the buyers (Imai and Khanna (2016)).

Cooperative Congressional Election Study (CCES). The CCES is the largest survey of Congressional elections conducted before and after the US presidential and midterm elections. It surveys more than 50,000 persons in election years and studies American's view on Congress and their representatives such as the president, governors, and supreme court. We use the sample of CCES in election years from 2008 through 2018 and make use of the questionnaires inquiring about American's approval of the legislature, president, governors, and supreme court.

Data on Voter Turnout. The data on voter turnout is obtained from Data and Lab (2018). This provides data on the turnout for every federal elections aggregated at the county level. We map the voting statistics to bordering counties and analyse the change in turnout after the Shelby ruling, particularly in the counties dominated by Black Americans.

4 Empirical Strategy

This paper aims to evaluate the effect of disenfranchisement on mortgage market outcomes for new home purchases. The empirical strategy compares the counties covered under Section 5 of VRA with the uncovered counties. The Shelby ruling took away the protections from the covered counties, instated half a century ago. However, the ruling did not affect the status quo in uncovered counties.

There are two keys empirical challenges with direct comparison of all covered counties with all uncovered counties. First, the counties covered under Section 5 of VRA were not randomly

assigned. The geographic coverage of Section 5 was deliberately designed to target counties with a high degree of racial discrimination. Second, comparing covered and uncovered counties tantamount to comparing the American Deep South with the rest of America – two regions that exhibit systematic differences along economic, social, and cultural dimensions. Therefore, a direct comparison of all covered and uncovered counties is likely to contaminate the estimation either due to selection bias or the presence of unobserved confounding variables, rendering the exercise futile.

We address these issues using a county-border discontinuity design exploiting policy discontinuities at county borders. This empirical strategy uses variation in coverage of Section 5 of the VRA within pairs of counties that share a border, and thus compares households exposed to similar local economic conditions.[9] Figure 2 presents the sub-sample of bordering covered and uncovered counties used in the analysis. Specifically, we compare mortgage outcomes of white and Black households in counties covered under Section 5 of VRA with outcomes of white and Black households in contiguous counties, which were not subject to the Section 6 of VRA, before and after the 2013 US Supreme Court judgement in *Shelby v. Holder*.

Table 2 presents summary statistics of key variables for our sample in 2010, just before the 2013 Shelby ruling. Panel A shows the average characteristics and the difference in these characteristics for the full sample of covered and uncovered counties as shown in Figure 1. Panel B shows the average characteristics and the difference in these characteristics for the sample of bordering covered and uncovered counties as shown in Figure 2. Additionally, panel B examines the differences in average characteristics within county-pairs of bordering uncovered and covered counties. Table 2 provides evidence supporting our empirical design of comparing outcomes in bordering county-pairs as the differences between counties are attenuated when we restrict the data to county-pairs of neighboring covered and uncovered counties.

We combine the sample of contiguous covered and uncovered counties with data on mortgage market applications, denial rate, and originations by race to investigate the impact of the 2013 Shelby decision. We refer to the counties covered by Section 5 of VRA prior to the Shelby ruling as treated counties and the uncovered counties as control counties. Specifically, we estimate a difference-in-difference-in-differences (DDD) specification that compares the mortgage market outcomes for

[9]The empirical methodology of comparing bordering counties to evaluate the effect of a policy change has earlier been used in prior works evaluating the effects of banking deregulation (Huang (2008)), minimum wage (Dube, Lester and Reich (2010)), credit supply (Favara and Imbs (2015)), and enfranchisement (Ang (2019), Aneja and Avenancio-Leon (2020), Aneja and Avenancio-León (2019)) among others.

Black households with white households in treated counties with their counterparts in the control counties. The identification strategy compares outcomes for Black and white households in treated and control counties in all border-county pairs before and after the 2013 ruling.

The underlying assumption in employing a county-pair DDD strategy rather than a standard DDD strategy is that Black and white households are more similar to Black and white households, respectively, residing in a contiguous county than to a household residing in a randomly chosen county. Also, by using only variation within pairs of bordering counties, this strategy controls for time-varying differences across county-pairs and race, such as differences in local economic or credit market conditions by race. The role of the outcome differences among Black and white households in control group is to provide a counterfactual of what would have happened to differences among Black and white households if the US Supreme Court would not have removed the pre-existing protections under Section 5. Accordingly, the key identifying assumption is that outcomes for Black and white households in treatment and control groups would have evolved according to parallel trends in the absence of Shelby ruling. Therefore, we estimate the following dynamic DDD specification:

$$y_{r,c(c\in p),t} = \sum_{k=2008, k\neq 2013}^{2019} \beta_k \cdot Black_r \cdot Treat_c \cdot 1(t=k) + \alpha_{r,c} + \alpha_{c,t} + \alpha_{p(c\in p),r,t} + \varepsilon_{r,c,t} \quad (1)$$

where, $y_{r,c,t}$ denotes the variable of interest aggregated at the county (c), race (r) and time (t) level. Each county is a part of a county-pair (p), which comprises a cluster of bordering counties. The different key dependent variables employed in this paper include - natural logarithm of number and amount of mortgage originations, the natural logarithm of number and amount of mortgage applications, and the denial rate. The coefficients of interest in equation 1 is the sequence of estimates $\{\beta_k\}$ associated with the triple interaction term. $Black_r$ is a binary variable taking a value of one for Black applicants and zero for white applicants. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise for the sample of bordering counties identified in Figure 2. $1(t = k)$ is a time indicator, with 2013 being the omitted year. The specification includes $\alpha_{r.c}$ control for non-time varying characteristics that are specific to a race living in a county and allows the estimation to exploit time-series variation due to the 2013 Shelby ruling. Importantly, county-race fixed effects ($\alpha_{r,c}$) non-parametrically account for the

1965 county-race specific characteristics that can explain selection into the treatment group. $\alpha_{c,t}$ control for all time-varying characteristics that might impact a county and allows the identification from variation in race. Finally, the specification includes county-pair × race × year ($\alpha_{p(c\in p),r,t}$) fixed effects. It accounts for all time-varying race-specific shocks in the county-pairs and allow the estimation in $\{\beta_k\}$ to come from variation in treated and control counties for the same race within the same county-pair. The standard errors are estimated by clustering at the county level and regressions are weighted by 2010 county population.[10]

Another underlying assumption of this analysis is that the 2013 Shelby ruling negatively affected the political voice of Black Americans in the treated counties relative to control counties, and, consequently, there are substantial differences in treatment intensity of Black households within border-county pairs. Evidence in favor of this assumption comes from the narrative analysis discussed in section 2.3.1 and estimating the voter-turnout in Presidential elections using the following dynamic specification:

$$y_{c(c\in p),t} = \beta \cdot \text{High Black}_c \cdot Treat_c \cdot Post_t + \alpha_c + \sum_k \gamma_k \cdot Treat_c \cdot 1(t = k) + \alpha_{p(c\in p),t} + \varepsilon_{rct} \tag{2}$$

where, $y_{c(c\in p),t}$ denotes the primary outcome variable in county (c) during year (t). Specifically, we use the voter turnout in Presidential elections as our primary outcome variable to demonstrate the effect of the Shelby ruling on the mobilization of voters as in Ang (2019), Aneja and Avenancio-Leon (2020) and Aneja and Avenancio-León (2019). $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise for the sample of bordering counties identified in Figure 2. $Post_t$ takes a value of 1 for years after 2013. $High\ Black_c$ takes a value of one if the 2010 share of Black population in county c is greater than the median population of our sample counties in 2010. The intuition for examining the effect by the county's share of Black population is that the Shelby ruling adversely hit the counties with a greater Black population. α_c, and $\alpha_{p(c\in p),t}$ denote county fixed effects, and county-pair × year fixed effects, respectively. Additionally, we control for time-varying shocks to treated counties relative to the control counties estimating β using variation in the share of Black population among treated counties.

[10]Our results are robust to not including weights in our regression as shown in appendix Table D.1.

We further supplement our baseline analysis with a geographic regression discontinuity (RD) wherein we estimate the effect of Shelby ruling on mortgage market applications, originations, and denial rates measured at the census tract level in a sample of bordering counties. Specifically, we estimate the following regression specification:

$$y_{r,v(v\in c(p)),t} = \beta \cdot Black_r \cdot Treat_c \cdot Post_t + f(location_v) + \alpha_{r,v} + \alpha_{v,t} + \alpha_{c(p)(v\in c(p)),r,t} + \varepsilon_{r,v,t} \tag{3}$$

where, $y_{r,v(v\in c(p)),t}$ denotes the variable of interest aggregated at the census tract (v) in county (c) lying within a contagious county-pair (p)), race (r) and time (t) level. As before, the key-dependent variables include - natural logarithm of number and amount of mortgage originations, the natural logarithm of number and amount of mortgage applications, and denial rate. The coefficient of interest in equation 3 is the interaction term of $Black_r$, $Treat_c$ and $Post_t$. $Black_r$ is a binary variable taking a value of one for Black Americans and zero for white Americans. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise. All counties included in the sample are identified in Figure 2. $Post_t$ is a binary variable taking a value of one for years after the 2013 Shelby ruling and zero otherwise. The specification includes race $\times$ census-tract ($\alpha_{r,v}$), and county-pair $\times$ race $\times$ year ($\alpha_{c(p)(v\in c(p)),r,t}$) fixed effects. $f(location_v)$ is a local linear polynomial in two dimensions, latitude and longitude, for every census tract estimated separately on each side of the border.[11]

The key innovation of this RD design is to include census-tract $\times$ year ($\alpha_{v,t}$) fixed effects addressing three concerns. First, it allows us to relax the assumption that the economic shocks in one county must evolve over space such that all areas within a county are affected similarly. Second, the census-tract $\times$ year fixed effects non-parametrically control for the within-county population distribution relative to the border addressing the concern – that the large counties on each side of the border might not be similar enough.[12] Third, the census-tract $\times$ year fixed effects allow us to control for heterogeneous policy spillovers within a county under the assumption that spillovers are uniform within a census tract. This is important to ensure that the null results in denial rates are not driven by spillovers. Another advantage of the geographic RD design is the inclusion of

[11] Our results are robust to omitting the two dimensional local linear polynomial ($f(location_v)$) as shown in appendix Table D.2.
[12] Dieterle, Bartalotti and Brummet (2020) suggest controlling for the moments of the within-county population distribution relative to the border can effectively approximate the RD coefficient estimated using more granular but infeasible data along the border.

$f(location_v)$. Dell (2010) and Michalopoulos and Papaioannou (2016) argue that adding this two-dimensional local linear polynomial helps the regression absorb spatial trends that might be superfluously driving the results. Hence, the RD approach augmented with the census-tract × year fixed effects allows for more precise comparison of the average difference in outcomes at the border.

5 Results

This section begins by establishing the relevance of the dilution VRA as a potential shock to the enfranchisement of Black Americans. Following this, we empirically investigate the causal link between disenfranchisement of Black Americans and racial differences in mortgage outcome.

5.1 Voter Turnout and the Repeal of VRA

This section establishes the relevance of the dilution of VRA as a potential shock to the political voice of Black Americans. This test builds on the narrative analysis in section 2.3.1 and is vital to verify the underlying assumption that the repeal of Section 5 of VRA led to *de-facto* disenfranchisement of Black Americans by reducing their electoral participation.

We compare the voter turnout in Presidential elections for our sample of bordering treated and control counties with a varying share of Black population by estimating equation 2. Table 3 reports these results. The table shows that the voter turnout declines after the dilution of VRA in treated counties with high share of Black population. Specifically, treated counties with high share of Black population experienced a decline of 1.4-2.1 percentage points in voter turnout relative to high Black control counties. This effect is statistically significant and represents a 5% decline over the sample average. The magnitude of the estimate is large compared to the average margin of victory for Presidential elections, measured using the national popular vote, is 2.97%. The documented decline in voter turnout following the Shelby ruling is consistent with Ang (2019) and suggests that the Shelby ruling reduced the political voice of Black Americans.

Figure 3 documents similar results using a dynamic specification for voter turnout around the Shelby ruling. There are two key takeaways from Figure 3. First, pre-trends in voter turnout across treated and control counties with high share of Black population are limited. Second, there is a sharp decline in voter turnout among treated counties with high share of Black population following

the 2013 Shelby ruling. Therefore, Figure 3 provides visual support of a first-stage political effect of Shelby ruling, as well as support for the parallel trends assumption.

We supplement this analysis using data on Google searches for the term “Voting Rights Act" around the Shelby ruling, reported in appendix Figure C.1. We find the searches are significantly higher by 11 percentage points in the treated counties compared to the control counties. This provides additional evidence on the relevance of dilution of VRA as a shock to the treated counties. These results, following the seminal work of Tingsten (1937) suggests an increase in political inequality and consequently erosion of political voice of Black Americans.

5.2 Baseline Results

This section explores the impact of increasing the cost of voting on mortgage market outcomes. We use the natural experiment of the 2013 Shelby ruling as a negative shock to the voting ability of Black Americans, relative to white Americans, to identify the effects on mortgage market outcomes.

5.2.1 Evolution of Mortgages for Black and white Americans around Shelby Ruling

We begin our analysis by examining the differential effect of Shelby ruling on Black and white Americans in treated counties relative to the control counties. Figure 4 plots the weighted average of the county-level aggregate amount of mortgage originations (Figure 4a) and applications (Figure 4b) of Black and white Americans in treated counties relative to the control counties for each year from 2008 through 2019.[13] The mortgage origination index (Treat−Control) is computed by estimating the weighted average of the natural logarithm of the amount of mortgage originations and applications for Black and white Americans for treated and control counties and taking the difference between the two. The mortgage origination index for both Black and white Americans is standardized to a value of 0 in 2013. The solid red line reports the mortgage origination index (Treat−Control) for Black borrowers, and the dash blue line reports the mortgage origination index (Treat−Control) for white borrowers.

The results presented in Figure 4 provide prima-facie evidence indicating that the mortgage origination declined for Black Americans in treated counties relative to control counties post 2013 Shelby ruling. However, the mortgage origination for white Americans remained largely similar in

[13]The sample of treated and control counties is shown in Figure 2. Each observation is weighted by the 2010 county population, and the county-race-year level aggregate data on mortgage origination and applications comes from the HMDA dataset from 2008 through 2019.

both the treated and the control counties. Meanwhile, we do not find any difference in the mortgage originations across races in the pre-Shelby period. The pattern thereby suggests a structural change for Black borrowers while leaving the white borrowers largely unaffected.

5.2.2 Results from the estimation of Border Discontinuity Design

This section presents results from the estimation of our baseline specification. Figure 5 reports the dynamic evolution of $\{\beta_k\}$ around the Shelby ruling based on the estimation of equation 1 using a sample of bordering counties. Figure 5a shows that there is no difference in mortgage originations between Black and white Americans across treated and control counties before the repeal of VRA in 2013. However, after the repeal, we see a sharp decline in mortgage origination for Black borrowers in the treated counties compared to Black borrowers in adjacent control counties. Next, in Figure 5b, we focus on mortgage applications and find that there does not exist a difference in applications by race before the dilution of VRA, but a sharp decline in the applications of Black Americans in the treated counties after the Shelby ruling. In Figure 5c we focus on the denial rate and find no difference in the denial rate between Black and white borrowers either before or after the dilution of VRA.

The results together indicate that the reduction in mortgage origination for Black borrowers is driven by a decrease in applications, suggesting that Black borrowers' demand for mortgages declined after the Shelby ruling. Meanwhile, the lack of temporal dynamics in relative denial rate by race around the Shelby ruling suggests little changes in the credit supply to Black borrowers.

5.2.3 Results from the estimation of Geographic Regression Discontinuity

Next, we present the analysis at the census tract level by estimating the RD specification as in equation 3 which includes census-tract $\times$ year fixed effects, census-tract $\times$ race fixed effects, and county-pair $\times$ race $\times$ year fixed effects. Table 4 reports the estimate of β for our key dependent variables aggregated at the census tract-race-year level. Columns 1 and 2 use the natural logarithm of total amount and number of mortgage origination for new home purchases as the dependent variable, respectively. The estimate of β associated with the triple interaction term is negative and statistically significant. We find that the mortgage origination amount (number) for Black Americans in treated counties declined by 14.7% (8.3%) after the Shelby ruling. Columns 3 and 4 report results using the natural logarithm of total amount and number of mortgage applications for

new home purchases as the dependent variable, respectively. As before, the estimate of the triple interaction term is negative and statistically significant at 1% level. The results indicate that the mortgage application amount (number) for Black Americans in treated counties declined by 12.5% (7.0%) after the Shelby ruling. Finally, column 5 reports results using denial rate as the dependent variable. We find no effect on the denial rate around the Shelby ruling. The coefficient reported in column 5 is economically small, precisely estimated, and statistically insignificant. The results taken together resonate with the results presented in section 5.2.2 and indicate that lower mortgage origination for Black Americans in treated counties is almost entirely driven by the reduction in mortgage applications by Black borrowers and not by an increase in mortgage denial rate to Black Americans.

5.3 Robustness Tests

This section explores several dimensions of the data and institutional details to probe the robustness of the result. Specifically, this section discusses the ability of aggregate macroeconomic shocks correlated with the timing of the Shelby ruling to confound our results, an alternative identification strategy employing a regression discontinuity design and differences-in-discontinuity design exploiting the treatment status based on 1964 Presidential election voter turnout threshold, a placebo analysis to verify the salience of treatment status and rule out spuriousness, effect on another minority – non-Black and non-white Hispanics, and using a different outcome variable – home purchases.

5.3.1 Macroeconomic Confounders

A key concern with our estimation strategy is that our period of analysis includes the recovery years of the 2008 global financial crisis. This period is characterized by multiple regulatory changes, changes in the interest rate regime, and changes in the supply of bank credit. Prior literature has documented households with different income and wealth levels have different sensitivity to macroeconomic shocks (see Kaplan and Violante (2018) for survey of this literature). Therefore, these shocks can have asymmetric effects across Black and white households given the wealth differences across the two.[14] As a result, changes in macroeconomic conditions can hinder the

[14]We direct readers to Kuhn, Schularick and Steins (2020) for the most recent documentation of persistent wealth and income inequality across Black and white households over the last 70 years from 1949 until 2016. Bhutta et al. (2020) extend this analysis to more recent years and document similar wealth inequality across Black and white households for 2019.

estimation of the effect of Shelby ruling on mortgage market outcomes for Black households.

The inclusion of census-tract × year fixed effect controls for all local and global policy changes in a census tract. Moreover, the inclusion of county-pair × race × year fixed effects in our estimation strategy is likely to control for the asymmetric effect of aggregate shocks across Black and white households within a narrowly defined cluster of counties. The effectiveness of county-pair × race × year fixed effects in mitigating the asymmetric effects of aggregate shocks relies on the assumption that aggregate shocks do not have an asymmetric effect by race and the treatment status. We test this assumption by examining the sensitivity of Black households in treated counties relative to control counties in the pre-Shelby period from 2008 until 2012. Specifically, we estimate the following regression specification where ΔX_t denotes aggregate shocks:

$$y_{r,v(v\in c(p)),t} = \beta \cdot Black_r \cdot Treat_c \cdot \Delta X_t + f(location_v) + \alpha_{r,v} + \alpha_{v,t} + \alpha_{c(p)(v\in c(p)),r,t} + \varepsilon_{r,v,t} \tag{4}$$

Table 5 reports twenty pairs of estimate (β) and standard errors from the estimation of equation 4 with four dependent variables and five macroeconomic shocks. We use the natural logarithm of the amount and number of mortgage applications and originations as our key dependent variables. Macroeconomic shocks (ΔX_t) include changes in the 30-year mortgage rate, 15-year mortgage rate, bank credit, term spread, and GDP growth rate. All estimates associated with the triple interaction term in equation 4 are statistically insignificant and economically small. These results indicate that the Black households in treated and control counties are likely to have similar sensitivity to aggregate shocks implying that our structure of fixed effects may be sufficient to control for the asymmetric effect of aggregate shocks by race.

The results in Table 5 suggest lack of asymmetric effect of aggregate shocks by race and treatment status. However, it is difficult to completely rule out the concern that omitted macroeconomic factors correlated with the timing of Shelby ruling drive our results in an observational setting. Therefore, we report additional results by augmenting specification 3 to include the triple interaction term of Black, treatment status of the county and macroeconomic shocks in addition to the triple interaction term of Black, treatment status of the county and post. Specifically, we

estimate the following specification:

$$y_{r,v(v\in c(p)),t} = \beta \cdot Black_r \cdot Treat_c \cdot Post_t + \sum_k \gamma_k \cdot Black_r \cdot Treat_c \cdot \Delta X_t^k + f(location_v) + \alpha_{r,v} + \alpha_{v,t} + \alpha_{c(p)(v\in c(p)),r,t} + \varepsilon_{r,v,t} \quad (5)$$

where, ΔX_t^k denotes the vector of macroeconomic shocks including changes in 30-year mortgage rate, 15-year mortgage rate, bank credit, term spread, and GDP growth rate. Table 6 present the estimate β of the triple interaction term – $Black_r \times Treat_c \times Post_t$ – from the estimation of 5. The estimate of β is negative and statistically significant from column 1 through 4. Moreover, the estimates are economically and statistically similar to the estimates reported in Table 4 indicating that our baseline result is unlikely to be driven by other macroeconomic variables.

The results taken together serve two purpose. First, macroeconomic shocks do not have an asymmetric effect on the mortgage market outcomes by race across the treatment and the control counties in the pre-Shelby period given our fixed effects structure. Second, controlling for major macroeconomic shocks such as changes in interest rates, bank credit and GDP growth rate does not effect the economic stability of our baseline estimates. Hence, it is very unlikely that our baseline effect is driven by contemporaneous aggregate shocks.

5.3.2 Alternate Identification Strategy: Regression Discontinuity Using 1964 Voter Turnout

This section supplements our baseline empirical strategy of comparing bordering counties with an alternate specification using a regression discontinuity (RD) design. A state or a county was covered under Section 5 of VRA if it used a test or device to restrict voting, such as a literacy test, and had a voter turnout of less than 50% in the 1964 Presidential elections. We use the counties within a narrow margin of 5% around the treatment threshold of 50% voter turnout to conduct an RD estimation. Our RD design includes counties treated in 1965 with the 1964 voter turnout between 45% and 50% as a sample of treated counties, and the sample of counties with 1964 voter turnout between 51% and 55%, on which Section 5 of VRA was never applied, as a sample of control counties.[15] Appendix Figure D.1 shows the treated and the control counties used in the RD design. The identifying assumption of this test is that the counties within a small interval around

[15]Data on county-level 1964 Presidential election voter turnout comes from Ang (2019).

the threshold are randomly distributed around the 50% voter turnout threshold. However, counties on one side of the threshold were covered under Section 5 of VRA, and others were not. This allows us to estimate the local treatment effect devoid of selection bias.

Table 7 reports the results using the RD design around the 50% voter turnout threshold using the sample identified in Figure D.1. Panel A reports the simple RD analysis while controlling for a function of the running variable of voter turnout and its interaction with the treatment. The dependent variable in columns 1 and 2 are county-level mortgage origination growth in amount and number, respectively, for Black Americans relative to white Americans from 2013 to 2016. Similarly, columns 3 and 4 use county-level mortgage application growth in amount and number for Black Americans relative to white Americans from 2013 to 2016 as dependent variables. Column 5 uses county-level changes in denial rates for Black Americans relative to white Americans from 2013 to 2016. The estimates for origination and applications are negative and statistically significant, whereas the estimate for denial rate is small and statistically insignificant. The point estimates are larger in magnitude than the baseline estimates but are statistically similar to the baseline estimates. Figure 6 presents a graphical depiction of results reported in panel A of Table 7. The RD plots show a discontinuity in mortgage applications and originations but no discontinuity for denial rates around the voter turnout threshold.

Furthermore, panel B of Table 7 presents the results from the differences-in-discontinuity design, which examines the coefficient of the interaction term of $Black$, $Treat$ and $Post$ using the sample of counties around the 5% interval of the voter turnout threshold shown in Figure D.1. The results reported in panel B are similar to our baseline estimates. They show that applications and originations decline for Black Americans following the Shelby ruling while the denial rates are unaffected.

Overall, this alternative identification strategy using a regression discontinuity design and a differences-in-discontinuity design lends further credence to our baseline results. Furthermore, it indicates that the results are unlikely to be an artifact of the border discontinuity design, the specific sample employed in baseline estimation, or selection bias.

5.3.3 Placebo Analysis

We conduct a placebo test wherein we randomize the treatment variable keeping the timing of the Shelby ruling fixed. This test addresses two concerns. First, it addresses whether the treatment status is meaningful by checking if the results disappear if the treatment is selected randomly in a non-meaningful way. Second, it validates the non-spuriousness of the results. A placebo treatment variable is generated from a binomial distribution for each census tract within a county-pair. The probability of treatment assignment is equal to the empirical probability of treatment in the sample. We estimate equation 3 using the new placebo treatment. We repeat this process of random treatment assignment 1,000 times and estimate the baseline specification for each randomly assigned treatment status. Appendix Figure D.2 plots the kernel density of the estimated coefficient on $Black_r \cdot Placebo\text{-}Treat_c \cdot Post_t$ obtained from 1,000 Monte-Carlo simulations where we randomize the treatment status of census tracts within county-pairs. The distribution of the coefficient of the triple interaction term in the placebo analysis is centered around zero, and the average effect is statistically indistinguishable for zero. Moreover, the exercise cannot generate an effect of a size equivalent to the baseline estimate. The results from the placebo analysis indicate that the treatment status is meaningful, and our results are unlikely to be spurious.

5.3.4 Effect of Shelby ruling on other minorities: Hispanics

This section expands the baseline estimation to evaluate the effect of Shelby ruling on other minorities, specifically non-Black and non-white Hispanics.[16] We expand our sample to include mortgage market outcomes of Hispanics in addition to Blacks and whites. Appendix Table D.3 reports the results from baseline specification 3 augmented to include the triple interaction term of Hispanic, treatment status of the county, and post-Shelby ruling. The coefficients associated with this triple interaction term are negative for mortgage originations and applications. Specifically, the estimates indicate a decline in mortgage origination (application) amount by 9.9% (5.3%) for Hispanics. Although the negative estimate associated with mortgage origination amount is statistically significant, the estimate related to application amount is not statistically significant. The magnitude of the coefficient associated with the triple interaction term for Hispanics is smaller than the magnitude for Black borrowers. However, we cannot reject the null that these estimates for

[16]We refer to the group of non-Black and non-white Hispanics simply as Hispanics, hereafter.

Hispanics are statistically similar to the estimates for Black borrowers. This result indicates that the Shelby ruling may adversely affect the mortgage market outcomes of other minorities.

5.3.5 Effect on Home Purchase

This section complements the baseline analysis by employing an alternative measure to identify the effect of Shelby ruling on Black Americans. Specifically, this section examines the effect on home purchases. This data comes from the Zillow database.[17] We predict the race of each purchaser based on the name and location of the purchaser. We aggregate the home purchase data at the county-race-year level and analyze the effect of Shelby ruling on home purchase of Black Americans in treated counties following specification 1. Figure 7 reports the dynamic estimates. There are two key takeaways from Figure 7. First, pre-trends in home purchases across Black and white households in treated and control counties are limited. Second, there is a sharp decline of 15% in the number of home purchases by Black Americans in treated counties following the 2013 Shelby ruling. This result indicates that the decline in mortgage origination and applications translates to lower home purchases among Black Americans, further exacerbating the pre-existing racial home-ownership gap.

6 Mechanism

Four potential channels can drive our results. First, the dilution of voting rights could lead to a reduction in income and consequently a reduction in the ability to obtain mortgages.[18] Second disenfranchisement could make the future prospect uncertain for the disenfranchised group leading them to increase the zone of inaction (Bloom (2009), Bloom (2014)). Consequently home applications could go down. Third, distinct from the income channel, there could be an increased fear among the minorities that can manifest as fear of rejection, leading to a reduction in mortgage applications. The increase in fear of rejection could stem from an increase in future economic and personal uncertainty or greater expected discrimination following the Shelby ruling. Fourth, there could be migration of Black Americans from areas that experienced a reduction in voting rights which can mechanically generate a decrease in mortgage applications by Black borrowers. This

[17] We restrict the analysis using Zillow data to span from 2009 until 2018, as the Zillow data became stable only after 2009 and has a lot of missing observations after 2018.

[18] Aneja and Avenancio-León (2019) and Aneja and Avenancio-Leon (2020) document that the income of Black Americans is sensitive to the dilution and implementation of the Voting Rights Act, respectively.

section highlights that the decrease in mortgage origination and applications is primarily driven by the third channel – increased fear of rejection following the Shelby ruling.

6.1 Flight of Black Mortgage Applications to Black Lenders

This section documents the flight of mortgage demand, applications, by Black borrowers to Black lenders in treated counties following the Shelby ruling. The objective of this test is to disentangle the mechanism of increased fear of rejection, either due to greater anticipated discrimination or future uncertainty, from the income channel by exploiting the role of the perceived racial affiliation of a bank. The intuition of this test is that if decline in income, following Shelby ruling, is the primary channel driving our results then reduction in loan applications by the Black Americans should be similar across all banks. However, if fear of rejection is the potential channel then one would expect a flight of mortgage applications from the Black borrowers to the Black banks. This argument follows the literature that highlights the role of group affiliation as insurance in mitigating the fear of anticipated discrimination and future uncertainty by making racial identity salient, following group-specific shocks, for economic decision making as in Akerlof and Kranton (2000), Akerlof and Kranton (2005), and Shayo (2020).[19] An additional advantage of this test is that it allows us to rule out the effect of observed and unobserved aggregate macroeconomic shocks as long as these shocks affect Black and non-Black lenders uniformly across the treated and control counties.

6.1.1 Definition of Black Lenders

We define Black lenders using lending data of lenders operating in the sample counties shown in Figure 2. This is done because Black lenders defined at the national level could differ from lenders to which Black borrowers in the sample counties feel comfortable and close. We then aggregate HMDA data for the pre-Shelby period, i.e. 2008 to 2012, at the lender level and sort the lenders by the share of Black borrowers in their mortgage lending portfolio. We define lenders above the 90th

[19] Baradaran (2017) describes Black banks as quasi-crusaders filling the void created by Jim Crow and segregation to offer services to Black individuals amidst exclusion. Black banks are often founded by Black Americans in response to economic segregation with the aim to provide financial inclusion to Black communities. Baradaran (2017) notes that some of the earliest Black banks were started by former slaves, e.g. the True Reformers Savings Bank founded in 1888 in Richmond Virginia, as a direct response to white-owned banks' discriminatory practices. Black banks are often headed and run by Black entrepreneurs and supported by Black community leaders. The recent founding of the Greenwood Bank, a Black bank, by rapper and activist Killer Mike is a case in point. The importance of Black community banks, and the counterfactual in their absence, is reminiscent of the community banker George Bailey, a character in the fictional story - "It's A Wonderful Life." The importance of community affiliated banks in mitigating group specific discrimination is not specific to Black Americans. The modern day Bank of America was founded as the Bank of Italy (United States) in 1904 as retaliation to the exclusion of Italians by the banking system of that time.

percentile as Black friendly lenders.[20] We can identify 569 Black lenders using this methodology. These banks are usually small banks and primarily cater to a small geographic area. Appendix table D.4 provides a description of five representative banks that are defined as Black banks using our methodology.

6.1.2 Results

We identify the effect of change in demand by examining the change in mortgage applications from Black Americans to Black and non-Black banks following the Shelby ruling. Specifically, we estimate the following regression specification using mortgage applications data aggregated at the census tract (v), race (r), lender type (l), and time (t) level:

$$y_{r,l,v(v\in c(p)),t} = \beta \cdot Black_r \cdot Black_l \cdot Treat_c \cdot Post_t + f(location_v) + \alpha_{v,r,l} + +\alpha_{v,l,t} + \alpha_{v,r,t} + \alpha_{c(p)(v\in c(p)),r,l,t} + \varepsilon_{r,l,v,t} \quad (6)$$

where, $y_{r,l,v(v\in c(p)),t}$ denotes the the natural logarithm of total amount and number of mortgage applications aggregated at the census tract (v) in county (c) lying within a contagious county-pair (p)), race (r), lender type (l) and time (t) level. Bank type (l) is either a Black lender or a non-Black lender. $Black_l$ is a binary variable taking a value of one for Black lenders defined in section 6.1.1. The coefficient of interest is β associated with the quadruple interaction term. This specification allows us to control for a richer set of fixed effects including census-tract × race × year and county-pair × race × lender-type × year fixed effects in addition to census-tract × lender-type × race and census-tract × lender-type × year fixed effects. Specifically, census-tract × lender-type × race allows us to control for agglomeration of lenders types in certain areas and their pre-existing importance in those areas.

Table 8 reports the results documenting the flight of application by Black borrowers to Black banks. Columns 1 and 2 report results from the estimation of baseline specification 3 restricted to the sample of non-Black banks. These results mirror the baseline results documenting a decline in mortgage applications for Black borrowers in treated counties following the Shelby ruling. Columns 3 and 4 report results from the estimation of baseline specification 3 restricted to the sample of

[20] Ross et al. (2008) show that lenders with substantial numbers of applications from African-Americans treat African-Americans more favorably than lenders with predominantly white application pools.

Black banks. The effect of Shelby ruling on mortgage applications by Black borrowers for the sample of Black lenders stands in stark contrast to the baseline results and the results documented for non-Black lenders. Specifically, Black borrowers' mortgage application amount (number) to Black lenders increased by 11.9% (15.0%). Finally, columns 5 and 6 estimate equation 6 for the entire sample with the richer set of fixed effects. The estimate associated with the quadruple interaction term is positive and statistically significant, documenting a relative increase in mortgage applications by Black borrowers to Black lenders in treated counties relative to control counties following the Shelby ruling. This indicates a flight of Black demand for home mortgages to Black lenders following the Shelby ruling.

There are three key takeaways from the analysis presented in table 8. First, the flight of Black demand to Black lenders after the Shelby ruling indicates an increase in racial homophily. Second, the asymmetric effect of applications by lender type suggests that our baseline results are unlikely to be entirely driven by reduced income and increased fear of being rejected by the non-Black lenders after the Shelby ruling could be an important driver. Third, the inclusion of census-tract $\times$ race $\times$ year allows us to better control for the asymmetric effect of observed and unobserved macroeconomic shocks across Black and white households in treated and control counties as discussed in section 5.3.1. The underlying assumption of this inference is that Black and non-Black banks in treated and control counties are likely to respond similarly to macroeconomic shocks.

6.2 Mode of Home Purchase: Cash vs. Mortgage

This section investigates the substitution from mortgages towards cash usage for home purchases by the Black households. As before, the objective of this test is to disentangle the income and uncertainty channels from the fear of rejection channel. The intuition of this test is that if our baseline results are primarily driven by the reduction in income of Black Americans following the Shelby ruling, we would expect a decline in home purchases both through cash and mortgages. Moreover, an increase in anticipated future economic uncertainty will increase the liquidity and precautionary demand for money. As a result, we would expect a decline in home purchases through cash if the results are primarily driven by an increase in anticipated future economic uncertainty. However, if fear of rejection due to greater anticipated discrimination is the primary channel, the reduction in home purchases will manifest only through mortgages but would entail an increase in

cash usage for home purchases.

We analyze the usage of cash and mortgages for home purchases by merging the Zillow dataset with the HMDA dataset and identifying the primary mode of payment – cash or mortgage – for each housing transaction. We estimate the dynamic specification 1 for home purchases financed through mortgage and paid using cash separately and report the results in Figure 8. Figure 8 shows that before the Shelby ruling, there was no significant difference in home purchases through mortgages or cash by Black Americans in treated and control counties. However, following the Shelby ruling, we observe a divergence in the tendency of Black Americans to pay for their home purchases through mortgages and cash. Specifically, Figure 8 documents a decline in home purchases financed through mortgages and an increase in home purchases paid for in cash by Black Americans in treated counties relative to the control counties, following the Shelby ruling. Hence, this result suggests a substitution in the mode of home purchases by Black Americans in treated counties following the Shelby ruling, i.e., Black Americans reduced their usage of mortgages to finance their home purchases and shifted to using cash. Specifically, this result sheds light on the change in the behavior of the marginal Black household after the Shelby ruling, who was initially indifferent between usage of mortgage or cash to pay for their home purchase. This change in the choice of payment mode of the marginal Black household indicates that the reduction in mortgage applications is more consistent with the fear of rejection channel.

6.3 Effect Over Income Distribution

Next, we investigate the size of our baseline effect over the income distribution of borrowers. Specifically, we examine whether our baseline result mainly comes from lower-income households. The intuition of this test is that if the results are just a manifestation of reduced income, then the effect would be more pronounced in the lower end of the income distribution as the marginal effect of reduction in income is likely to be higher for low-income households. Moreover, since uncertainty shocks amplify in presence of greater financial frictions, lower-income Black households are likely to have a greater zone of inaction relative to higher-income Black households if uncertainty is the primary channel (Alfaro, Bloom and Lin (2018)).

We conduct this exercise by grouping the population in different income buckets and estimating the baseline specification for each bucket in the income distributions. Figure 9 reports the

estimates of the triple interaction term in equation 3 for each income bucket. We note that our baseline result of the reduction in mortgage applications from Black Americans in treated counties, following the Shelby ruling, holds across all income buckets, i.e., the estimate of the triple interaction term is negative across all buckets. Moreover, the estimate is stable across the income distribution, i.e., they are economically and statistically equivalent to each other and also to our baseline estimate reported in column 3 of Table 4. This result provides additional support to our thesis that the impact of the Shelby ruling on Black mortgage demand is not just a downstream effect of reduced income or heightened uncertainty.

6.4 Migration of Black Americans

Another channel that could mechanically generate our baseline results is the emigration of Black households from treated counties following the Shelby ruling. Black Americans could circumvent the adverse effects of disenfranchisement by moving to other areas within the US where their voting rights are relatively better protected.[21] Therefore, emigration of disenfranchised groups would lower the housing demand among the disenfranchised group, consequently reducing mortgage applications. This section examines the importance of the migration channel in explaining our baseline results.

Using the IRS data on aggregate inflow and outflow of people to examine the effect of Shelby ruling on the migration of Black people in treated counties relative to people in the control counties. We define a county as a high Black county if its 2010 share of Black population was greater than the median value of the share of Black population in all sample counties in 2010. The intuition for using Black population share to classify counties is that the counties with a greater percentage of Black population are likely to be most adversely hit by the Shelby ruling. Table 9 reports these results using different measures of migration. Columns 1, 2, 3. and 4 use the natural logarithm of county outflows, the natural logarithm of county inflows, the natural logarithm of county outflows minus the natural logarithm of county outflows, and the difference of county outflows and inflows divided by 2010 county population, respectively. Across all migration measures, the coefficient of

[21]The movement of 6 million African Americans out of the rural Southern United States to the urban Northeast, Midwest, and West between 1916 and 1970, also known as the Great Migration, in search of better economic opportunities and freedom from oppression is a case in point.

the triple interaction term is statistically and economically insignificant. This result suggests that migration is likely to play an inappreciable role in explaining our results.

A shortcoming of the analysis presented in Table 9 is that we cannot precisely identify the migration of Black individuals in the IRS data. Therefore, the results of Table 9 can only be inferred as suggestive. Thus, we further refine our analysis by constructing ZIP Code Tabulation Area (ZCTA) level population by race using the 2013 American Community Survey (ACS) 5-year estimates and the 2018 5-year estimates. This exercise yields pre- and post-Shelby share of population by race over essentially the same period as the core analysis in this paper. Table 10 reports results using the ACS data. The estimate of the interaction term of $Treat$ and $Post$ using the share of white and Black population as the dependent variable in columns 1 and 2, respectively, indicate statistically and economically insignificant change in the share of population by race following the Shelby ruling. Column 3 estimates the coefficient of the triple interaction term of $Black$, $Treat$, and $Post$ with a richer set of fixed effects and finds little change in the relative share of Black population in treated counties compared to the control counties following the Shelby ruling. Overall, these results reinforce the findings of Table 9 and indicate that emigration of Black households from treated counties is unlikely to explain our results.

6.5 How Real is the Fear?

The mechanism of the results that we observe appears to be driven by fear of rejection which is likely a manifestation of the plight of Black Americans in the treated counties after the Shelby ruling. However, is this fear real? Has the plight of Black Americans worsened post the dilution of VRA?

In order to shed light, this section examines the change in violence and attitudes towards Black Americans following the 2013 Shelby ruling. The state provides protection against discrimination and all forms of violence. The 2013 Shelby ruling decreases the political voice of Black Americans and reduces the incentives of the state to provide such protections to them. Hence, attenuating the barriers to explicit animosity and violence against Black Americans by racist individuals and groups. This increased risk of violence, resulting in loss of life or destruction of property, can reduce the investment horizon thereby reducing housing demand among Black Americans.[22]

[22]Historically, the Black community has faced destruction of their property by white supremacist groups and individuals with little ex-ante protection or ex-post justice by the state. The 1912 Tulsa race riots is a case in point where white rioters rampaged through

Table 11 documents the change in the extent of hate crimes against Black Americans following the Shelby ruling using FBIs hate crime data from 2010 till 2019. The estimates in Table 11 shows that the number of incidents of violent hate crimes against African Americans increased by 16-29% in treated areas relative to control areas following the Shelby ruling. We provide additional evidence using the ANES data on reported warmth for Black Americans among white males in America around Presidential elections. Appendix Table D.5 reports these results showing that the warmth towards Black Americans declined by 4.5 pp in treated areas relative to control areas following the Shelby ruling. The two results together indicate that the usage of violence and animosity against Black Americans by non-state actors increased following the Shelby ruling.

Lastly, we document the Shelby ruling's effect on the trust of Black Americans in the ability of the state to provide adequate protection. Using the Cooperative Congressional Election Study (CCES) Survey data from 2008 until 2018, we show that the approval of state agents – State Legislatures, Congress, President – and the Supreme Court declines among Black individuals in treated counties after the Shelby ruling (see, Table 12).[23] This result suggests that the dilution of political voice results in a decline in trust in the state's ability.

6.6 The Role of Racial Animus

The results so far highlight the importance of increased fear of rejection following the Shelby ruling. Specifically, we argue that the increase in fear of rejection comes from the increased fear of discrimination among Black Americans after the Shelby ruling. This section provides some evidence indicating the relevance of anticipated discrimination in explaining the decline in mortgage originations and applications.

Our measure of anti-Black racial animus comes from Stephens-Davidowitz (2013). This measure is calculated at the level of the designated media market and measures the percentage of an area's Google searches that contain racially charged words. We augment our baseline specification 3 to include a quadruple interaction term of Black, Treat, Post, and High racial animus. The

a Black neighborhood in the Greenwood district of Tulsa in Oklahoma, also referred to as the *Black Wall Street*, killing men and destroying property on the ground and from private aircraft. There was little to no state support or protection provided to the Black community and no charges were made against white rioters (Cook (2014)). The Rosewood massacre of 1923 in rural Levy County, Florida is yet another example. Violence against Black Americans and destruction of their property is not simply an ancient phenomenon. The 2017 Hate Crime Victimization Report by the US Department of Justice documents that 35.4% of all violent hate crime victims between 2011 and 2015 were Black Americans as opposed to Black Americans accounting for 22% of all victims to violent non-hate crime incidents. The FBI's annual Hate Crime Statistics Act (HCSA) report of 2019 documents that 26% of hate crime incidents were racially motivated and targeted Black Americans.

[23] Our results are robust to restricting the analysis until 2016, before the Trump Presidency.

intuition of this test is that preexisting anti-Black sentiment is likely to become dominant – at least in expectations of Black Americans – in treated areas after the Shelby ruling, as the state's incentives to protect Black Americans against racial discrimination decline.

Table 13 presents the results from this analysis. The estimate associated with the quadruple interaction term is negative and statistically significant for originations and applications. However, there is no effect on the denial rate. This result indicates that the applications, and consequently originations, decline for Black Americans in treated counties with a high preexisting level of anti-Black sentiment. These results indicate the salience of fear of rejection – fueled by racial animus – in driving our results.

7 External Validity

This section provides external validity to our analysis showing that the link between the cost of voting and the racial homeownership gap is not just a VRA issue but a much larger phenomenon related to racial harmony. We accomplish this by examining the correlation between the cost of voting and the racial homeownership gap at the state level.[24] The data on state-level racial homeownership gap comes from the one-year summary files of the American Community Survey between 2009 and 2019, and the annual state-level data on Cost of Voting Index (COVI) during the same period comes from Schraufnagel, Pomante and Li (2020).

Figure 10a presents the relationship between the state-level racial homeownership gap, the gap between white and Black Americans, and the state-level COVI. The state-level racial homeownership gap regression estimate on state-level COVI is 0.012 and significant at 5% level. The scatter plot and the best-fit line indicate that the homeownership gap between white and Black Americans increases with the cost of voting. COVI can explain 20% of the total variation in the racial homeownership gap. There is, however, significant cross-sectional heterogeneity across states in the amount of total variation in the racial homeownership gap that COVI can explain. Figure 10b presents the variation in the model R^2, for each state, obtained from state-wise time-series regression of racial homeownership gap on COVI. Next, we evaluate the correlation between racial harmony and the ability to explain the racial homeownership gap. The measure of state-level racial harmony comes from Dougal et al. (2019). Figure 10c shows that the heterogeneity in the

[24] A caveat of this analysis is that it is not a well-identified analysis, and the results from this analysis should be treated as correlation.

R^2 across states can be explained by the extent of racial harmony in the state. The estimate of the cross-sectional regression of state-level model R^2 on racial harmony is -0.145 and significant at 5% level. This suggests that the total variation in the racial homeownership gap that COVI can explain increases with a decline in racial harmony.

8 Conclusion

In this paper, we identify the effect of electoral disenfranchisement of Black Americans on their mortgage borrowing decisions. We combine the spatial information on jurisdictions previously covered under Section 5 of VRA with the race and location of mortgage applicants and use a triple difference estimation strategy. We document that the amount (number) of total mortgage originations fell by 14.7% (8.3%) for Black borrowers in treated counties relative to control counties, following the Shelby ruling.

We find that the reduction in mortgage origination is driven by decline in mortgage applications by Black Americans, whereas the denial rate of applications remains unchanged. These results suggest that the political disenfranchisement can push Black Americans to self select out of the mortgage market. The real impact is manifested through a reduction in homeownership among Black Americans after the Shelby ruling. Finally, we show that these effects are driven by an increased fear of rejection following the Shelby ruling rather than being a downstream effect of income changes or heightened uncertainty.

Broadly, the results expand our understanding of the social and economic impact of changes in voting power. This paper documents that individuals alter their economic decision making as a response to changes in their political voice. Hence, our paper proposes a new channel through which discrimination in the voting process can result in exclusion from markets. Our work is also relevant to policy makers working on issues of voting rights, racial disparity, and community banks. Our results highlight that fifty years after the passage of voting rights act, there might still be a need to protect the ballot, especially for the historically marginalized.

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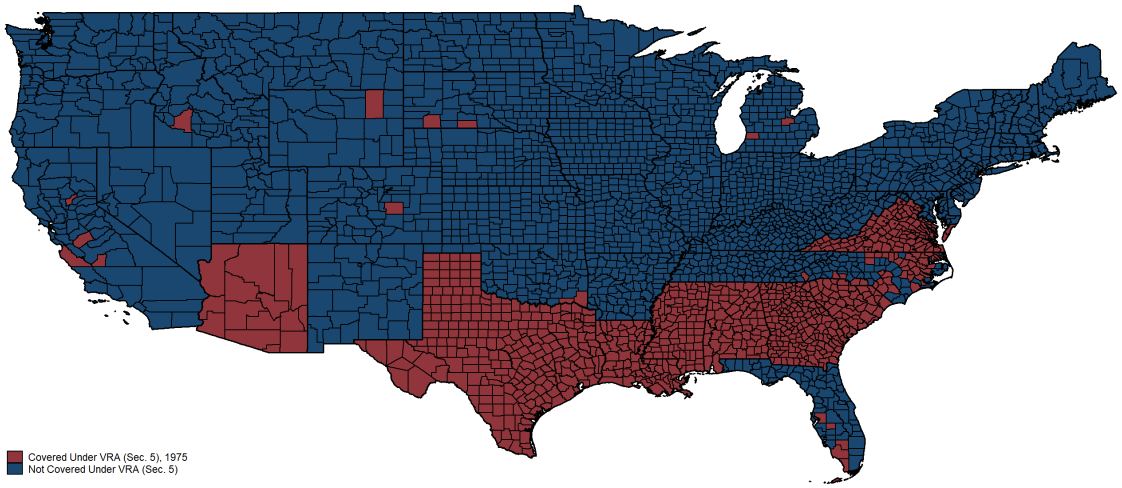
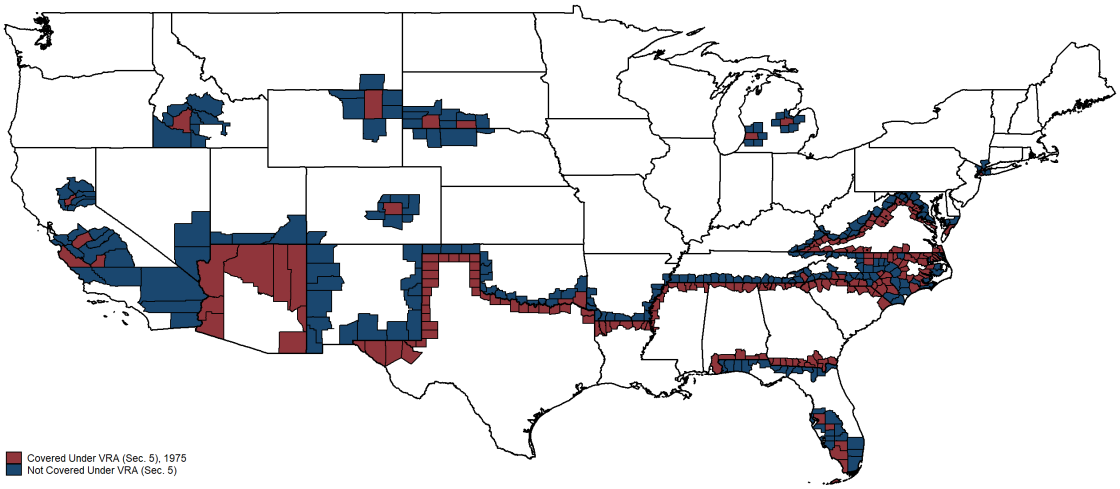
Figure 1: Jurisdictions Under Preclearance Coverage



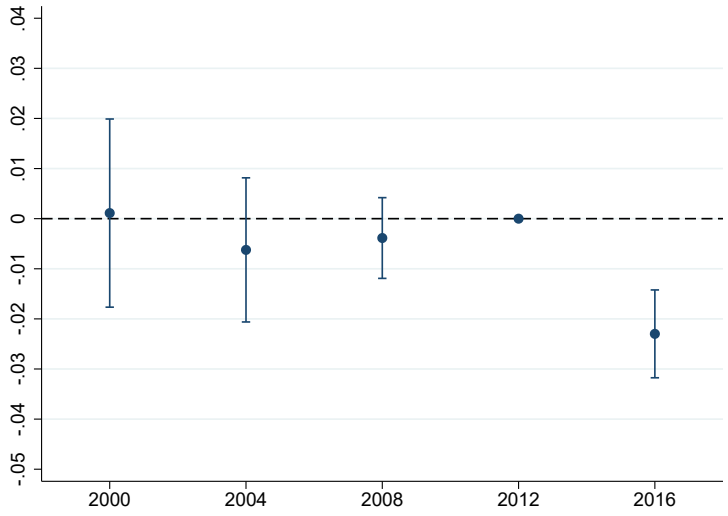
The figure shows all counties subject to preclearance under Section 5 of the Voting Rights Act by 1975. The counties covered under Section 5 of the VRA requires preclearance from either the US Attorney Gereral or the US District Court of DC. This list of counties covered under Section 5 of the VRA is obtained from the US Department of Justice. <LINK>

Figure 2: Sample of Bordering Counties Used in the Analysis



The figure shows the sample bordering counties used in the analysis. The covered counties were subject to preclearance under Section 5 of the Voting Rights Act by 1975. The counties covered under Section 5 of the VRA requires preclearance of all changes in voting laws from either the US Attorney Gereral or the US District Court of DC. This list of counties covered under Section 5 of the VRA is obtained from the US Department of Justice. <LINK> The uncovered counties in the immediate border of the covered counties are shown marked in navy blue color.

Figure 3: Black Voter Turnout and the Shelby ruling

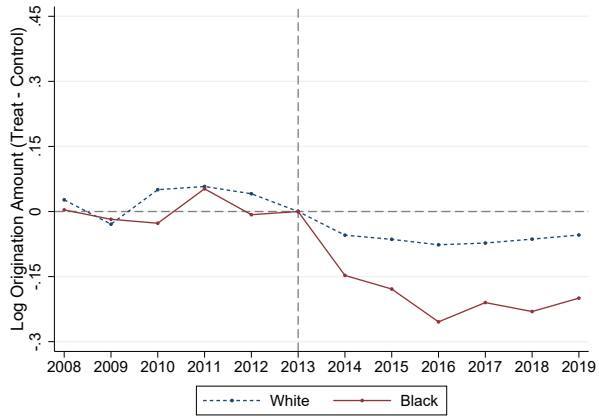


This figure uses county-level voter turnout data and plots coefficients $\{\beta_k\}$ from the specification

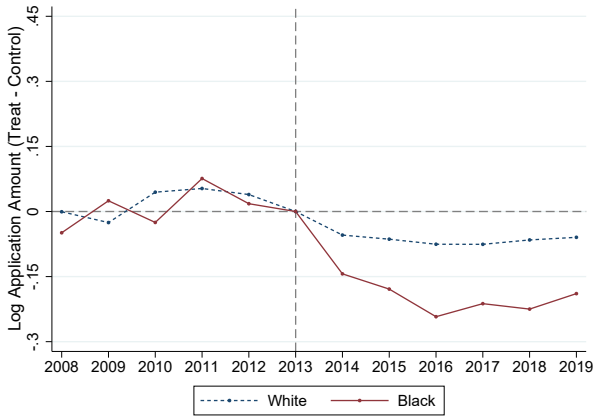
$$\text{Voter Turnout}_{c(c\in p),t} = \sum_{k=2000, k\neq 2012}^{2016} \beta_k \cdot \text{High Black}_c \cdot Treat_c \cdot 1(t=k) + \alpha_c + \sum_{k=2000, k\neq 2012}^{2016} \gamma_k \cdot Treat_c \cdot 1(t=k) + \alpha_{p(c\in p),t} + \varepsilon_{c,t}$$

where, $\text{Voter Turnout}_{c(c\in p),t}$ denotes the voter turnout in Presidential elections as our primary outcome variable in county (c) during year (t). $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise for the sample of bordering counties identified in figure 2. $1(t = k)$ denotes year dummies for 2000, 2004, 2008, 2012 and 2016, with 2012 as the omitted category. $High\ Black_c$ takes a value of one if the 2010 share of Black population in county c is greater than the median population of our sample counties in 2010. α_c, and $\alpha_{p(c\in p),t}$ denote county fixed effects, and county-pair $\times$ year fixed effects, respectively. Additionally, we control for time-varying shocks to treated counties relative to the control counties. The sample includes 2000, 2004, 2008, 2012 and 2016 Presidential elections. Capped spikes drawn with the estimated coefficients $\{\beta_k\}$ indicate 95 percent confidence intervals obtained from standard errors clustered at the county level.

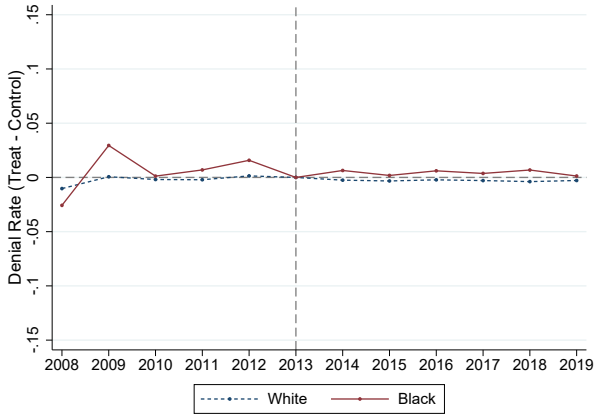
Figure 4: Mortgage Market Outcomes and the Shelby ruling



(a) Origination



(b) Application



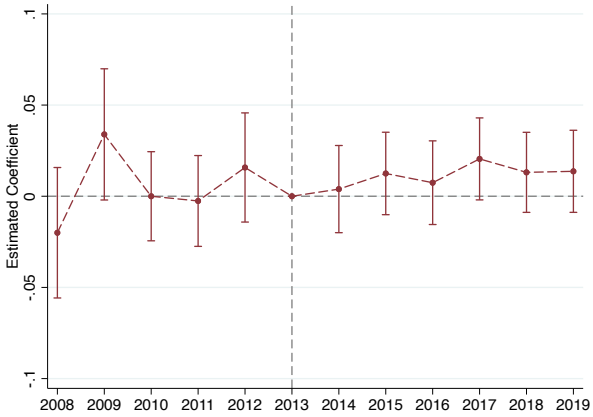
(c) Denial Rate

This figure uses the HMDA data aggregated at the county-race-year level for the period 2008 to 2019 and plots the mortgage origination, application and denial rate index for Black and white Americans in treated counties relative to the control counties. Figure 4a uses the amount of mortgage origination. Figure 4b uses the number of mortgage origination. Figure 4c uses the denial rate. The mortgage origination index (Treat−Control) is computed by estimating the weighted average of the mortgage origination amount (Figure 4a), application amount (Figure 4b) and denial rate (Figure 4c) for Black and white Americans in treated and control counties, and taking the difference between the two groups of counties for each race. The county population in 2010 is used as a weight. The sample of treated and control counties is shown in figure 2. The mortgage origination, application and denial rate index is standardized to a value of 0 in 2013. The blue dashed line reports the indices (Treat−Control) for the white borrowers, and the red solid line reports the indices (Treat−Control) for Black borrowers.

Figure 5: Racial Differences in mortgages and the Shelby ruling

(a) Origination

(b) Application



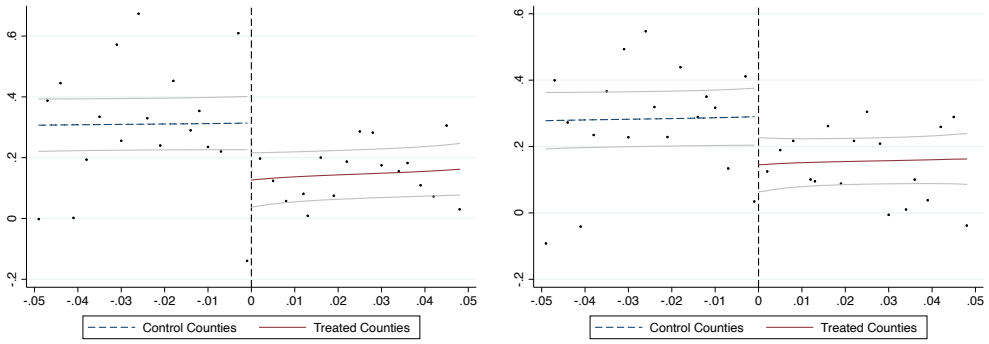
(c) Denial Rate

This figure uses the HMDA data aggregated at the county-race-year level for the period 2008 to 2019 and plots coefficients $\{\beta_k\}$ from the following specification:

$$y_{r,c(c\in p),t} = \sum_{k=2008, k\neq 2013}^{2019} \beta_k \cdot Black_r \cdot Treat_c \cdot 1(t=k) + \alpha_{r,c} + \alpha_{c,t} + \alpha_{p(c\in p),r,t} + \varepsilon_{r,c,t}$$

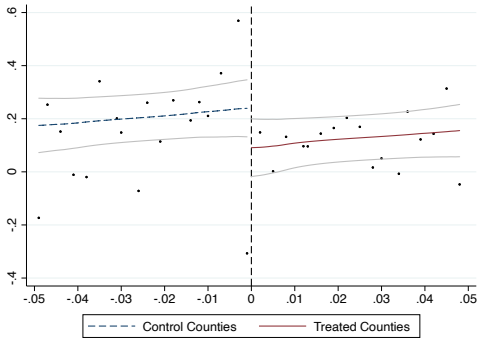
where, $y_{r,c,t}$ denotes the variable of interest aggregated at the county (c), race (r) and time (t) level. Each county is a part of a county-pair (p), which comprises a cluster of bordering counties. The different key dependent variables employed in this paper include - natural logarithm of number and amount of mortgage originations, the natural logarithm of number and amount of mortgage applications, and the denial rate. The figure plots the sequence of estimates $\{\beta_k\}$ associated with the triple interaction term. $Black_r$ is a binary variable taking a value of one for Black applicants and zero for white applicants. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise for the sample of bordering counties identified in figure 2. $1(t=k)$ is a time indicator, with 2013 being the omitted year. $\alpha_{r,c}$, $\alpha_{c,t}$, and $\alpha_{p(c\in p),r,t}$ represent race × county, county × year, and county-pair × race × year fixed effects, respectively. As dependent variables, Figure 5a uses the natural logarithm of total mortgage origination amount for home purchases, Figure 5b uses the natural logarithm of total mortgage application for home purchases, and figure 5c uses denial rate. Regressions are weighted by the total county population in 2010. Capped spikes drawn with the estimated coefficients $\{\beta_k\}$ indicate 95 percent confidence intervals obtained from standard errors clustered at the county level.

Figure 6: Regression Discontinuity around the Voter Turnout Threshold

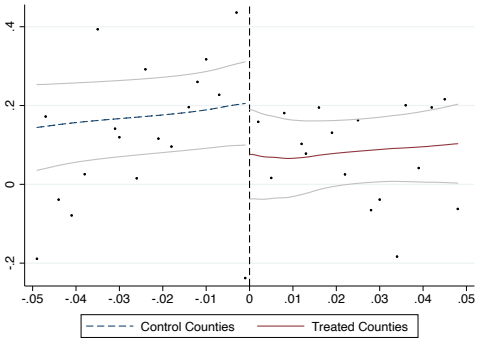


(a) Origination Amount

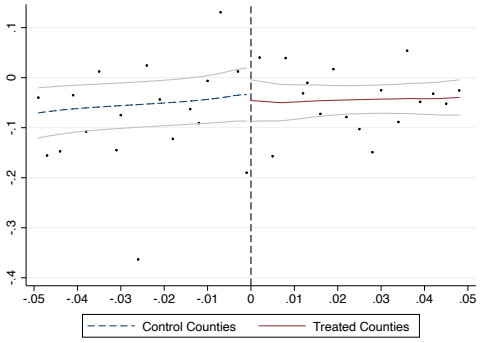
(b) Origination Number



(c) Application Amount



(d) Application Number



(e) Denial Rate

This figure plots the scatter-plot and the local best-fit linear polynomial of the county-level mortgage origination growth for Black Americans relative to white Americans from 2013 to 2016 (Y-axis) against the running variable, i.e., 0.5 minus the voter turnout in the 1964 Presidential election (X-axis). The sample of treated and control counties is shown in Figure D.1. The solid red line illustrates the local best-fit linear polynomial for the treated counties whose 1964 Presidential voter turnout was between 46% and 50%. The navy dashed line shows the local best-fit linear polynomial for the control counties whose 1964 Presidential voter turnout was between 40% and 45%. The black vertical dashed line separates the treated and control groups, and the solid gray line indicates the 95% confidence interval of the local local best-fit linear polynomials.

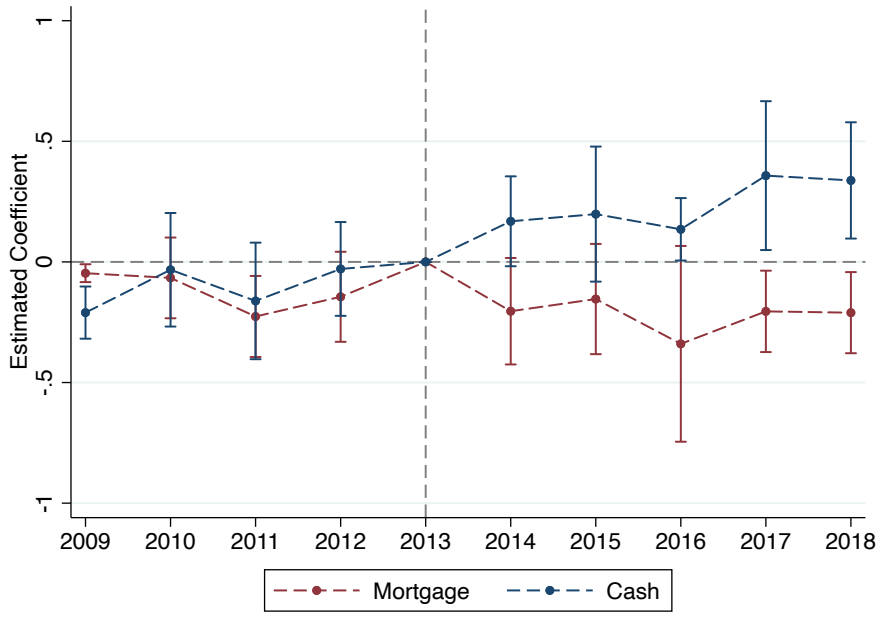
Figure 7: Home Purchase and the Shelby ruling

This figure uses the Zillow data aggregated at the county-race-year level for the period 2009 to 2018 and plots coefficients $\{\beta_k\}$ from the following specification:

$$y_{r,c(c\in p),t} = \sum_{k=2008, k\neq 2013}^{2018} \beta_k \cdot Black_r \cdot Treat_c \cdot 1(t=k) + \alpha_{r,c} + \alpha_{c,t} + \alpha_{p(c\in p),r,t} + \varepsilon_{r,c,t}$$

where, $y_{r,c,t}$ denotes the natural logarithm of the number of new home purchases aggregated at the county (c), race (r) and time (t) level. Each county is a part of a county-pair (p), which comprises a cluster of bordering counties. The figure plots the sequence of estimates $\{\beta_k\}$ associated with the triple interaction term. $Black_r$ is a binary variable taking a value of one for Black home buyers and zero for white home buyers. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise for the sample of bordering counties identified in figure 2. $1(t=k)$ is a time indicator, with 2013 being the omitted year. $\alpha_{r,c}$, $\alpha_{c,t}$, and $\alpha_{p(c\in p),r,t}$ represent race × county, county × year, and county-pair × race × year fixed effects, respectively. Regressions are weighted by the total county population in 2010. Capped spikes drawn with the estimated coefficients $\{\beta_k\}$ indicate 95 percent confidence intervals obtained from standard errors clustered at the county level.

Figure 8: Change in Mode of Home Purchase and the Shelby ruling: Cash vs. Mortgage

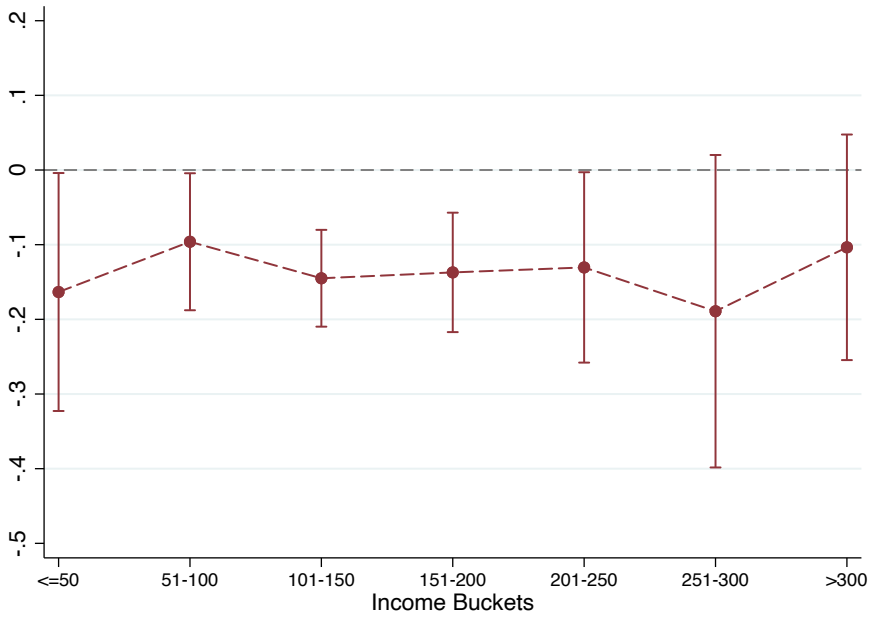


This figure uses the home transactions data from Zillow merged with HMDA and aggregated at the county-race-year level for the period 2009 to 2018 for homes purchased through cash and mortgages and plots coefficients $\{\beta_k\}$ from the following specification:

$$y_{r,c(c\in p),t} = \sum_{k=2009, k\neq 2013}^{2018} \beta_k \cdot Black_r \cdot Treat_c \cdot 1(t=k) + \alpha_{r,c} + \alpha_{c,t} + \alpha_{p(c\in p),r,t} + \varepsilon_{r,c,t}$$

where, $y_{r,c,t}$ denotes the natural logarithm of the number of new home purchases through mortgages or cash aggregated at the county (c), race (r) and time (t) level. Each county is a part of a county-pair (p), which comprises a cluster of bordering counties. The figure plots the sequence of estimates $\{\beta_k\}$ associated with the triple interaction term. $Black_r$ is a binary variable taking a value of one for Black applicants and zero for white applicants. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise for the sample of bordering counties identified in figure 2. $1(t=k)$ is a time indicator, with 2013 being the omitted year. $\alpha_{r,c}$, $\alpha_{c,t}$, and $\alpha_{p(c\in p),r,t}$ represent race × county, county × year, and county-pair × race × year fixed effects, respectively. Regressions are weighted by the total county population in 2010. Capped spikes drawn with the estimated coefficients $\{\beta_k\}$ indicate 95 percent confidence intervals obtained from standard errors clustered at the county level.

Figure 9: Effect Over Income Distribution

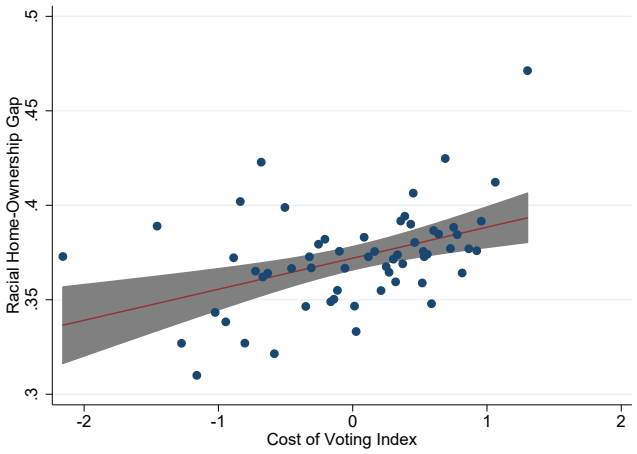


This table reports the coefficient β from the following regression specification estimated for separately for seven income buckets:

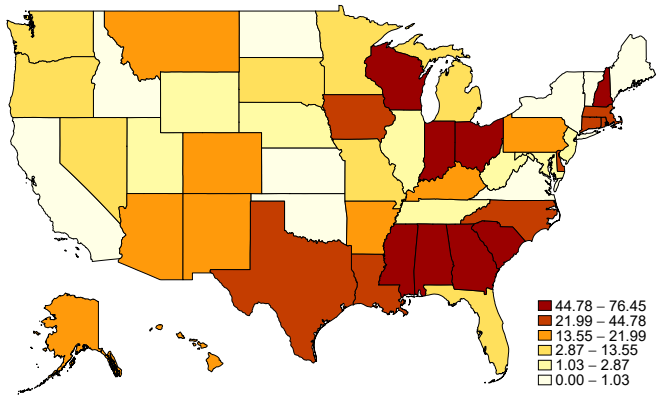
$$y_{r,v,t} = \beta \cdot Black_r \cdot Treat_c \cdot Post_t + \alpha_{r,v} + f(location_v) + \alpha_{v,t} + \alpha_{c(p)(v \in c(p)),r,t} + \varepsilon_{r,v,t}$$

where $y_{r,v(v \in c(p)),t}$ denotes the variable of interest aggregated at the census tract (v) in county (c) lying within a contagious county-pair (p)), race (r) and time (t) level. The key-dependent variables include - natural logarithm of amount of mortgage applications. The coefficient of interest is the interaction term of $Black_r, Treat_c$ and $Post_t$. $Black_r$ is a binary variable taking a value of one for Black Americans and zero for white Americans. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise. All counties included in the sample are identified in figure 2. $Post_t$ is a binary variable taking a value of one for years after the 2013 Shelby ruling and zero otherwise. The specification includes race × census-tract ($\alpha_{r,v}$), census-tract × year ($\alpha_{v,t}$) fixed effects, and county-pair × race × year ($\alpha_{c(p)(v \in c(p)),r,t}$) fixed effects. $f(location_v)$ or 2D local linear polynomial refers to the local linear polynomial in two dimensions, latitude and longitude, for every census tract estimated separately on each side of the border. The data spans all census tracts in bordering counties identified in figure 2 from 2008 until 2019. Regressions are weighted by the total county population in 2010. Capped spikes drawn with the estimated coefficients indicate 95 percent confidence intervals obtained from standard errors clustered at the county level

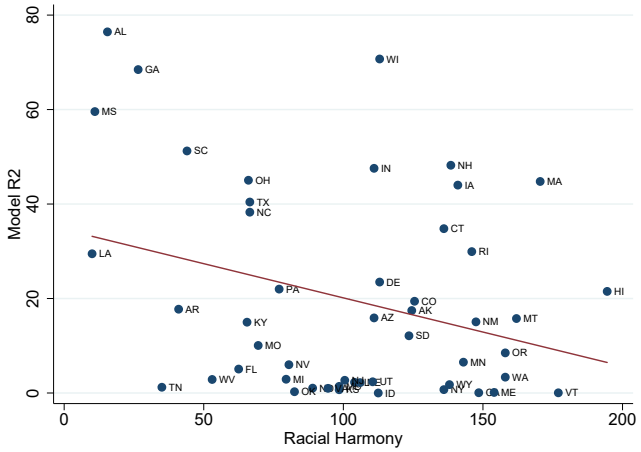
Figure 10: Racial Home-ownership Gap and the Cost of Voting Index



(a) Average Relationship



(b) R^2 for States



(c) R^2 and Measure of Racial Harmony

Figure 10a presents the relationship between the racial home-ownership gap between Black and white Americans, and the cost of voting index (COVI) at the state level from 2009 to 2019. The data on the state-level racial home-ownership gap comes from the one-year summary files of the American Community Survey between 2009 and 2019. The annual state-level data on COVI between 2009 and 2019 comes from Schraufnagel, Pomante and Li (2020). Figure 10b presents heat-map of the model R^2, for each state, obtained from state-wise time-series regression of racial home-ownership gap on COVI. Figure 10c plots the the model R^2 against the racial harmony measure for each state. The model R^2 for each state comes from state-wise time-series regression of racial home-ownership gap on COVI. The measure of state-level racial harmony comes from Dougal et al. (2019).

Table 1: Summary Statistics

Variables	Mean	SD	P25	P50	P75
Origination					
LN(Amount)	2.056	2.409	0.798	2.468	3.949
LN(Number)	1.452	2.092	0.095	1.808	3.223
Application					
LN(Amount)	2.372	2.307	1.176	2.754	4.157
LN(Number)	1.752	2.013	0.742	2.092	3.405
Denial Rate	0.156	0.217	0.000	0.089	0.212
LN(Number of Housing Transactions)	4.792	2.660	3.140	4.970	6.763
Voter Turnout	0.394	0.087	0.334	0.392	0.454
Migration					
LN(Outflow)	0.034	1.009	-0.707	-0.113	0.696
LN(Inflow)	0.031	0.999	-0.682	-0.111	0.695
LN(Outflow/Inflow)	0.003	0.164	-0.078	0.001	0.085
LN((Outflow-Inflow)/Population in 2010)	0.007	0.959	-0.384	0.072	0.506
Share of White Population	0.610	0.262	0.429	0.663	0.829
Share of Black Population	0.157	0.196	0.021	0.074	0.214
LN(Hate Crime)	0.490	0.716	0.000	0.000	0.693
Approval of Job, Legislature	2.2	0.9	1	2	3
Approval of Job, Congress	1.8	0.9	1	2	2
Approval of Job, President	2.3	1.3	1	2	4
Approval of Job, Supreme Court	2.3	0.9	2	2	3

This table presents the summary statistics for the key outcome variables explored in this paper. The first two rows report summary statistics for the natural logarithm of mortgage origination amount and number for home purchases, followed by the summary statistics for the natural logarithm of mortgage applications amount and number. We then report the summary statistics for the denial rate, defined as the ratio of the number of denied applications to the total number of applications for home purchases. Next, we report the natural logarithm of number of housing transactions. The mortgage market variables are constructed from the HMDA database and are at the census-tract and year level. The number of housing transactions is computed from the ZTRAX database at the county-year level. All variables are winsorized at the 1 percent level to minimize the influence of outliers. We also include other variables – the migration and share of the white and Black population collected from IRS and ACS, respectively. Incidents of hate crime are constructed from the FBI database. American's approval of the legislature, congress, president, and the supreme court is collected from CCES. One indicates strong disapproval, and four indicates strong approval.

Table 2: Balance Test: Comparing Bordering County Characteristics in 2010

Panel A: All Counties

	Uncovered Counties	Covered Counties	Mean Difference	P-Value
Mean Income	33159.486	29991.869	3167.617	0.001
Mean Age	37.476	35.314	2.162	0.000
Share of Black Pop	0.040	0.216	-0.177	0.000
Share of Urban Pop	0.409	0.430	-0.021	0.095
Share of Pop Owning Home	0.681	0.643	0.038	0.001
Share of Mortgage Users	0.756	0.720	0.036	0.000
Employment Rate	0.908	0.911	-0.003	0.185
Share of Labor Force	0.773	0.750	0.023	0.000
Share of Manufacturing	0.096	0.078	0.018	0.000
Share of Trade	0.129	0.123	0.005	0.004

Panel B: Bordering Counties

	Uncovered Counties	Covered Counties	Simple Difference		Difference (within county-pairs)	
			Magnitude	P-Value	Magnitude	P-Value
Mean Income	31959.662	31223.474	736.187	0.769	1737.668	0.566
Mean Age	37.146	35.827	1.319	0.039	-0.881	0.126
Share of Black Pop	0.102	0.177	-0.075	0.000	0.013	0.133
Share of Urban Pop	0.455	0.454	0.002	0.960	0.018	0.458
Share of Pop Owning Home	0.642	0.609	0.033	0.217	-0.037	0.270
Share of Mortgage Users	0.755	0.733	0.022	0.191	-0.019	0.200
Employment Rate	0.897	0.903	-0.006	0.291	0.004	0.572
Share of Labor Force	0.753	0.753	0.000	0.999	-0.003	0.778
Share of Manufacturing	0.071	0.081	-0.010	0.380	0.008	0.407
Share of Trade	0.124	0.118	0.006	0.188	-0.006	0.114

This table reports average characteristics across Section 5 (covered) and non-Section 5 (uncovered) counties. Panel A reports average characteristics across Section 5 (covered) and non-Section 5 (uncovered) counties, for the full county sample shown in figure 1. Panel B reports average characteristics across Section 5 (covered) and non-Section 5 (uncovered) counties, for the sample of bordering counties shown in figure 2. Simple difference reports the average difference across covered and uncovered counties. Difference (within county-pairs) reports the average value of the difference between covered and uncovered estimated within county-pairs of bordering counties.

Table 3: Voter Turnout and the Shelby ruling

Dep Var: Voter Turnout	(1)	(2)	(3)
High Black x Treat x Post	-0.0140**	-0.0193**	-0.0207***
	(0.0070)	(0.0077)	(0.0063)
County FE	Yes	Yes	Yes
Year FE	Yes		
Treat × Year FE		Yes	Yes
County Pair × Year FE			Yes
Adjusted R^2	0.8015	0.8020	0.9199
# Obs	3,125	3,125	3,125

This table reports the coefficient β from the following specification:

$$y_{c(c\in p),t} = \beta \cdot \text{High Black}_c \cdot Treat_c \cdot Post_t + \alpha_c + \sum_k \gamma_k \cdot Treat_c \cdot 1(t = k) + \alpha_{p(c\in p),t} + \varepsilon_{rct}$$

where, $y_{c(c\in p),t}$ denotes the voter turnout in Presidential elections as our primary outcome variable in county (c) during year (t). $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise for the sample of bordering counties identified in figure 2. $Post_t$ takes a value of 1 for years after 2013. $High\ Black_c$ takes a value of one if the 2010 share of Black population in county c is greater than the median population of our sample counties in 2010. α_c, and $\alpha_{p(c\in p),t}$ denote county fixed effects, and county-pair × year fixed effects, respectively. Additionally, we control for time-varying shocks to treated counties relative to the control counties. The sample includes 2000, 2004, 2008, 2012 and 2016 Presidential elections. Standard errors clustered at the county level are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 4: Geographic Regression Discontinuity: Mortgage Market Outcome and the Shelby ruling

	(1)	(2)	(3)	(4)	(5)
	Origination		Application		Denial Rate
	LN(Amount)	Ln(Number)	LN(Amount)	LN(Number)	
Black x Treat x Post	-0.1466***	-0.0828***	-0.1261***	-0.0695***	0.0004
	(0.0322)	(0.0251)	(0.0313)	(0.0246)	(0.0054)
Census Tract x Year FE	Yes	Yes	Yes	Yes	Yes
Census Tract x Race FE	Yes	Yes	Yes	Yes	Yes
County Pair x Race x Year FE	Yes	Yes	Yes	Yes	Yes
2D Local Linear Polynomial	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.8634	0.8868	0.8619	0.8864	0.4180
# Obs	346,825	346,825	346,825	346,825	346,825

This table reports the coefficient β from the following regression specification:

$$y_{r,v(v\in c(p)),t} = \beta \cdot Black_r \cdot Treat_c \cdot Post_t + f(location_v) + \alpha_{r,v} + \alpha_{v,t} + \alpha_{c(p)(v\in c(p)),r,t} + \varepsilon_{r,v,t}$$

where, $y_{r,v(v\in c(p)),t}$ denotes the variable of interest aggregated at the census tract (v) in county (c) lying within a contagious county-pair (p)), race (r) and time (t) level. The key-dependent variables include - natural logarithm of amount (column 1) and number (column 2) of mortgage originations, the natural logarithm of amount (column 3) and number (column 4) of mortgage applications, and denial rate (column 5). The coefficient of interest is the interaction term of $Black_r$, $Treat_c$ and $Post_t$. $Black_r$ is a binary variable taking a value of one for Black Americans and zero for white Americans. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise. All counties included in the sample are identified in figure 2. $Post_t$ is a binary variable taking a value of one for years after the 2013 Shelby ruling and zero otherwise. The specification includes race × census-tract ($\alpha_{r,v}$), census-tract × year ($\alpha_{v,t}$) fixed effects, and county-pair × race × year ($\alpha_{c(p)(v\in c(p)),r,t}$) fixed effects. $f(location_v)$ or 2D local linear polynomial refers to the local linear polynomial in two dimensions, latitude and longitude, for every census tract estimated separately on each side of the border. The data spans all census tract in bordering counties identified in figure 2 from 2008 until 2019. Regressions are weighted by the total tract population in 2010. Standard errors clustered at the tract level are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 5: Robustness: Relative Sensitivity to Macroeconomic Shocks

Macroeconomic Shock → Dep Var: ↓	(1) 30-Year Mortgage Rates	(2) 15-Year Mortgage Rates	(3) GDP Growth Rate	(4) Term Spread	(5) Bank Credit
Mortgage Origination					
LN(Amount)	-0.0115	-0.0157	0.0015	0.0048	0.0028
	(0.0495)	(0.0575)	(0.0142)	(0.0472)	(0.0086)
LN(Number)	0.0044	0.0026	0.0030	0.0102	-0.0006
	(0.0385)	(0.0446)	(0.0110)	(0.0369)	(0.0067)
Mortgage Applications					
LN(Amount)	-0.0227	-0.0263	-0.0054	-0.0192	0.0124
	(0.0478)	(0.0553)	(0.0134)	(0.0458)	(0.0084)
LN(Number)	-0.0247	-0.0292	-0.0013	0.0001	0.0036
	(0.0376)	(0.0434)	(0.0104)	(0.0361)	(0.0065)

This table reports the coefficient β for the following regression specification for different dependent variables and macroeconomic shocks:

$$y_{r,v(v\in c(p)),t} = \beta \cdot Black_r \cdot Treat_c \cdot \Delta X_t + f(location_v) + \alpha_{r,v} + \alpha_{v,t} + \alpha_{c(p)(v\in c(p)),r,t} + \varepsilon_{r,v,t}$$

where, $y_{r,v(v\in c(p)),t}$ denotes the variable of interest aggregated at the census tract (v) in county (c) lying within a contagious county-pair (p)), race (r) and time (t) level. The coefficient of interest is the interaction term of $Black_r$, $Treat_c$ and ΔX_t. $Black_r$ is a binary variable taking a value of one for Black Americans and zero for white Americans. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise. All counties included in the sample are identified in figure 2. ΔX_t includes macroeconomic shocks including changes in 30-year mortgage rate, 15-year mortgage rate, term spread, bank credit, and GDP growth rate. The specification includes race × census-tract ($\alpha_{r,v}$), census-tract × year ($\alpha_{v,t}$) fixed effects, and county-pair × race × year ($\alpha_{c(p)(v\in c(p)),r,t}$) fixed effects. $f(location_v)$ or 2D local linear polynomial refers to the local linear polynomial in two dimensions, latitude and longitude, for every census tract estimated separately on each side of the border. The data spans all census tracts in bordering counties identified in figure 2 from 2008 until 2012 with total observations of 146,011. Regressions are weighted by the total tract population in 2010. Each pair of estimate and standard error is estimated from separate regression using a different dependent variable and macroeconomic shocks. The four different dependent variables include the natural logarithm of amount and number of mortgage originations and the natural logarithm of amount and number of mortgage applications. The four dependent variables and five macroeconomic shocks result in creation of this 4X5 matrix estimated using twenty different regressions. Standard errors clustered at the tract level are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 6: Robustness: Baseline Effect after controlling for Macroeconomic Shocks

	(1)	(2)	(3)	(4)	(5)
	Origination		Application		Denial Rate
	LN(Amount)	Ln(Number)	LN(Amount)	LN(Number)	
Black x Treat x Post	-0.1456***	-0.0801**	-0.1279***	-0.0704*	0.0025
	(0.0484)	(0.0380)	(0.0470)	(0.0371)	(0.0090)
Tract x Year FE	Yes	Yes	Yes	Yes	Yes
Tract x Race FE	Yes	Yes	Yes	Yes	Yes
County Pair x Race x Year FE	Yes	Yes	Yes	Yes	Yes
2D Local Linear Polynomial	Yes	Yes	Yes	Yes	Yes
Control for Macroeconomic Variables	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.8634	0.8868	0.8620	0.8864	0.4180
# Obs	346,825	346,825	346,825	346,825	346,825

This table reports the coefficient β from the following regression specification:

$$y_{r,v(v\in c(p)),t} = \beta \cdot Black_r \cdot Treat_c \cdot Post_t + \sum_k \gamma_k \cdot Black_r \cdot Treat_c \cdot \Delta X_t^k + f(location_v) + \alpha_{r,v} + \alpha_{v,t} + \alpha_{c(p)(v\in c(p)),r,t} + \varepsilon_{r,v,t}$$

where, $y_{r,v(v\in c(p)),t}$ denotes the variable of interest aggregated at the census tract (v) in county (c) lying within a contagious county-pair (p)), race (r) and time (t) level. The key-dependent variables include - natural logarithm of amount (column 1) and number (column 2) of mortgage originations, the natural logarithm of amount (column 3) and number (column 4) of mortgage applications, and denial rate (column 5). The coefficient of interest is the interaction term of $Black_r$, $Treat_c$ and $Post_t$. $Black_r$ is a binary variable taking a value of one for Black Americans and zero for white Americans. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise. All counties included in the sample are identified in figure 2. $Post_t$ is a binary variable taking a value of one for years after the 2013 Shelby ruling and zero otherwise. ΔX_t^k refers to the vector of macroeconomic shocks that include changes to 30 year mortgage rates, 15-year mortgage rates, bank credit, term spread, and GDP growth rate. The specification includes race × census-tract ($\alpha_{r,v}$), census-tract × year ($\alpha_{v,t}$) fixed effects, and county-pair × race × year ($\alpha_{c(p)(v\in c(p)),r,t}$) fixed effects. $f(location_v)$ or 2D local linear polynomial refers to the local linear polynomial in two dimensions, latitude and longitude, for every census tract estimated separately on each side of the border. The data spans all census tract in bordering counties identified in figure 2 from 2008 until 2019. Regressions are weighted by the total tract population in 2010. Standard errors clustered at the tract level are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 7: Regression Discontinuity around the Voter Turnout Threshold

Panel A: Regression Discontinuity					
	(1)	(2)	(3)	(4)	(5)
	Origination		Application		$\Delta Denial\ Rate$
	$\Delta LN(Amount)$	$\Delta LN(Number)$	$\Delta LN(Amount)$	$\Delta LN(Number)$	
Treat	-0.2374**	-0.2049**	-0.2224*	-0.1992*	-0.0099
	(0.1148)	(0.0896)	(0.1209)	(0.1010)	(0.0253)
Adjusted R^2	0.0413	0.0452	0.0356	0.0312	-0.0107
# Obs	164	164	164	164	164

Panel B: Differences-in-Discontinuity Design					
	(1)	(2)	(3)	(4)	(5)
	Origination		Application		Denial Rate
	LN(Amount)	Ln(Number)	LN(Amount)	LN(Number)	
Black x Treat x Post	-0.1101***	-0.0860**	-0.1035***	-0.0838**	-0.0010
	(0.0347)	(0.0374)	(0.0346)	(0.0377)	(0.0062)
County x Year FE	Yes	Yes	Yes	Yes	Yes
County x Race FE	Yes	Yes	Yes	Yes	Yes
Race x Year FE	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.9909	0.9917	0.9916	0.9920	0.6308
# Obs	5,314	5,314	5,314	5,314	5,314

Panel A use the HMDA data aggregated at the county level and report the coefficient β from the specification:

$$\Delta y_{c,Black} - \Delta y_{c,White} = \alpha + \beta \cdot Treat_c + \gamma_1 \cdot Turnout_c + \gamma_2 \cdot Treat_c \cdot Turnout_c + \varepsilon_c,$$

Panel B use the HMDA data aggregated at the county-race-year level for the period 2008 to 2019 and report coefficients β from the following specification:

$$y_{r,c,t} = \beta \cdot Black_r \cdot Treat_c \cdot Post_t + \alpha_{r,c} + \alpha_{r,t} + \alpha_{c,t} + \varepsilon_{r,c,t}$$

where subscript r, c and t indicate race, county, and year, respectively. $Treat_c$ is an indicator variable that takes one for counties whose voter turnout in the 1964 Presidential election is greater than 45% but less than 50% and zero for counties whose voter turnout in the 1964 Presidential election is greater than 50% but less than 55%. The sample of treated and control counties is shown in Figure D.1. $Turnout_c$ is voter turnout in the 1964 Presidential election. $Black_r$ is an indicator variable that takes one for Black borrowers, and $Post_t$ is an indicator variable that takes one for years from 2014. $\alpha_{r,c}$, $\alpha_{r,t}$, and $\alpha_{c,t}$ represent race-county, race-year, and county-year fixed effects, respectively. $\Delta y_{c,Black}$ and $\Delta y_{c,White}$ denote the change in the natural logarithm of the amount and number of mortgage originations and applications and denial rates from 2013 to 2016 for Black and white Americans, respectively. Panel B uses the natural logarithm of total amount and number of originations, applications and denial rate as the dependent variable. Panel A reports heteroskedasticity-robust standard errors. Panel B reports standard errors clustered at the county level. All regressions are weighted by the total county population in 2010. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 8: Flight of Mortgage Applications from Black borrowers to Black Lenders

	Non-Black Lender		Black Lender		All	
	(1) LN(Amount)	(2) LN(Number)	(3) LN(Amount)	(4) LN(Number)	(5) LN(Amount)	(6) LN(Number)
Black x Treat x Post	-0.1524***	-0.1028***	0.1188	0.1500**		
	(0.0461)	(0.0379)	(0.0797)	(0.0652)		
Black x Treat x Post x Black Lender					0.2090**	0.2037***
					(0.0876)	(0.0714)
Tract x Year FE	Yes	Yes	Yes	Yes		
Tract x Race FE	Yes	Yes	Yes	Yes		
County Pair x Race x Year FE	Yes	Yes	Yes	Yes		
2d Local Linear Polynomial	Yes	Yes	Yes	Yes	Yes	Yes
Tract x Year x Race FE					Yes	Yes
Tract x Year x Black Lender FE					Yes	Yes
Tract x Race x Black Lender FE					Yes	Yes
County Pair x Year x Race x Black Lender FE					Yes	Yes
Adjusted R^2	0.8765	0.8935	0.7875	0.7898	0.9262	0.9347
# Obs	204,250	204,250	145,977	145,977	350,227	350,227

This table reports the coefficient β from the following regression specification:

$$y_{r,l,v(v\in c(p)),t} = \beta \cdot Black_r \cdot Black_l \cdot Treat_c \cdot Post_t + f(location_v) + \alpha_{v,r,l} + +\alpha_{v,l,t} + \alpha_{v,r,t} + \alpha_{c(p)(v\in c(p)),r,l,t} + \varepsilon_{r,l,v,t}$$

where, $y_{r,l,v(v\in c(p)),t}$ denotes the variable of interest aggregated at the census tract (v) in county (c) lying within a contagious county-pair (p)), race (r), lender type (l) and time (t) level. Bank type l is either Black lender or non-Black lenders. Black lenders are defined as in section 6.1.1. The key-dependent variables include the natural logarithm of total amount and number of mortgage applications. The coefficient of interest is the interaction term of $Black_r$, $Black_l$, $Treat_c$ and $Post_t$. $Black_r$ is a binary variable taking a value of one for Black Americans and zero for white Americans. $Black_l$ is a binary variable taking a value of one for Black lenders defined in section 6.1.1. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise. All counties included in the sample are identified in figure 2. $Post_t$ is a binary variable taking a value of one for years after the 2013 Shelby ruling and zero otherwise. The specification includes race × census-tract ($\alpha_{r,v}$), census-tract × year ($\alpha_{v,t}$) fixed effects, and county-pair × race × year ($\alpha_{c(p)(v\in c(p)),r,t}$) fixed effects. $f(location_v)$ or 2D local linear polynomial refers to the local linear polynomial in two dimensions, latitude and longitude, for every census tract estimated separately on each side of the border. The data spans all census tract in bordering counties identified in figure 2 from 2008 until 2019. Regressions are weighted by the total tract population in 2010. Standard errors clustered at the tract level are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 9: Migration and the Shelby ruling: County Level Analysis using IRS data

	(1)	(2)	(3)	(4)
	Ln(Outflow)	Ln(Inflow)	Ln($\frac{Outflow}{Inflow}$)	$\frac{Outflow-Inflow}{Pop_{2010}}$
High Black × Treat × Post	-0.0065	-0.0027	-0.0037	0.0571
	(0.0106)	(0.0164)	(0.0129)	(0.0480)
Treat × Post	0.0124	0.0133	-0.0008	0.0155
	(0.0107)	(0.0124)	(0.0106)	(0.0556)
County FE	Yes	Yes	Yes	Yes
County-Pair × Year FE	Yes	Yes	Yes	Yes
High Black × Year FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.9915	0.9890	0.4363	0.6043
# Obs	6,387	6,387	6,387	6,387

This table uses IRS's county-level migration data and reports coefficients β from the following specification:

$$y_{c(c\in c(p)),t} = \beta_1 \cdot High\text{-}Black_c \cdot Treat_c \cdot Post_t + \beta_2 \cdot Treat_c \cdot Post_t + \alpha_c + \alpha_{c(p)(c\in c(p)),t} + \alpha_{hb,t} + \varepsilon_{c(c\in c(p)),t}$$

where the subscripts c, hb and t indicate county, high Black, and year, respectively. County (c) lies within a contagious county-pair ($c(p)$). $High\text{-}Black_c$ is an indicator variable that takes one for counties with more than median share of Black population in 2010. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise. All counties included in the sample are identified in figure 2. $Post_t$ is a binary variable taking a value of one for years after the 2013 Shelby ruling and zero otherwise. α_c, $\alpha_{c(p)(c\in c(p)),t}$ and $\alpha_{hb,t}$ represent county, county-pair × year, and high Black × year fixed effects, respectively. Column (1) and (2) use the natural logarithms of inflow and outflow as the dependent variable, respectively. Column (3) uses the natural logarithm of the ratio of outflow to inflow, and the column (4) uses migration (i.e., outflow minus inflow) as a share of population in 2010 as the dependent variable. Inflow refers to the number of new individuals who filed the income tax returns in a particular county and year. Outflow refers to number of individuals who had filed the the income tax return in a county in the previous year, but filed in a different county in a given year. Standard errors clustered at the county level are reported in the parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 10: Migration and the Shelby ruling: ZCTA Level analysis using ACS data

Dep Var: Sh. Population	(1)	(2)	(3)
	White	Black	All
Treat x Post	0.0005	-0.0009	
	(0.0025)	(0.0021)	
Black x Treat x Post			-0.0014
			(0.0042)
ZCTA FE	Yes	Yes	
County Pair x Post FE	Yes	Yes	
ZCTA x Post FE			Yes
ZCTA x Black FE			Yes
County Pair x Black x Post FE			Yes
Adjusted R^2	0.9879	0.9556	0.9741
# Obs	11,085	11,085	22,170

This table reports the estimation results from the following specification:

$$y_{z(z\in c(p)),r,t} = \beta \cdot Black_r \cdot Treat_c \cdot Post_t + \alpha_{z,t} + \alpha_{z,r} + \alpha_{c(p)(z\in c(p)),r,t} + \varepsilon_{z(z\in c(p)),r,t}$$

where the subscripts z, r and t indicate Zipcode tabulation area (ZCTA) located in county c within county-pair $c(p)$, race and time, respectively. $Black_r$ is a binary variable taking a value of one for Black Americans and zero for white Americans. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise. All counties included in the sample are identified in figure 2. $Post_t$ is a binary variable taking a value of one for years after the 2013 Shelby ruling and zero otherwise. The specification includes race × ZCTA ($\alpha_{z,r}$) fixed effects, ZCTA × year ($\alpha_{z,t}$) fixed effects, and county-pair × race × year ($\alpha_{c(p)(z\in c(p)),r,t}$) fixed effects. The unit of analysis is ZCTA-race-year where the key dependent variable is the share of population. We constructing ZIP Code Tabulation Area (ZCTA) level population by race using the 2013 American Community Survey (ACS) 5-year estimates and the 2018 5-year estimates. We have one observation in the pre-period and and another in the post-Shelby period. COlumns 1 and 2 restrict the sample to Black and white population and estimate the effect associated with Treat × Post for each population group. Column 3 estimates the triple interaction term by including both Black and white population shares. Standard errors clustered at the county level are reported in the parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 11: Hate Crime and the Shelby ruling

	(1) OLS	(2) OLS	(3) Poisson	(4) Poisson	(5) OLS
Treat x Post	0.2244**	0.2914***	0.2173***	0.2601***	0.1611*
	(0.1002)	(0.1049)	(0.0690)	(0.0665)	(0.0966)
Sample	All States	Border States	All States	Border States	Border Counties
State/County FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Within R^2	0.0192	0.0398	-	-	0.0056
# Obs	490	290	490	290	2,090

This table uses the FBI's hate crime statistics summarized at the state (column (1) through (4)) and county (column (5)) level for the period 2010 to 2019 and reports coefficients β from the following specification:

$$y_{c(s)t} = \beta \cdot Treat_{c(s)} \cdot Post\text{-}Shelby_t + \alpha_{c(s)} + \alpha_t + \varepsilon_{c(s)t}$$

where subscript c, s, and t indicate county, state, and year, respectively. $Treat_{c(s)}$ is an indicator variable that takes one for VRA-treated counties (states). The sample of treated and control counties (states) is shown in Figure 2 (Figure 1). $Post\text{-}Shelby_t$ is an indicator variable that takes one for years from 2014 . As dependent variables, columns (1), (2) and (5) use the natural logarithm of one plus the number of hate crime against Black Americans, and columns (3) and (4) use the raw number of hate crime against Black Americans. Columns (1), (2), and (5) report OLS estimates, and columns (3) and (4) report Poisson estimates. Regressions in columns (1) through (4) are weighted by the total state population in 2010, and regression in column (5) is weighted by the total county population in 2010. Standard errors clustered at the state in columns (1)-(4) and county level in column (5), are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 12: Approval of State Agents

Dep Var: Approval of State Agents	(1)	(2)	(3)	(4)	(5)
State Legislature	-0.1857**	-0.3305***	-0.2857***	-0.2807***	-0.3261***
	(0.0943)	(0.0655)	(0.0679)	(0.0673)	(0.0851)
Congress	-0.1484*	-0.2947***	-0.2383***	-0.2186***	-0.1586**
	(0.0881)	(0.0755)	(0.0768)	(0.0766)	(0.0780)
President	-0.2930***	-0.1982***	-0.1961***	-0.2024***	-0.1859***
	(0.0893)	(0.0591)	(0.0598)	(0.0610)	(0.0593)
Supreme Court	-0.1849*	-0.2529***	-0.2355***	-0.2420***	-0.2147***
	(0.0983)	(0.0766)	(0.0747)	(0.0712)	(0.0743)
Race X Year FE	Yes				
County X Race FE	Yes				
County X Year FE	Yes				
County-pair X Race X Year FE	Yes				
Party Affiliation X Race X Year FE		Yes	Yes	Yes	Yes
Party Affiliation X County X Race FE		Yes	Yes	Yes	Yes
Party Affiliation X County X Year FE		Yes	Yes	Yes	Yes
Party Affiliation X County-pair X Race X Year FE		Yes	Yes	Yes	Yes
Individual Controls			Yes	Yes	Yes
Income Bucket FE				Yes	Yes
Zipcode FE					Yes

This table reports the coefficient β for the following regression specification for different dependent variables:

$$y_{i,z(z\in c(p)),t} = \beta \cdot Black_i \cdot Treat_c \cdot Post_t + \alpha_{a,r,c} + \alpha_{a,c,t} + \alpha_{a,r,t} + \alpha_{a,c(p)(z\in c(p)),r,t} + \alpha_z + \gamma X_{it} + \varepsilon_{i,t}$$

where, $y_{i,z(z\in c(p)),t}$ denotes the approval of the state agent reported by individual i, with political affiliation (a) residing in zipcode z in county (c) lying within a contagious county-pair (p), with race (r) at time (t). The coefficient of interest is the interaction term of $Black_i$, $Treat_c$ and $Post_t$. $Black_i$ is a binary variable taking a value of one for Black Americans and zero for white Americans. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise. All counties included in the sample are identified in figure 2. $Post_t$ takes a value of one for years after 2013 and zero otherwise. The specification includes political affiliation × race × year, party affiliation × county × race, party affiliation × county × year, party affiliation × county-pair × race × year and zip code fixed effects. Individual level controls include gender, birth year fixed effects, marital status, union member, has children and income bucket fixed effects. Political affiliation is divided into seven buckets – strong Democrat, not very strong Democrat, lean Democrat, independent, lean Republican, not very Strong Republican, and strong Republican. The data comes from Cooperative Congressional Election Study (CCES) for the years 2008, 2010, 2012, 2014, 2016 and 2018. Regressions are weighted by individual survey weights. Each pair of estimate and standard error is estimated from separate regression using a different dependent variable and a different set of fixed effects. The four different dependent variables are approval of the state legislature, congress, President and the Supreme Court. Each respondent gives their approval rating on a four point scale – strongly approve, somewhat approve, somewhat disapprove, and strongly disapprove. The four dependent variables and five set of different fixed effects result in creation of this 4X5 matrix estimated using twenty different regressions. Standard errors clustered at the county level are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 13: Mortgage Market Outcomes and the Shelby ruling: The Effect of Racial Animus

	(1)	(2)	(3)	(4)	(5)
	Origination		Application		Denial Rate
	LN(Amount)	Ln(Number)	LN(Amount)	LN(Number)	
Black x Treat x Post	0.0869*	0.0499	0.0858*	0.0523	0.0044
	(0.0520)	(0.0408)	(0.0514)	(0.0403)	(0.0082)
Black x Treat x Post x High Racial Animus	-0.3403***	-0.1990***	-0.3119***	-0.1853***	-0.0063
	(0.0651)	(0.0509)	(0.0639)	(0.0501)	(0.0105)
Tract x Year FE	Yes	Yes	Yes	Yes	Yes
Tract x Race FE	Yes	Yes	Yes	Yes	Yes
County Pair x Race x Year FE	Yes	Yes	Yes	Yes	Yes
2D Local Linear Polynomial	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.8628	0.8866	0.8614	0.8862	0.4122
# Obs	335,413	335,413	335,413	335,413	335,413

This table reports the coefficient β from the following regression specification:

$$y_{r,v(v\in c(p)),t} = \beta_1 \cdot Black_r \cdot Treat_c \cdot Post_t + \beta_2 \cdot Black_r \cdot Treat_c \cdot Post_t \cdot HighRacialAnimus + f(location_v) + \alpha_{r,v} + \alpha_{v,t} + \alpha_{c(p)(v\in c(p)),r,t} + \varepsilon_{r,v,t}$$

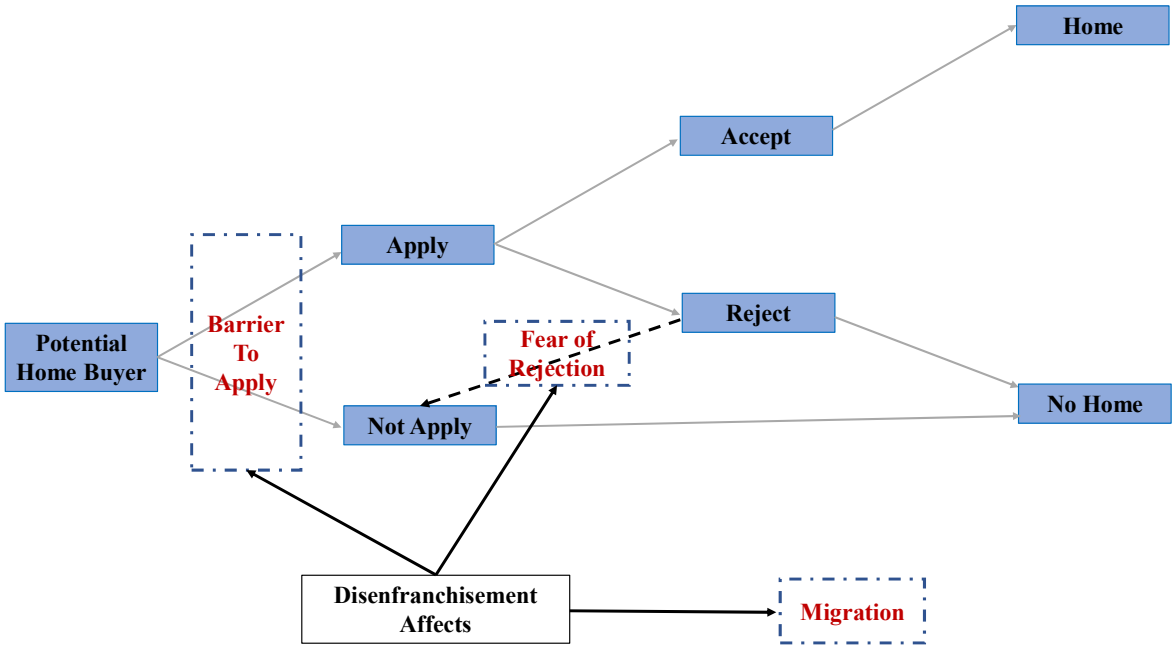
where, $y_{r,v(v\in c(p)),t}$ denotes the variable of interest aggregated at the census tract (v) in county (c) lying within a contagious county-pair (p)), race (r) and time (t) level. The key-dependent variables include - natural logarithm of amount (column 1) and number (column 2) of mortgage originations, the natural logarithm of amount (column 3) and number (column 4) of mortgage applications, and denial rate (column 5). The coefficient of interest is β_2, coefficient associated with the interaction term of $Black_r$, $Treat_c$, $Post_t$ and High Racial Animus. $Black_r$ is a binary variable taking a value of one for Black Americans and zero for white Americans. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise. All counties included in the sample are identified in figure 2. $Post_t$ is a binary variable taking a value of one for years after the 2013 Shelby ruling and zero otherwise. High Racial Animus takes a value of one if the value of racial animus is greater than the median value in the sample and zero otherwise. The measure of racial animus comes from Stephens-Davidowitz (2013). The specification includes race × census-tract ($\alpha_{r,v}$), census-tract × year ($\alpha_{v,t}$) fixed effects, and county-pair × race × year ($\alpha_{c(p)(v\in c(p)),r,t}$) fixed effects. $f(location_v)$ or 2D local linear polynomial refers to the local linear polynomial in two dimensions, latitude and longitude, for every census tract estimated separately on each side of the border. The data spans all census tract in bordering counties identified in figure 2 from 2008 until 2019. Regressions are weighted by the total tract population in 2010. Standard errors clustered at the tract level are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Online Appendix for:

"Political Voice and (Mortgage) Market Participation: Evidence from Minority Disenfranchisement"

Appendix A Framework

Figure A.1: How can Disenfranchisement Effect Mortgage Applications?



The figure shows a representative process for buying a home through mortgage and the three effects of disenfranchisement.

Appendix B Background and Enactment of the VRA

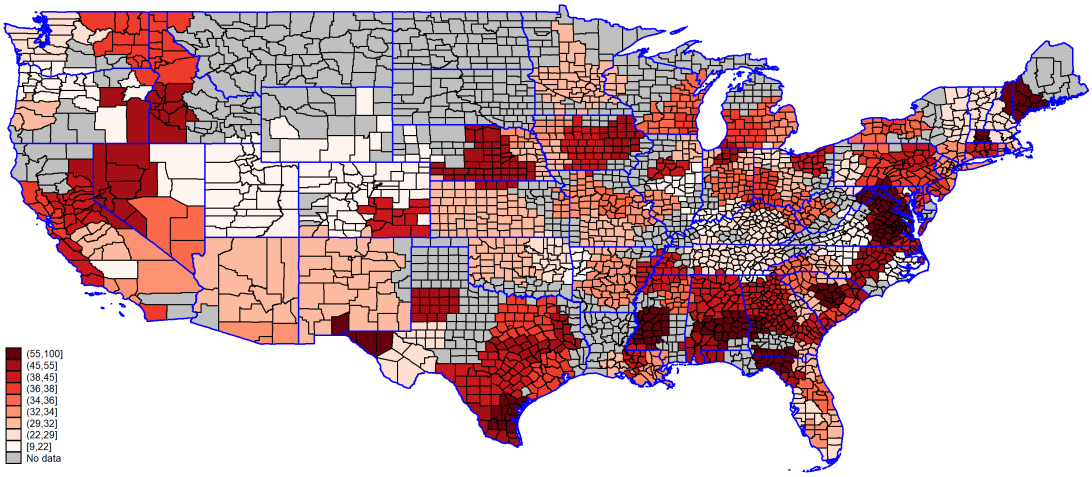
The years following the enactment of the three reconstruction amendments – the thirteenth, the fourteenth, and the fifteenth amendments – were marked by active involvement of the Black American population in politics, including holding of public offices, and their economic prosperity (Logan (2020)). The increasing political and economic involvement of the Black Americans led to a wide-spread campaign among southern whites to overturn the Reconstruction era policies. This movement of re-establishing the antebellum racial hierarchy is referred to as the Southern Redemption. Several works including Woodward (1981), Ayers (2007), Lemann (2007), and Rable (2007) among others have noted that the Southern Redemption was concentrated on reducing Black political involvement both through laws and intimidation. As a result southern state legislatures enacted several laws between the late 19th and the early 20th century, referred to as the "Jim Crow" laws, to impose *de-facto* suffrage restrictions on Black Americans.

The goals of these laws were achieved through imposition of poll taxes, literacy tests administered in a discriminatory manner by county officials, whites-only party primaries etc. which were unduly burdensome to the Black Americans.[25] Valelly (2009) notes that these restrictions disenfranchised most eligible Black Americans before the civil rights era. Furthermore, these restrictions contributed to the decline in the social and economic status of Black Americans (Sundstrom (2007), Wanamaker (2017), Logan (2020)).

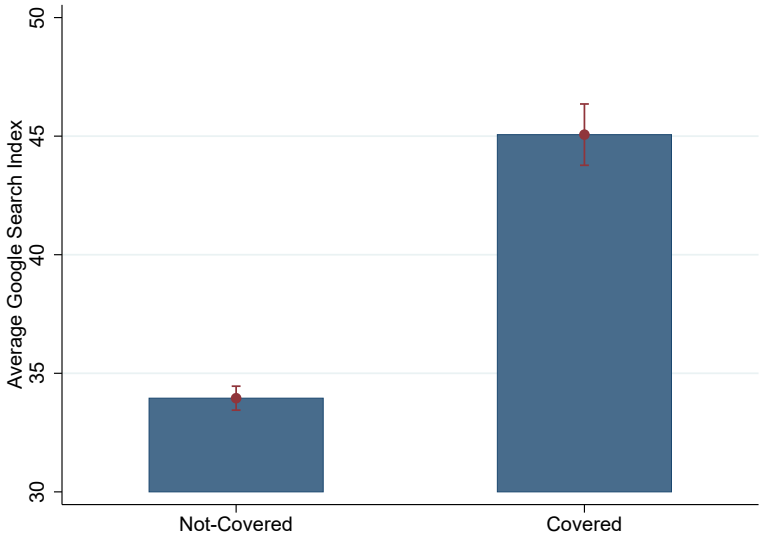
[25] We direct the readers to Perman (2003) for an extensive discussion on the disenfranchisement of Black Americans in the South during this period.

Appendix C Political Voice and Repeal of the VRA

Figure C.1: Google Search for Voting Rights Act



(a) Across Counties



(b) Covered vs Uncovered Counties

This figure plots the geographic dispersion in the google search index for the term "Voting Rights Act" from January 1, 2012 until December 30, 2014. Figure C.1a plots the heat map for google search index across different counties. Counties with no data have very low search traffic for the term "Voting Rights Act". Figure C.1b plots the average search index for the term "Voting Rights Act" for counties covered and not-covered by the Section 5 of VRA. The t-statistic for the equality of the average search index across covered and uncovered counties is 19 and significant at 1% level.

Appendix D Robustness

Table D.1: Robustness: Unweighted Results

	(1)	(2)	(3)	(4)	(5)
	Origination		Application		Denial Rate
	LN(Amount)	Ln(Number)	LN(Amount)	LN(Number)	
Black x Treat x Post	-0.1179***	-0.0615**	-0.1016***	-0.0494**	0.0011
	(0.0308)	(0.0242)	(0.0302)	(0.0238)	(0.0053)
Tract x Year	Yes	Yes	Yes	Yes	Yes
Tract x Race	Yes	Yes	Yes	Yes	Yes
County Pair x Year x Race	Yes	Yes	Yes	Yes	Yes
2D Local Linear Polynomials	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.8589	0.8811	0.8572	0.8802	0.4205
# Obs	346,825	346,825	346,825	346,825	346,825

This table reports the coefficient β from the following regression specification:

$$y_{r,v(v\in c(p)),t} = \beta \cdot Black_r \cdot Treat_c \cdot Post_t + f(location_v) + \alpha_{r,v} + \alpha_{v,t} + \alpha_{c(p)(v\in c(p)),r,t} + \varepsilon_{r,v,t}$$

where, $y_{r,v(v\in c(p)),t}$ denotes the variable of interest aggregated at the census tract (v) in county (c) lying within a contagious county-pair (p)), race (r) and time (t) level. The key-dependent variables include - natural logarithm of amount (column 1) and number (column 2) of mortgage originations, the natural logarithm of amount (column 3) and number (column 4) of mortgage applications, and denial rate (column 5). The coefficient of interest is the interaction term of $Black_r$, $Treat_c$ and $Post_t$. $Black_r$ is a binary variable taking a value of one for Black Americans and zero for white Americans. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise. All counties included in the sample are identified in figure 2. $Post_t$ is a binary variable taking a value of one for years after the 2013 Shelby ruling and zero otherwise. The specification includes race × census-tract ($\alpha_{r,v}$), census-tract × year ($\alpha_{v,t}$) fixed effects, and county-pair × race × year ($\alpha_{c(p)(v\in c(p)),r,t}$) fixed effects. $f(location_v)$ or 2D local linear polynomial refers to the local linear polynomial in two dimensions, latitude and longitude, for every census tract estimated separately on each side of the border. The data spans all census tract in bordering counties identified in figure 2 from 2008 until 2019. Standard errors clustered at the tract level are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table D.2: Robustness: Without 2D Local Linear Polynomial

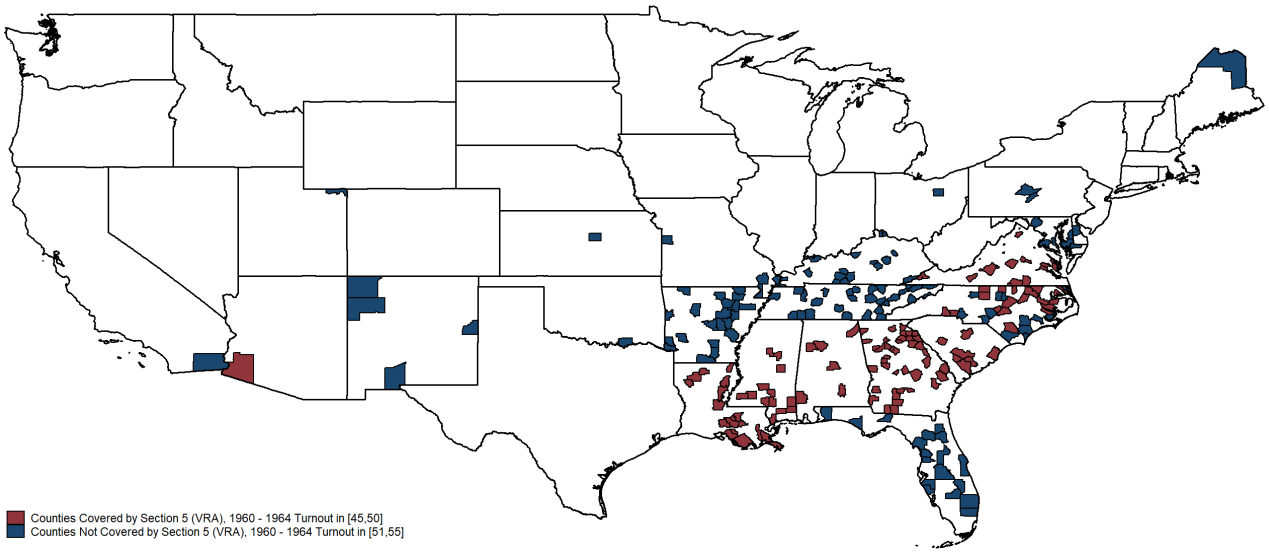
	(1)	(2)	(3)	(4)	(5)
	Origination		Application		Denial Rate
	LN(Amount)	Ln(Number)	LN(Amount)	LN(Number)	
Black x Treat x Post	-0.1146***	-0.0621***	-0.1022***	-0.0518**	0.0013
	(0.0271)	(0.0214)	(0.0265)	(0.0210)	(0.0047)
Tract x Year FE	Yes	Yes	Yes	Yes	Yes
Tract x Race FE	Yes	Yes	Yes	Yes	Yes
County Pair x Race x Year FE	Yes	Yes	Yes	Yes	Yes
2D Local Linear Polynomials	No	No	No	No	No
Adj R2	0.8717	0.8931	0.8705	0.8925	0.4307
# Obs	454,310	454,310	454,310	454,310	454,310

This table reports the coefficient β from the following regression specification:

$$y_{r,v(v\in c(p)),t} = \beta \cdot Black_r \cdot Treat_c \cdot Post_t + \alpha_{r,v} + \alpha_{v,t} + \alpha_{c(p)(v\in c(p)),r,t} + \varepsilon_{r,v,t}$$

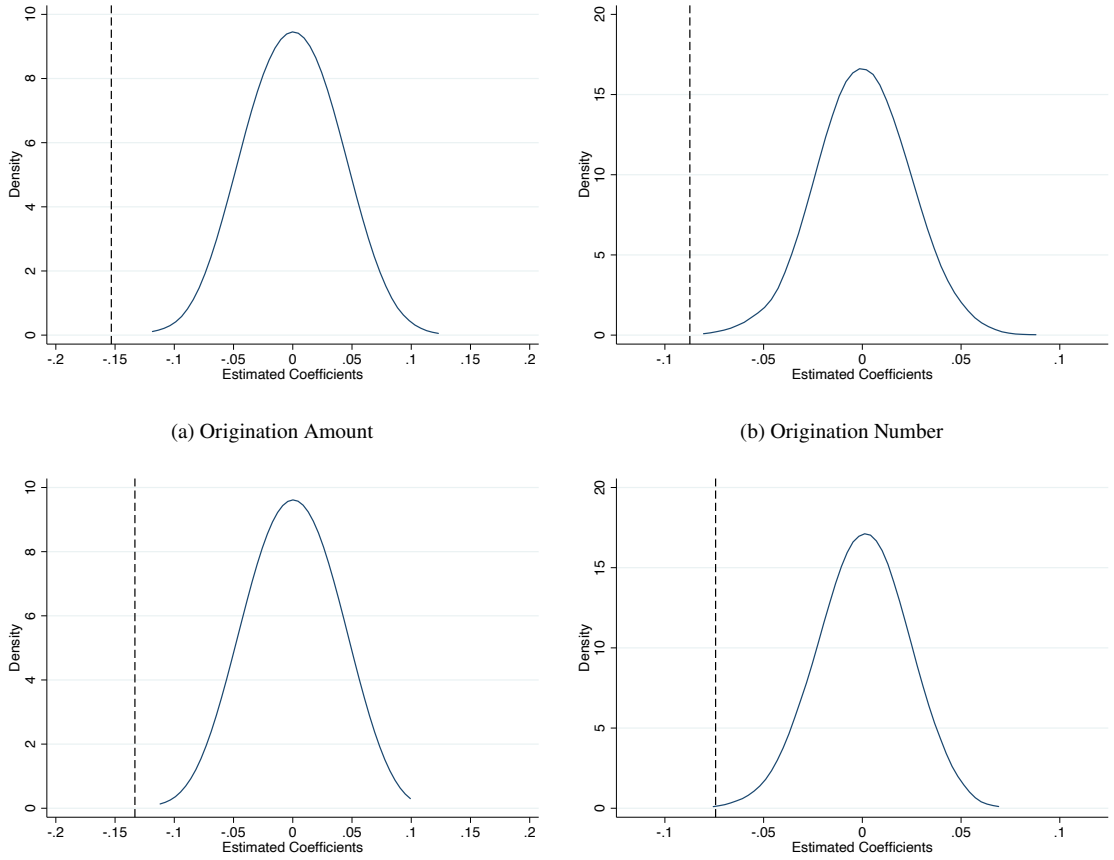
where, $y_{r,v(v\in c(p)),t}$ denotes the variable of interest aggregated at the census tract (v) in county (c) lying within a contagious county-pair (p)), race (r) and time (t) level. The key-dependent variables include - natural logarithm of amount (column 1) and number (column 2) of mortgage originations, the natural logarithm of amount (column 3) and number (column 4) of mortgage applications, and denial rate (column 5). The coefficient of interest is the interaction term of $Black_r$, $Treat_c$ and $Post_t$. $Black_r$ is a binary variable taking a value of one for Black Americans and zero for white Americans. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise. All counties included in the sample are identified in figure 2. $Post_t$ is a binary variable taking a value of one for years after the 2013 Shelby ruling and zero otherwise. The specification includes race × census-tract ($\alpha_{r,v}$), census-tract × year ($\alpha_{v,t}$) fixed effects, and county-pair × race × year ($\alpha_{c(p)(v\in c(p)),r,t}$) fixed effects. The data spans all census tract in bordering counties identified in figure 2 from 2008 until 2019. Standard errors clustered at the tract level are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Figure D.1: Sample of Treated Counties and Control Counties used in Regression Discontinuity



The figure shows the sample of treated and control counties used in the regression discontinuity analysis. The covered counties were subject to preclearance under Section 5 of the Voting Rights Act by 1965. The counties covered under Section 5 of the VRA requires preclearance from either the US Attorney Gereral or the US District Court of DC. The list of counties covered under Section 5 of the VRA is obtained from the US Department of Justice. <LINK> The covered counties with the 1964 Presidential voter turnout from 45% till 50% are included in the treated sample. The uncovered counties are counties that were never covered by Section 5 of VRA and have the 1964 Presidential voter turnout from 51% till 55%.

Figure D.2: Placebo Test: Randomizing the treatment status



(a) Origination Amount

(b) Origination Number

(c) Application Amount

(d) Application Number

This figure plots the kernel density of the point estimates β obtained from 1,000 Monte-Carlo simulations of the treatment status $Placebo\text{-}Treat_c$ in the following specification:

$$y_{r,v(v\in c(p)),t} = \beta \cdot Black_r \cdot Placebo\text{-}Treat_c \cdot Post_t + f(location_v) + \alpha_{r,v} + \alpha_{v,t} + \alpha_{c(p)(v\in c(p)),r,t} + \varepsilon_{r,v,t}$$

where, $y_{r,v(v\in c(p)),t}$ denotes the variable of interest aggregated at the census tract (v) in county (c) lying within a contagious county-pair (p)), race (r) and time (t) level. $Black_r$ is a binary variable taking a value of one for Black Americans and zero for white Americans. $Placebo\text{-}Treat_c$ is generated from a binomial distribution for each census tract within a county-pair with the probability of treatment being equal to the empirical probability of treatment. All counties included in the sample are identified in figure 2. $Post_t$ is a binary variable taking a value of one for years after the 2013 Shelby ruling and zero otherwise. The specification includes race × census-tract ($\alpha_{r,v}$), census-tract × year ($\alpha_{v,t}$) fixed effects, and county-pair × race × year ($\alpha_{c(p)(v\in c(p)),r,t}$) fixed effects. $f(location_v)$ or 2D local linear polynomial refers to the local linear polynomial in two dimensions, latitude and longitude, for every census tract estimated separately on each side of the border. The data spans all census tract in bordering counties identified in figure 2 from 2008 until 2019. Regressions are weighted by the total county population in 2010. Panel A and B use the natural logarithm of mortgage origination amount and number, respectively. Panel C and D use the natural logarithm of mortgage application amount and number, respectively. The dash black line denotes the magnitude of the baseline estimate corresponding to the dependent variable.

Table D.3: Mortgage Market Outcome and the Shelby ruling: Effect on Hispanics

	(1)	(2)	(3)	(4)	(5)
	Origination		Application		Denial Rate
	LN(Amount)	Ln(Number)	LN(Amount)	LN(Number)	
Black x Treat x Post	-0.1497***	-0.0852***	-0.1277***	-0.0718***	0.0001
	(0.0322)	(0.0251)	(0.0312)	(0.0246)	(0.0053)
Hispanic x Treat x Post	-0.0987**	-0.0537	-0.0530	-0.0186	-0.0002
	(0.0462)	(0.0352)	(0.0454)	(0.0352)	(0.0080)
Tract x Year FE	Yes	Yes	Yes	Yes	Yes
Tract x Race FE	Yes	Yes	Yes	Yes	Yes
County Pair x Race x Year FE	Yes	Yes	Yes	Yes	Yes
2D Local Linear Polynomial	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.8478	0.8731	0.8420	0.8688	0.3329
# Obs	446,031	446,031	446,031	446,031	446,031

This table reports the coefficient β from the following regression specification:

$$y_{r,v(v\in c(p)),t} = \beta \cdot Black_r \cdot Treat_c \cdot Post_t + \gamma \cdot Hispanic_r \cdot Treat_c \cdot Post_t + f(location_v) + \alpha_{r,v} + \alpha_{v,t} + \alpha_{c(p)(v\in c(p)),r,t} + \varepsilon_{r,v,t}$$

where, $y_{r,v(v\in c(p)),t}$ denotes the variable of interest aggregated at the census tract (v) in county (c) lying within a contagious county-pair (p)), race (r) and time (t) level. The key-dependent variables include - natural logarithm of amount (column 1) and number (column 2) of mortgage originations, the natural logarithm of amount (column 3) and number (column 4) of mortgage applications, and denial rate (column 5). $Black_r$ is a binary variable taking a value of one for Black Americans. $Hispanic_r$ is a binary variable taking a value of one for non-Black and non-white Hispanics. $Treat_c$ takes a value of one if the county was covered by Section 5 of VRA and zero otherwise. All counties included in the sample are identified in figure 2. $Post_t$ is a binary variable taking a value of one for years after the 2013 Shelby ruling and zero otherwise. The specification includes race × census-tract ($\alpha_{r,v}$), census-tract × year ($\alpha_{v,t}$) fixed effects, and county-pair × race × year ($\alpha_{c(p)(v\in c(p)),r,t}$) fixed effects. $f(location_v)$ or 2D local linear polynomial refers to the local linear polynomial in two dimensions, latitude and longitude, for every census tract estimated separately on each side of the border. The data spans all census tract in bordering counties identified in figure 2 from 2008 until 2019. Regressions are weighted by the total tract population in 2010. Standard errors clustered at the tract level are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table D.4: Example of Black Lenders

FDIC Certificate No.	Name	City	State	Est. Date	2013 Total Assets ($ thou.)
20856	LIBERTY BANK & TRUST CO	NEW ORLEANS	LA	11/16/1972	547,984
8033	CITIZENS TRUST BANK	ATLANTA	GA	6/18/1921	387,410
33938	CAPITOL CITY BANK & TRUST CO	ATLANTA	GA	10/3/1994	286,761
35241	SOUTH CAROLINA CMTY BANK	COLUMBIA	SC	3/26/1999	67,203
22229	COMMONWEALTH NATIONAL BANK	MOBILE	AL	2/19/1976	59,613

This table presents examples of Black lenders in southern states. Lenders are defined as Black lenders if they operate in border counties and are above the 90th percentile when sorted by the share of Black borrowers in their mortgage lending portfolio in 2008 to 2012.

Table D.5: Warmth towards Black Americans and the Shelby ruling

	(1)	(2)	(3)
Treat × Post	-4.6808***	-4.6335***	-4.3129**
	(1.6654)	(1.7080)	(1.7855)
State FE	Yes	Yes	Yes
Year FE	Yes		Yes
Age Group-Year FE		Yes	
# Obs	3250	3250	133
Within R^2	0.0017	0.0017	0.0436
Sample	Respondent	Respondent	State

This table uses the American National Election Series (ANES) data and reports coefficients β from the following specification:

$$y_{i(s)t} = \beta \cdot Treat_s \cdot Post\text{-}Shelby_t + \alpha_s + \alpha_{t(age,t)} + \varepsilon_{i(s)t}$$

where subscript i, s, age, and t indicate individual, state, individual's age, and year, respectively. $Treat_s$ is an indicator variable that takes one for VRA-treated states. $Post\text{-}Shelby_t$ is an indicator variable that takes one for 2016 (i.e., the survey year after the repeal of VRA). α_s and $\alpha_{t(age,t)}$ represent state and year (age group-year) fixed effects. The dependent variable is feeling thermometer measuring the level of warmth towards Black Americans on a scale ranging from 0 to 97 with higher value indicating a higher degree of warmth. The sample comprises of white male American survey respondents in the ANES survey waves of 2008, 2012 and 2016. Columns (1) and (2) use respondent level data, and column (3) uses data averaged at the state level. All observations are weighted by survey weights. Standard errors clustered at the state level are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.